REPORT ON CURRENCY AND FINANCE 2008-09

GLOBAL FINANCIAL CRISIS AND THE INDIAN ECONOMY

RESERVE BANK OF INDIA

"The findings, views, and conclusions expressed in this Report are entirely those of the contributing staff of the Department of Economic Analysis and Policy (DEAP) and should not necessarily be interpreted as the official views of the Reserve Bank of India".

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FOREWORD

The Global Financial Crisis, which has been compared with the Great Depression of the 1930s, in intensity and impact, has shown signs of moderation, lately. The crisis, which surfaced within the narrow confines of the subprime mortgage sector in the US in August 2007, metamorphosed into a global financial crisis in September 2008 following the collapse of Lehman Brothers. Recent developments in Europe suggest that there are still some remaining weak spots in the global economy.

With the benefit of hindsight, a number of macro - and micro-economic factors have been identified in the literature as the proximate causes of the crisis – role of easy money, global imbalances and financial innovations on the one hand to regulatory and supervisory loopholes both at the national and global level on the other. A comparison of the current crisis with the various episodes of crises in the past reveals that some semblance can be found amongst them with regard to the underlying causes.

In terms of impact, however, the recent crisis seems to have been more widespread than many other previous episodes. Almost all segments of the global financial markets experienced tremors of the financial crisis, though at varying degrees. Interbank markets in advanced economies were the first one to be affected with severe liquidity pressures as banks became reluctant to lend to each other on fear of counterparty risks. EMEs were also adversely affected by the spillover effects of the macroeconomic turbulence emanating from global financial meltdown. The crisis evoked unprecedented policy responses, both domestically and internationally. Monetary authorities all over the world went far beyond their customary roles and resorted to aggressive monetary easing, so much so that policy rates reached record lows. The forceful and coordinated policy actions appear to have been successful in preventing a catastrophe. India could not remain unscathed and the global developments affected the financial and real activities in the second half of 2008-09.

Every crisis provides us powerful lessons. What we carry forward from this crisis is the need for some new regulatory and supervisory institutions with emphasis on a system-wide approach, some new objectives for the central banks, importance of communication, transparency and coordination in central bank functioning, a new design of the international financial architecture and renewed faith in some of the safeguards adopted by the emerging market economies. This crisis has raised questions about the adequacy and efficacy of the current international financial architecture to prevent and manage global crises. In fact, the speed and intensity with which the US subprime crisis exploded into a global financial crisis and then into a global economic crisis has led to a whole new debate on dominant tenets of macroeconomics and has challenged established views on self correcting market mechanisms and the role of public policy. The depth and breadth of the crisis tested the limits of conventional and unconventional policy options available to policymakers around the world.

Against this backdrop, it was felt that it will be timely to reflect upon the global crisis to make an objective assessment of its impact on the global economy and the Indian economy, in particular, and to draw some policy lessons. **Accordingly, the theme of this Report for 2008-09 was selected as "Global Financial Crisis and the Indian Economy".** The Report undertakes an in-depth analysis of causes of the crisis, the policy measures undertaken and the impact on the global as well as the Indian economy.

It may be recalled that from 1998-99, the Report on Currency and Finance has become theme based. So far nine Reports have been published as follows;

	Year	Theme
1.	1998-99	The Structural Transformation of the Indian Economy
2.	1999-2000	Financial Sector and Market Integration
3.	2000-01	Revitalising Growth
4.	2001-02	Stock taking of the Reform Process and its Outcomes
5.	2002-03	Management of the External Sector in an Open Economy Framework
6.	2003-04	The Evolution of Monetary Policy
7.	2004-05	The Evolution of Central Banking in India
8.	2005-06	Development of Financial Markets and Role of the Central Bank
9.	2006-07 and 2007-08	The Banking Sector in India : Emerging Issues and Challenges
10.	2008-09 (Current)	Global Financial Crisis and the Indian Economy

This Report has been prepared in the Department of Economic Analysis and Policy by a team of officers led by Shri S.V.S. Dixit, Adviser and Dr. Rajiv Ranjan, Director under the overall supervision and guidance of Shri Deepak Mohanty, Executive Director. The core team comprised Jeevan K. Khundrakpam, Rekha Misra, Bhupal Singh, Sunil Kumar, Abhiman Das, S.C. Dhal, Anupam Prakash, Rajeev Jain, Atri Mukherjee, Saurabh Ghosh, Sangita Misra, S.M. Lokare, Pankaj Kumar, Rakesh Kumar, Subrat Seet, N.Arun Vishnukumar, Indrajit Roy and S.Suraj. Valuable inputs from officers of other Departments are highly appreciated.

Many of the issues raised in the Report are still evolving and it will take some time for them to settle down. This group of young economists, who undertook the challenge of drawing a fine balance, did so, with courage, determination and forthrightness. I place on record my deep appreciation of their efforts.

Subir Gokarn
Deputy Governor

July 1, 2010

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ABBREVIATIONS

ABCP	–	Asset Backed Commercial Paper
ABS	–	Asset-Backed Securities
ACMA	–	Automobile Components Manufacturing Association of India
AD	–	Authorised Dealer
ADF	–	Augmented Dicky Fuller
ARM	–	Adjustable Rate Mortgages
BCBS	–	Basel Committee on Banking Supervision
BIS	–	Bank for International Settlements
BoP	–	Balance of Payments
BPO	–	Business Process Outsourcing
CAD	–	Current Account Deficit
CBRG	–	Cross-Border Bank Resolution Group
CBO	–	Congressional Budget Office
CDOs	–	Collateralised Debt Obligations
CDS	–	Credit Default Swaps
CESR	–	Committee of European Securities Regulators
CFPA	–	Consumer Financial Protection Agency
CMBS	–	Commercial Mortgage-Backed Securities
CP	–	Commercial Paper
CPI	–	Consumer Price Index
CPFF	–	Commercial Paper Funding Facility
CPSS	–	Committee on Payment and Settlement Systems
CRAs	–	Credit Rating Agencies
CRAR	–	Capital to Risk-Weighted Assets Ratio
CRR	–	Cash Reserve Ratio
CVD	–	Countervailing Duty
EC	–	European Commission
ECB	–	European Central Bank
Ecofin	–	Economic and Financial Affairs Council
EMEs	–	Emerging Market Economies
EMPI	–	Exchange Market Pressure Index
ESF	–	Exogenous Shock Facility
ERM	–	Exchange Rate Mechanism
ESFS	–	European System of Financial Supervisors
ESRC	–	European Systemic Risk Council
FASB	–	Financial Accounting Standards Board
FBT	–	Fringe Benefit Tax
FCL	–	Flexible Credit Line
FDI	–	Foreign Direct Investment
FDIC		Federal Deposit Insurance Corporation
FHCs	–	Financial Holding Companies
FHLMC	–	Federal Home Loan Mortgage Corporation
FIIs	–	Foreign Institutional Investors
FIPB	–	Foreign Investment Promotion Board
FSI	–	Financial Stress Indicator
FNMA	–	Federal National Mortgage Association
FSA	–	Financial Services Authority
FSCS	–	Financial Services Compensation Scheme
FTC	–	Federal Trade Commission
GAAP	–	Generally Accepted Accounting Principles
GDP	–	Gross Domestic Product
GECC	–	Global Economic Co-ordination Council
GFD	–	Gross Fiscal Deficit
GFSR	–	Global Financial Stability Report

GIMF	–	Global Integrated Monetary and Fiscal
GPRF	–	Global Food Crisis Response Programme
GSDP	–	Gross State Domestic Product
DTA	–	Domestic Tariff Areas
HFCs	–	Housing Finance Companies
HP	–	Hodrick-Prescott
HKMA	–	Hong Kong Monetary Authority
IASB	–	International Accounting Standards Board
IFC	–	International Finance Corporation
IFRS	–	International Financial Reporting Standards
IIFCL	–	India Infrastructure Finance Company Limited
INFRA	–	Infrastructure Recovery and Assets
IMF	–	International Monetary Fund
IMFC	–	International Monetary and Financial Committee
IOSCO	–	International Organization of Securities Commissions
IPAs	–	Issuing and Paying Agents
IPOs	–	Initial Public Offerings
IRB	–	Internal Rating Based
IT	–	Information Technology
ITEs	–	Intra-Group Transactions and Exposures (ITEs)
ITES	–	Information Technology-enabled Services
LAF	–	Liquidity Adjustment Facility
LCBGs	–	Large and Complex Banking Groups
LCD	–	Liquid Crystal Display
LIBOR	–	London Inter-Bank Offer Rate
LOLR	–	Lender of Last Resort
MAS	–	Monetary Authority of Singapore
MBS	–	Mortgage Backed Securities
MFIs	–	Micro-Finance Institutions
MIBOR	–	Mumbai Inter-Bank Offer Rate
MIGA	–	Multilateral Investment Guarantee Agency
MSMEs	–	Micro, Small and Medium Enterprises
MSS	–	Market Stabilisation Scheme
MTM	–	Mark-to-Market
M&As	–	Mergers and Acquisitions
NAB	–	New Arrangements to Borrow
NBFCs	–	Non-Banking Financial Companies
NBS	–	National Bank Supervisor
NCBP	–	Non-Concessional Borrowing Policy
NDA	–	Net Domestic Asset
NDTL	–	Net Demand and Time Liability
NFA	–	Net Foreign Assets
NFC	–	Non-Food Credit
NMF	–	Investment by Mutual Funds
NPLs	–	Non-Performing Loans
NRSROs	–	Nationally Recognised Securities Rating Organisations
OBSVs	–	Off-Balance Sheet Vehicles
OCR	–	Ordinary Capital Resources
OECD	–	Organisation for Economic Cooperation and Development
OIS	–	Overnight Indexed Swap
OLS	–	Ordinary Least Squares
OMO	–	Open Market Operation
ONI	–	Office of National Insurance
OTC	–	Over-the-Counter
OTD	–	Originate-to-Distribute
OTH	–	Originate-to-Hold
OTS	–	Office of Thrift Supervision
OBSEs	–	Off-Balance Sheet Entities

PDIC	–	Philippine Deposit Insurance Corporation
PDs	–	Primary Dealers
PPAC	–	Petroleum Planning Analysis Cell
PPP	–	Public Private Partnership
PRGF	–	Poverty Reduction and Growth Facility
PVAR	–	Panel Vector Auto-Regression
REER	–	Real Effective Exchange Rate
RMBS	–	Residential Mortgage-Backed Securities
RWA	–	Risk-Weighted Assets
SEBI	–	Securities and Exchange Board of India
SEC	–	Securities and Exchange Commission
SEP	–	Supervisory Enhancement Programme
SEZs	–	Special Economic Zones
SHGs	–	Self-Help Groups
SIDBI	–	Small Industries Development Bank of India
SDL	–	State Development Loan
SIVs	–	Structured Investment Vehicles
SLR	–	Statutory Liquidity Ratio
SMEs	–	Small and Medium Enterprises
SMO	–	Special Market Operation
SSMB	–	Standard Setting and Monitoring Body
SSIs	–	Small-Scale Industries
StAR	–	Stolen Asset Recovery
S&L	–	Savings and Loan Associations
TAF	–	Term Auction Facility
TARP	–	Troubled Asset Relief Program
TFFP	–	Trade Facilitation Programme
TUF	–	Technology Upgradation Fund
UNWTO	–	United Nations World Tourism Organization
VAR	–	Vector Autoregression
WADR	–	Weighted Average Discount Rate
WEO	–	World Economic Outlook
WTO	–	World Trade Organisation

This Report can also be accessed on Internet
URL : www.rbi.org.in

1 THE THEME OF THE REPORT

Genesis and the Nature of the Crisis

1.1 The world economy experienced a sustained period of growth with only moderate fluctuations coupled with low inflation, a phenomenon popularly termed as the 'Great Moderation' till the precipitation of the recent global crisis. This prolonged period of macro-economic stability was essentially attributed to efficiently functioning markets and the benefits of globalisation. However, what remained hidden within these overall signs of prosperity were the immensely complex financial systems and the systemic risks they entailed due to the policy of 'benign neglect' followed by authorities. In addition, some structural imbalances had also developed in the world economy in terms of mismatches between savings and investments and production and consumption across nations that manifested in the widening current account imbalances in some part mirrored with surpluses in others, misalignment in exchange rates and booming asset prices. These developments had to unwind at some point of time and when the unwinding began, they manifested themselves in the form of the worst ever global financial crisis since the 'Great Depression' of the 1930s.

1.2 The speed and intensity with which the US sub-prime crisis that appeared in mid-2007 transformed itself into a global financial crisis and then into a global economic crisis has attracted the attention of all. In the postmortem analysis, a number of micro and macroeconomic factors have been listed in the literature as the proximate causes of the crisis – role of easy money, financial innovations and global imbalances on the one hand to regulatory loopholes both at the national and global level on the other. At the fulcrum of the crisis was too much of leverage. Easy credit combined with under-pricing of risks both by the households as well as financial intermediaries created bubbles in real estate, energy and other sectors that had to face a disorderly unwinding. The recent crisis has necessitated the need to revisit the global regulatory and supervisory structures and perimeters against the backdrop of rapid financial innovations. The analysis of the various causes of the crisis has evolved a whole new debate on the relevance of various economic tenets and has challenged the economic doctrine that assumed the self correcting mechanism of the markets. There is also a view which holds responsible the policy frameworks and growth strategies pursued by economies in the various regions.

1.3 A comparison of the recent crisis with the various episodes of crises in the past reveals that some semblance can be found amongst them with regard to the underlying causes. As in the past, the main causes of the recent crisis are linked to systemic fragilities and imbalances that contributed to the inadequate functioning of the global economy. Leading up to the crisis, these factors became more pronounced due to major weaknesses in financial regulation, supervision and monitoring of the financial sector and inadequate surveillance and early warning. These, together with over-reliance on market self-regulation, overall lack of transparency with distorted incentive structure led to excessive risk-taking, unsustainable high asset prices, irresponsible leveraging and high levels of consumption which were fuelled by easy credit and inflated asset prices. In terms of impact, however, the recent crisis seems to be more widespread than many other previous episodes and is considered to be closest to the Great Depression of the 1930s. The estimates of output loss place this crisis above most of the episodes in the past with majority of the advanced and emerging market economies facing the downturn as a result of the rapid transmission of the crisis from the epicenter to the periphery. In fact, the same forces of

globalisation and international finance that had led to developments in poorer countries over the past decades also carried with them the seeds of contagion, which resulted in the international transmission of shocks.

1.4 As a result, the so-called 'decoupling theory' which was in full force just before the recent crisis, came under question in an increasingly interdependent world. The crisis that emerged in the US spread to other advanced economies quickly and at a later stage spread to emerging and developing economies through various channels - financial, trade and confidence - despite their relatively sound macroeconomic fundamentals and policy frameworks. Thus, the established views on the efficiency of markets and the role of public policy both came under severe criticism, which posed new challenges for the discipline of economics. More fundamentally, the old debate on the 'role of finance in economic growth' has again come to the centre stage, while the potential costs and benefits of financial globalisation have become the focus of policy discussions in international fora. At the same time, the adequacy and efficacy of the current international financial architecture to prevent and manage global crises has resurfaced again.

Manifestation of the Crisis

1.5 Almost all segments of the global financial markets experienced tremors of the financial crisis, though at variant degrees. Interbank markets in advanced economies were the first to be affected with severe liquidity crisis as banks became reluctant to lend to each other on fear of counterparty risks. Subsequently, the crisis spread to the money markets as manifested in abnormal level of spreads, shortening of maturities, and contraction, or even closure, of some market segments. In the wake of credit and money markets witnessing a squeeze and equity prices plummeting, banks and other financial institutions experienced erosion in their access to funding and capital base, owing to accumulating mark to market losses. Stock markets in EMEs, on the other hand, bore much of the heat of the crisis as equity markets all over the world witnessed high volatility, and suffered sharp decline in prices and turnover. Commodity prices, which reached record highs during the initial stages of the crisis witnessed a sharp reversal in trend since the collapse of Lehman Brothers in September 2008. The depth and spread of the crisis can be gauged from the successive revisions in the estimates of write-downs, decline in trade and finally the contraction in economic activity.

1.6 In the backdrop of large scale disruptions in international financial markets and deteriorating macroeconomic conditions, financial institutions also suffered significantly. Commercial banks suffered from decline in profitability and large mark to market losses. The crisis almost sidelined the investment banking industry, while the financial performance of the monoline insurers and hedge funds were impacted severely. The banking systems of emerging market economies, on the contrary, showed relative resilience during the crisis on account of their limited exposure to the toxic assets and the regulatory and supervisory measures taken to strengthen their balance sheets in the aftermath of the East Asian crisis.

1.7 The increasing globalisation and trade integration have brought enormous economic and financial benefits to the EMEs, but have also widened channels through which a slowdown in economic activity in advanced economies could spread to the EMEs. Initially, it appeared that EMEs were better positioned to weather the storm created by the global financial meltdown on the back of substantial foreign exchange reserve cushion, improved policy frameworks and generally robust banking sector and corporate balance sheets. However, any hope about EMEs escaping unscathed could not sustain much after the failure of Lehman Brother in September 2008 and ensuing rise in the global risk aversion; EMEs were also adversely affected by the spillover effects of the macroeconomic turbulences created by global financial meltdown. The EMEs were affected through contraction in world trade especially during the second half of 2008. Net private capital flows

to EMEs also reversed reflecting global deleveraging and risk aversion on the part of investors, which led to tightening of external financing conditions. Finally, their growth was also impacted.

International Responses to the Crisis

1.8 The crisis evoked unprecedented policy responses, both domestically and internationally. Amidst the deteriorating global financial environment, the authorities, particularly in the advanced countries recognised at an early stage that they needed to respond bravely and act swiftly. The national Governments and central banks in several countries resorted concomitantly with a variety of both conventional and unconventional policy actions to contain systemic risk to shore up the confidence in the financial system and arrest the economic slowdown. The policy responses-regulatory, supervisory, monetary and fiscal during the crisis have been unparalleled in terms of their scale, magnitude and exceptional coordination across various jurisdictions. The responses included varying combinations of monetary and fiscal measures, deposit guarantees, debt guarantees, capital injections and asset purchases, which were coordinated globally.

1.9 Monetary authorities in the industrial world were the first to take a plunge by resorting to an aggressive monetary easing; so much so that policy rates reached to record lows. To contain the crisis of confidence and ease financial conditions, central banks ventured even further by using their balance sheets in unconventional ways. The governments across the countries responded by way of massive bail outs and capital injections to resolve the problem of insolvency and stabilise the financial system. The unprecedented scale of economic slowdown accompanying the financial crisis also led to activation of counter-cyclical fiscal policy of magnitudes, least seen in the past.

1.10 As the crisis unfolded, the resolution mechanisms that came to the fore had to contend with new and complex web of financial world involving credit default swaps, special investment vehicles and hence differed radically from the responses undertaken in the previous such episodes. Supervisors and standard setting bodies around the world increasingly got engaged in strengthening the standards governing bank capital, liquidity, risk management, incentive compensation, and consumer protection, and so on. The emphasis on scaling up the supervision with greater macro prudential focus, through enhanced consolidated supervision and the development of new supervisory tools began gathering momentum.

1.11 Although advanced countries turned their policy attention on restoring normalcy and strengthening financial regulation/ supervision and EMEs began dealing with the collapse of trade and the capital outflows, restoring growth emerged as the common thread of policy response among both the categories. It was for the first time that EMEs turned out to be active partners in finding meaningful resolution mechanisms to a global problem. A distinguishing feature of the current financial crisis is that despite being global in nature, there appears to be a clear divide between the advanced countries and the emerging market economies (EMEs) in terms of impact and policy responses. For advanced countries, the policy priority has been to strengthen financial regulation and supervision. In the EMEs, dealing with the collapse of trade and the outflow of capital occupied the policy attention.

1.12 The forceful and coordinated policy actions have been successful in extinguishing the initial damages and averting a global financial collapse. Although the policy responses could avoid the worst financial and economic outcomes, the policymakers and academia are still grappling with the design and conduct of appropriate policies to arrest the possibility of such events in the future. Moreover, the unconventional measures, while helping in stabilising the financial system, have posed several challenges and risks.

1.13 More recently, in the wake of the financial stress triggered by Greece, comprehensive support measures have been announced focusing on

preserving economic and financial stability within the Euro Area. The belief that sovereign states can borrow without any limits has been once again called into question after the problem in Greece. This is a reminder that fiscal space is finite and cannot be extended indefinitely. It is being now realised that the Euro Area has to supplement its strict entry norms regarding fiscal discipline with continuous fiscal surveillance so as to detect vulnerabilities well in time.

Impact and Policy Responses in India

1.14 Until the emergence of global crisis, the Indian economy also passed through a phase of high growth driven by domestic demand - growing domestic investment financed mostly by domestic savings and sustained consumption demand. In fact, consumption and saving are well balanced. Services sector, led by domestic demand, contributed to the stability in growth. Concomitantly, inflation was also generally low and stable. This overall improvement in macroeconomic performance in India was attributed to the sequential financial sector reforms that resulted in an efficient system of financial intermediation, *albeit* bank-based; the rule-based fiscal policy that reduced the public sector's drag on private savings; and forward looking monetary policy that balanced the short-term trade-off between growth and inflation on a continuous basis, while also pursuing the objective of financial stability. Additionally, the phased liberalisation of the economy to trade and capital flows along with a broadly market driven exchange rate regime enhanced the role of external demand in supporting the growth process, simultaneously exposing the economy to the forces of globalisation. In the process, India became increasingly integrated with the world economy and maintaining financial stability assumed importance in the hierarchy of public policy; in fact, it emerged as an important objective of monetary policy in India even before the current crisis. This is evident from the counter-cyclical monetary policy and macro-prudential financial regulations that were in force during the boom phase just before the crisis.

1.15 In these circumstances, the Indian economy benefited from global integration and had also exhibited remarkable resilience to various adverse external developments – the east-Asian crisis (1997-98), the dot.com crisis (2000-01), *etc.* However, during the current global crisis, India was impacted like most other emerging markets, despite hardly any direct exposure to the troubled assets in the epicenter of the financial crisis. In fact, the contagion spread through all the channels – trade, finance and confidence.

1.16 During the initial phase of the crisis, the impact on the Indian financial markets was rather muted. In fact, banks dominated the financial system and their negligible engagement in the off-balance-sheet activities and illiquid securitised assets, which remained at the heart of current global financial crisis in advanced economies, protected India from early turmoil in international financial markets. Nonetheless, India could not remain unscathed and the global developments affected the financial and real activities in the second half of 2008-09. India's financial markets - equity market, money market, forex market and credit market - all came under pressure from a number of directions.

Lessons from the Crisis and Future Challenges

1.17 Several lessons could be drawn from the crisis to identify the future challenges in the global financial system. A number of important issues have emerged relating to the prevention and management of crises which allows us to draw relevant lessons for both market participants and policy makers. The analysis of underlying factors – whether macroeconomic or microeconomic in nature - responsible for evolving and intensifying the crisis - raises issues about the role of public authorities, *viz.,* central banks, supervisor/regulators and governments in safeguarding financial stability. The crisis has certainly doubted the efficacy of the existing institutional framework and available policy instruments at the national as well as international levels in ensuring global financial stability.

1.18 It also raised questions on the functioning of financial markets and institutions, in particular their capacity to price, allocate and manage risk efficiently. Thus, the lessons to be drawn from the recent crisis are not only manifold but also for a diverse set of authorities entrusted with the task of maintaining financial stability being most applicable for the advanced economies besides a broader relevance for EMEs. Looking ahead, devising a calibrated exit from the unprecedented monetary accommodation globally, which has already started in some countries, is one of the most important challenges. In this context, the timing and the amount of reversing become very important.

1.19 It is not yet known whether the business cycle synchronization that was evident just before the crisis and monetary policy synchronization that emerged in response to the crisis, will give way to similar synchronization in the exit strategies. It is therefore timely to reflect upon the global crisis - the past, present and future – to make an objective assessment of its impact on the Indian economy and to draw policy lessons to ward-off any recurrence of crisis like situation in future, and in the event of a crisis to deal with it more effectively. Accordingly, the theme of this Report for 2008-09 has been titled as "Global Financial Crisis and the Indian Economy". The Report undertakes an in-depth analysis of causes and consequences of the crisis, compares and contrasts the present crisis with past crises, analyse the effectiveness of the conventional and unconventional policy responses to the crisis at the global level. From the Indian perspective, the Report covers in detail the manifestation of the crisis in India, the nature of policy responses undertaken and their impact in limiting the adverse impact and the broad lessons that emerge from the crisis at the domestic as well as international level.

Chapter Scheme of the Report

1.20 The Report includes seven chapters including this one. Chapter 2 titled "Genesis and the Nature of the Crisis" traces the genesis and nature of the crises which has affected both the developed, emerging and developing world over the last century and a half, when they have often arrived with fierce force and departed with important lessons for the policy makers. This chapter discusses the causes of the current financial crisis while simultaneously highlighting the debate as it has evolved on the various contributing factors of the crisis, besides covering the crisis in a historical perspective by giving a comparison between the present crisis with the earlier episodes of crisis of similar nature. The Chapter also covers the genesis of the recent crisis in Greece.

1.21 The chapter 3 on "Manifestation of the Crisis" attempts at analysing the impact of the crisis on the various sectors of the global economy, such as financial markets, financial institutions, international trade, international capital flows, remittances and the real economy.

1.22 The chapter 4 on "International Responses to the Crisis" discussed the measures taken by the international community during the present financial crisis against the backdrop of the conventional crisis management strategies. The chapter also provides the policy responses to financial crisis in a historical perspective. The monetary policy and the fiscal policy responses along with the issues on fiscal monetary coordination are covered. The responses from the multilateral institutions are also presented. The actions taken relating to financial sector policies to reduce the chance of recurrence of financial crisis of such a magnitude are elucidated in the chapter.

1.23 After discussing the genesis, manifestation and policy responses of the crisis in the global context in Chapters 2,3, and 4 respectively, the next two Chapters 5 and 6 cover impact of the global financial crisis on the Indian economy and the policy responses of the authorities. In Chapter 5 on "Impact and Policy Responses in India: Financial Sector", the impact on the India's financial sector is analysed in detail. In the following Chapter 6 on "Impact and Policy Responses in India: Real Sector", the impact on the real sector of the Indian economy through trade, services, capital flows are analysed.

1.24 In examining the impact of the financial crisis on the financial sector, the Chapter 5 analyses the evolving global integration of the Indian economy through trade and financial channels over the years. The impact of the crisis on various financial markets and respective policy measures has been delineated. The spillover effects travelling to the banking sector, mutual funds and non-banking finance companies and policy measures to counter their impact have been examined in detail. The policy responses to the crisis by the Government of India and the Reserve Bank are also discussed in the chapter.

1.25 Chapter 6 covers the impact through trade and capital flows channel, which finally penetrated into the real sector of the economy. In this chapter, a perspective is given on various channels of transmission of global shocks to the real sector. The analysis of the impact emanating from trade and financial channels are discussed elaborately and ultimately the impact on the saving, investment and growth are covered in the chapter.

1.26 The Chapter 7 on "Lessons from the Crisis and Future Challenges" draws lessons from the crisis to identify some of the future challenges. The chapter covers lessons for the central banks, for the financial regulation and supervision, for fiscal policy and for the international policy coordination followed by the role of international financial institutions. Issues coming out of global imbalances and macroeconomic management are also covered in this chapter. Finally, this chapter brings out the lessons and challenges for EMEs and India.

2 GENESIS AND THE NATURE OF THE CRISIS

2.1 The world economy witnessed a truly global crisis since mid 2008. This crisis has tested the contours of the functioning of the global financial landscape, while the interlinkages between the financial and the real economy were magnified. The problems that surfaced in the US sub-prime market in August 2007 reached their peak during September 2008 when some of the prime Wall Street financial institutions collapsed, leading to a worldwide failure of confidence. Credit markets virtually froze with financial institutions almost unwilling to lend to each other. The loss of confidence set off a chain of deleveraging, declining asset and commodity prices, falling incomes, shrinking demand and trade and capital flows, and rising unemployment in the advanced economies in the early stages. Although advanced countries clearly remained the epicentre of the recent global crisis, emerging market economies (EMEs) have also been substantially affected by the crisis. The turmoil in the financial sector of the advanced countries traversed to the financial sector of the EMEs, including India, especially after the Lehman Brothers bankruptcy in mid-September 2008. The contagion spread to these economies through financial, trade and confidence channels, despite their relatively sound fundamentals. This promoted many to revisit the so-called 'decoupling theory' in an increasingly globalised world. Thus, what started off as a sub-prime crisis in the US housing market in August 2007 turned successively into a global banking crisis, a global financial crisis and then a global economic crisis.

2.2 The period prior to the unravelling of the crisis was generally characterised by relatively steady growth and low and stable inflation in advanced economies and rapid growth and development in EMEs, popularly known as the period of 'Great Moderation' (Bernanke, 2004). This prolonged period of macroeconomic stability was attributed to free markets and successful globalisation. The 'Great Moderation' in economic performance, however, ignored the possibility of catastrophic failures in a market economy. What remained hidden within these overall signs of prosperity were the immensely complex financial systems that at times remained beyond the regulatory purview of policy authorities, and posed tremendous systemic risks. In addition, some structural imbalances had also developed in the world economy over the years in terms of mismatches between savings and investments and production and consumption across nations that were manifested in widening current account imbalances, misaligned exchange rates, and low interest rates and asset prices, which had to unwind at some point of time. All these factors manifested themselves in the form of the worst-ever global financial crisis.

2.3 The rapid speed with which the financial crisis spread from the United States to Europe and then to the rest of the world shocked the entire world. While crises have been part of the financial landscape for ages, it is now widely accepted that the nearest precedent to the recent crisis is the Great Depression of the 1930s in terms of its depth, geographical spread, intensity and duration. No country has been spared from its wrath, although the impact has varied across nations.

2.4 The recent financial crisis and the subsequent recession have re-opened two crucial debates – on the efficacy of the markets and the role of public policy, the so-called Keynesianism – and have posed new challenges for the discipline of economics. The recent crisis has again questioned the role of finance in leading to growth and brought into focus the role of non-economic motives in explaining market rise and fall. The recent crisis has also necessitated a revisit of the

current global regulatory and supervisory structures and perimeters against the backdrop of rapid financial innovations. Finally, it has re-invoked the debate on the adequacy and efficacy of the current international financial architecture to prevent and manage global crises of the kind recently seen.

2.5 The depth and breadth of the crisis has tested the limits of the conventional and unconventional policy options available to policymakers around the world. The initial estimate of actual and potential global write-downs held by banks and other financial institutions, which started at about US$ 50 billion in mid-2007, increased to around US$ 4.0 trillion by end-2008 and was scaled down to US$ 2.3 trillion by the IMF in April 2010. As per IMF forecasts (April, 2010), world GDP growth after decelerating to 3.0 per cent in 2008 from 5.2 per cent in 2007 declined by 0.6 per cent in 2009. However, the global growth is projected to rise to 4.2 per cent in 2010 and 4.3 per cent in 2011. The advanced economies exhibited a negative growth of 3.2 per cent in 2009 (as against a positive growth of 0.5 per cent in 2008), while emerging and developing economies grew by 2.4 per cent in 2009 (compared with 6.1 per cent in 2008). The advanced economies and the emerging and developing economies are projected to grow by 2.3 per cent and 6.3 per cent, respectively, during 2010.

2.6 Against the above backdrop, this chapter will trace the genesis and nature of the crises affecting both the developed and developing world over the past century and a half when they often arrived with fierce force and departed with important lessons for policymakers. This will be covered under three broad sections. Section I will discuss in detail the causes of the recent financial crisis and simultaneously trace the evolving debate on the various contributing factors. The crisis in a historical perspective is covered in Section II. A comparison between the recent crisis and similar earlier episodes is presented in Section III. Section IV sets out the concluding observations.

I. CAUSES OF THE CRISIS

2.7 The causes of the crisis were many and intertwined as such a pervasive crisis cannot be triggered by a single or isolated cause. In trying to understand the various causes of the crisis, different viewpoints have emerged. One view believes that the current disruption of financial markets is the long-run consequence of the easy global money and credit conditions that existed, particularly from the start of the decade. While the immediate cause of the financial crisis is attributed to the problems persisting in the sub-prime mortgage sector of the United States, the root lies in the persistence of global imbalances since the start of the current decade (BIS, 2009; Mohan, 2008; Portes, 2009; Taylor, 2009). The global imbalances interacted with the flaws in financial markets and instruments to generate the specific features of the crisis.

2.8 Another view argues that if imbalances at the global level were the root cause, then why did the crisis originate in the United States and not in other countries which were also partners of global imbalances? The excesses in the US financial system are, in fact, at the core of the current crisis and all other factors contributed to further aggravate the crisis. Finance has been the proximate factor behind most crises of the past and the recent crisis is no different (Ferguson, 2009). Some are also of the opinion that one important cause of the crisis is the US Fed's very low interest rates that were maintained for a very long time leading to a housing and asset price bubble (ECB, 2007; Taylor, 2009; Skidelsky, 2009) and an equally important cause has been the lack of recognition of asset prices in policy formulation (Borio and Lowe, 2004; White 2008). According to some, the Basel Accord is also a cause of the recent banking crisis; banks' efforts to circumvent the capital adequacy requirements of Basel Accord caused the financial crisis (Acharya *et al.*, 2009; Plender, 2007). Leaders at the G-20 Summit in September 2009 blamed global imbalances, seeing them as more responsible for the crisis than the failure of global financial regulation.

2.9 The debate on the causes of the crisis has also revolved around whether the crisis was the result of market failure or of governance failure. The Great Moderation in economic performance over the previous decade and half ignored the possibility of catastrophic failures in the market economy. During the golden years, financial economists believed that free-market economies could never go astray, which is belied by the crisis (Krugman, 2009). The IMF too supported the market-oriented ideology.

2.10 In contrast, the recent crisis has also been considered to be a failure of governance. Central banks focused excessively on CPI inflation at the expense of financial vulnerability (IMF, 2009a). Since there was no formal mandate to maintain financial stability, the latter was inadvertently ignored in public policy. By accommodating lax credit conditions and rising debt, monetary policymakers in a way increased the risks of a bust. Besides, many central banks were persuaded to be very transparent and provided forward guidance to the financial markets on their policy stance, especially on the future course of monetary policy. Such forward guidance provided excessive comfort to the financial markets and aided the under-pricing of risks[1]. The roles of international financial institutions like the IMF with the responsibility of surveillance, have also been questioned. It is lamented that the IMF failed in diagnosing and pointing out the vulnerabilities both at the global level and at the level of systemically important advanced economies.

2.11 A more balanced viewpoint is that the recent crisis reflects a collapse of the market as well as the State, since governance in both private and public sectors failed (Reddy, 2009c). This argument has been stretched further to interpret failure of governance at all levels as indicative of moral failure of the whole economic system or what some have described as a failure of capitalism (Krugman, 2009). Be that as it may, as the debate on the causes of the crisis still continues, it is worth distilling the variety of factors that contributed to the crisis.

Global Imbalances

2.12 From a historical perspective, many now argue that the US sub-prime mortgage crisis was only a proximate cause or simply a trigger for the recent crisis through the re-pricing of risks that spilled over to other parts of the world *via* securitised mortgage derivatives. At a more fundamental level, it can be traced to the persistence of large global imbalances of various systemically important economies over a period of time – large current account deficits in the US along with some other advanced economies such as the United Kingdom, Greece, Italy, Portugal and Spain mirrored by substantial surplus in Asia, particularly in China, oil-exporting countries in the Middle East and Russia – that posed risks to the global financial system of a disorderly unwinding. Global imbalances, in general, can be defined as "external positions of systemically important economies reflecting distortions or entailing risks for the global economy" (Bracke *et al.*, 2008).

2.13 The period following the bursting of the dot-com bubble in the US was marked by a highly accommodative monetary policy that boosted aggregate demand in the US as well as in other advanced countries. Lower interest rates along with financial innovations encouraged a housing boom and an increase in housing and other asset prices, providing further impetus to consumption and investment through wealth effects. While real activity in the US did provide a stimulus to activity in the rest of the world, it was accompanied by large and growing current account deficits (Table 2.1). In absolute terms, the current account deficit (CAD) of the US saw a seven-fold increase from US$ 114 billion in 1995 to US$ 804 billion in 2006

[1] Even if some central banks perceived that there were excessive risks in the system, they concluded that such risks were dispersed widely due to the emergence of new intermediaries, like hedge funds, and new instruments, like derivatives, with no impact on the financial system as a whole.

Table 2.1: Macro Parameters of the United States

(in per cent, annual average)

Period	GDP growth	CAD/ GDP	General Government Fiscal Balance/ GDP	Savings	Investments	Savings-Investment gap
1	2	3	4	5	6	7
1981-85	3.3	-1.3	-4.5	18.7	20.8	-2.1
1986-90	3.2	-2.4	-4.1	16.6	19.8	-3.2
1991-95	2.5	-1.1	-4.5	15.4	17.8	-2.4
1996-2000	4.3	-2.6	-0.02	18.1	20.1	-1.9
2001-2005	2.4	-4.8	-3.3	14.9	19.3	-4.4
2005-2008	1.8	-5.3	-3.6	14.4	19.4	-5.0

Source : World Economic Outlook, October 2009, International Monetary Fund.

(Table 2.2). As a percentage of GDP, the CAD of the US almost doubled every 5 years from the early 1990s (Table 2.3). During 2006, the CAD was close to 6 per cent of GDP, the highest-ever CAD for the US that amounted to about 1.5 per cent of global GDP. Although it has declined since then, it remains high by historic standards. A large increase in current account deficits was not confined to the US; in fact; since 1996 a number of other key industrial countries have also seen their current accounts turning to deficit, including France, Italy, Spain, Australia, and the United Kingdom. Most of these have experienced substantial housing appreciation and increases in household wealth (Bernanke, 2005). For example, since 1996 wealth-to-income ratio has risen by 14 per cent in France, 12 per cent in Italy, and 27 per cent in the United Kingdom.

2.14 With large current account imbalances, capital flew from capital-poor emerging countries to capital-rich industrial economies, especially the US. Also, in response to the series of financial crises the EMEs experienced during the 1990s, they either chose or were forced into new strategies for managing international capital flows. In general, these strategies involved shifting from being net importers of financial capital to being net exporters, resulting in large current account surpluses (Chart II.1). This contradictory phenomenon was attributed to a significant rise in saving rates in emerging market economies (EMEs), especially in China, a dearth of investment opportunities, and the accumulation of large foreign exchange reserves by EMEs to check their currency appreciation and as self-insurance against a sudden reversal of capital flows. Many of these economies, particularly the East Asian countries, began to build up large amounts of foreign exchange reserves from the

Table 2.2: Current Account Balance

(US$ billion)

	1990-94	1995-99	2000-04	2005	2006	2007	2008	2009
1	2	3	4	5	6	7	8	9
China	5.5	18.6	37.6	160.8	253.3	371.8	426.1	283.8
France	0.9	32.3	18.2	-9.1	-11.6	-25.9	-64.8	38.8
Germany	-10.2	-19.4	36.5	142.8	188.4	253.8	245.7	160.6
India	-3.8	-5.0	2.7	-10.3	-9.3	-11.3	-26.6	-25.9
Japan	97.4	101.5	125.7	165.7	170.4	211.0	157.1	141.7
Korea	-3.5	5.0	13.2	15.0	5.4	5.9	-5.8	42.7
Malaysia	-3.2	0.6	10.4	20.7	25.8	29.2	38.9	32.0
Philippines	-2.1	-2.3	-0.5	2.0	5.3	7.1	3.6	8.6
Russia	3.1	8.5	41.0	84.4	94.3	77.0	102.4	47.5
Saudi Arabia	-15.4	-3.4	23.2	90.1	99.1	93.5	132.5	20.5
South Africa	1.5	-1.9	-1.5	-8.6	-13.9	-20.1	-19.6	-11.4
Switzerland	14.3	24.9	32.5	52.2	59.5	43.5	11.9	43.1
Thailand	-6.9	-0.8	5.3	-7.6	2.3	15.7	1.6	20.3
Turkey	-2.2	-1.9	-5.7	-22.1	-31.9	-37.7	-41.3	-13.6
United Arab Emirates	2.9	2.3	8.0	22.6	36.2	19.5	22.2	-7.0
United Kingdom	-21.9	-13.3	-34.6	-59.8	-80.8	-75.5	-40.7	-28.8
United States	-66.5	-178.4	-485.5	-748.7	-803.5	-726.6	-706.1	-418.0

Note: (-) indicates deficit.
Source: World Economic Outlook database, International Monetary Fund.

Table 2.3: Current Account Balance

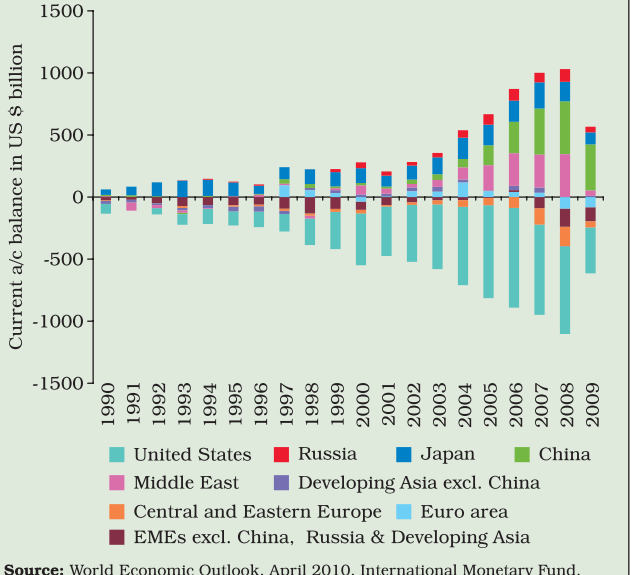
(Per cent to GDP)

Country	1990-94	1995-99	2000-04	2005	2006	2007	2008	2009
1	2	3	4	5	6	7	8	9
China	1.4	1.9	2.4	7.2	9.5	11.0	9.4	5.8
France	0.0	2.0	1.3	-0.4	-0.5	-1.0	-2.3	-1.5
Germany	-0.4	-0.8	1.4	5.1	6.5	7.6	6.7	4.8
India	-1.3	-1.3	0.5	-1.3	-1.1	-1.0	-2.2	-2.1
Japan	2.4	2.3	2.9	3.6	3.9	4.8	3.2	2.8
Korea	-1.0	1.9	2.1	1.8	0.6	0.6	-0.6	5.1
Malaysia	-5.2	1.8	9.8	15.0	16.4	15.7	17.5	16.7
Philippines	-4.0	-2.8	-0.7	2.0	4.5	4.9	2.2	5.3
Russia	0.9	3.5	11.2	11.0	9.5	6.0	6.2	3.9
Saudi Arabia	-11.7	-2.4	10.6	28.5	27.8	24.3	27.9	5.5
South Africa	1.2	-1.3	-0.7	-3.5	-5.3	-7.0	-7.1	-4.0
Switzerland	5.7	8.8	10.8	14.0	15.2	10.0	12.4	8.7
Thailand	-6.4	1.0	4.2	-4.3	1.1	6.3	-0.6	7.7
Turkey	-0.9	-0.8	-1.6	-4.6	-6.0	-5.8	-5.7	-2.3
United Arab Emirates	8.3	4.6	9.9	16.9	22.1	9.4	8.5	-3.1
United Kingdom	-2.1	-1.0	-2.0	-2.6	-3.3	-2.7	-1.5	-1.3
United States	-1.0	-2.1	-4.5	-5.9	-6.0	-5.2	-4.9	-2.9
Memo:								
Euro Area	n.a.	0.9	0.4	0.4	0.4	0.4	-0.8	-0.4

Note: (-) indicates deficit.
Source: World Economic Outlook Database, April 2010, International Monetary Fund.

beginning of the current decade. Emerging market countries saw these reserve stockpiles as welcome 'war-chests' to defend them from sudden capital flow reversals of the sort that had occurred during the Asian crisis.

Chart II.1: Global Imbalances: 1990-2009



Source: World Economic Outlook, April 2010, International Monetary Fund.

Savings Glut Hypothesis

2.15 The large global current account imbalances also got reflected in the savings-investment behaviour in both emerging and advanced nations. This is why global imbalances are now universally ascribed to the 'savings glut' hypothesis, which states that the US current account deficit was driven by a savings glut in the rest of the world, especially in emerging market countries (Bernanke, 2005). While in the US the gap between savings and investment almost doubled from minus 2.7 per cent of GDP in 2001 to minus 5.6 per cent of GDP in 2008, the opposite was observed in the case of EMEs where excess savings led to significant current account surpluses.

2.16 There was a significant rise in global gross saving as a percentage of GDP, from about 21.4 per cent in 2001 to almost 24.2 per cent in 2007. Most of the increase reflected the relatively high saving rate of the EMEs in the post-Asian crisis period, where a more than three-fold rise in aggregate saving between 2001 and 2007 had lifted

the marginal propensity to save to 43 per cent (BIS, 2009). In gross terms, the share of EMEs in global saving rose from 25 per cent in 1992–96 to 30 per cent in 2003 and 37 per cent in 2007. In comparison, the EME share of world GDP did not rise quite so rapidly, moving from 21 per cent in 1992–96 to 31 per cent in 2007. Within emerging markets, the rise in average saving rates was significant for China and the Middle East. The US, in contrast, has observed a decline in savings since 2001 (Table 2.4).

2.17 The precautionary motive was the main reason behind the high savings in these economies. The absence of adequate safety nets and the consequent need for self-insurance coupled with financial market underdevelopments in emerging economies have led private agents in these economies to oversave, particularly in countries such as China (Francia, 2009). The one-child policy in China has also contributed to the rise in savings as children are substitutes for life-cycle savings (Modigliani and Cao, 2004). Besides, as per capita income increases at high rates, consumption usually does not keep pace with income and the savings rate tends to increase. Higher migration from rural to urban areas added to the rise in savings as the consumption habits of the migrants remained unchanged even though their income rose.

2.18 The saving-investment balances also differed across EME regions in the pre-crisis period. In China, gross saving exceeded gross investment by a large margin: the saving rate reached 59 per cent of GDP in 2008 even though China maintained one of the highest investment rates in the world of around 49 per cent of GDP. While India also saw a sharp rise in the saving rate, the savings-investment gap remained negative due to an equivalent increase in the investment rate. Other Asian emerging economies saw only a modest rise in saving and investment rates between 2003 and 2007, with both remaining below the levels preceding the Asian crisis.

2.19 Higher net savings by oil exporters are also believed to have contributed to the global savings glut. Consequent upon the sharp rise in oil prices, the current account surpluses of oil exporters, notably in the Middle East and also in countries such as Russia, Nigeria, and Venezuela, rose as oil revenues surged. The collective current account surplus of the Middle East and Africa rose by more than US$ 115 billion between 1996 and 2004. As a percentage of GDP, the current account surplus of the Middle East rose from around 1.0 per cent in 2000 to about 18.5 per cent in 2005. Thus, changes in the collective current account position of the developing world resulted in many developing and emerging-market countries

Table 2.4: Savings and Investment

(as a percentage of GDP)

	Savings				Investment			
Countries	1995	2001	2007	2008	1995	2001	2007	2008
1	2	3	4	5	6	7	8	9
Advanced Economies	21.4	20.0	19.9	18.8	21.6	20.6	21	20.4
United States	16.0	16.4	14.2	11.9	18.6	19.1	18.8	17.5
Japan	30.5	26.9	28.9	26.7	28.4	24.8	24.1	23.5
Germany	21.1	19.5	25.8	25.7	22.2	19.5	18.3	19.3
United Kingdom	15.9	15.4	15.3	15.1	17.2	17.4	18.2	16.8
Others	21.4	22.5	22.5	21.9	20.1	21.2	23.5	23.2
Emerging Economies	26.8	26.6	35.4	36.6	27.6	25.1	30.2	31.8
China	42.1	37.6	57.6	59.0	41.9	36.3	46.6	49.0
India	24.4	23.4	37.7	36.3	26.0	23.1	38.7	39.1
Other Emerging Asia	33.3	28.9	30.9	30.4	33.9	24.6	25.1	26.3
Middle East	24.0	33.3	49.6	50.8	20.9	24.8	26.5	26.7

Source: World Economic Outlook, October 2009, International Monetary Fund .

becoming large net lenders to the rest of the world rather than net borrowers.

2.20 One view of the savings glut hypothesis is that there was an investment drought rather than a savings glut. The East Asian crisis has exerted permanent depressing effects on investment in these economies (Barro and Lee, 2003). While the savings rate in most East Asian EMEs, which has generally remained higher than in the industrialised countries, exhibited a modest decline, investment rates showed sharper declines, resulting in the widening of the savings-investment gap in the EMEs. A corroborative view is that the consumption glut in the advanced countries has exacerbated the current account disequilibrium across the world. Excess consumption combined with higher leveraging in a loosely regulated and unsupervised financial system fuelled the housing bubble (Francia, 2009).

Inadequate Exchange Rate Flexibility

2.21 Several emerging market economies as part of their export-led growth strategy were deliberately maintaining undervalued exchange rates. Between 2003 and mid-2008, many EMEs experienced rapid integration with the advanced economies and became substantially dependent on exports as an engine of growth. The share of exports of goods and services to GDP for China rose from about 23 per cent during 1992-95 to around 30 per cent during 2003 and further to around 43 per cent during 2007 before coming down to 35 per cent of GDP in 2008 (Table 2.5). For emerging Asia as a whole, exports rose from already high levels in the pre-Asian crisis period to about 75 per cent of GDP in 2007. Reserves were accumulated in the context of foreign exchange interventions intended to prevent any exchange-rate appreciation (Michael Dooley *et al.*, 2004). Countries typically pursued export-led growth because domestic demand was thought to be insufficient to fully employ domestic resources. Further, these surpluses were intended to build up precautionary reserves to deal with sudden stops in capital flows.

Table 2.5: Exports of Goods and Services

(Percentage of GDP)

Country	1992-95	2003	2005	2007	2008
1	2	3	4	5	6
China	23.3	29.6	37.4	42.5	35.0
France	21.8	25.6	26.1	26.5	..
Germany	23.4	35.6	40.9	46.7	..
India	10.0	14.8	19.9	21.2	24.0
Japan	9.3	12.0	14.3	..	..
Korea	27.1	35.4	39.3	41.9	52.9
Malaysia	84.5	106.9	117.5	110.2	..
Philippines	32.7	49.6	47.6	42.5	36.9
Russia	39.4	35.2	35.2	30.5	33.4
Saudi Arabia	36.4	46.1	60.9	65.0	69.9
South Africa	22.2	28.1	27.4	31.6	36.3
Switzerland	36.2	44.0	48.8	..	..
Thailand	38.9	65.7	77.2	76.0	..
Turkey	17.3	23.0	21.9	22.0	23.6
United Arab Emirates	71.4	79.0	92.6	..	..
United Kingdom	25.9	25.5	26.5	25.9	..
United States	10.0	10.0	11.0	11.9	12.9

.. : Not Available.

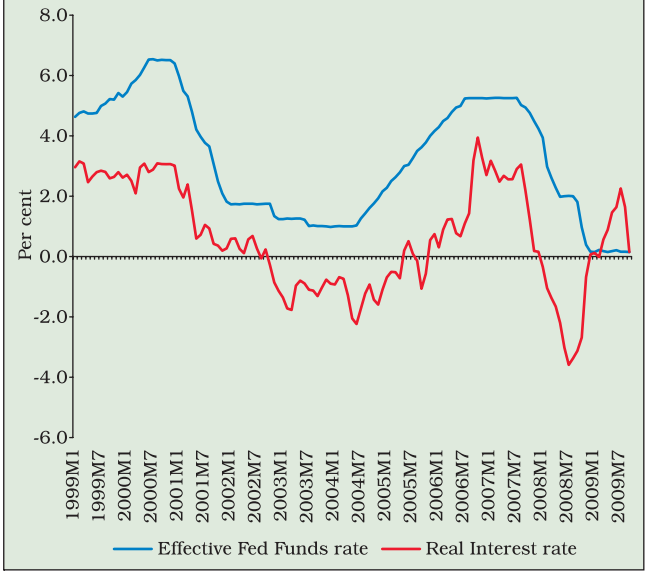
Source : World Development Indicators, World Bank Online Database.

2.22 This argument, however, puts excessive emphasis on exchange rate policy. The existence of excess demand for an extended period in the developed economies was more influenced by their own macroeconomic and monetary policies, and may have continued even with more flexible exchange rate policies in EMEs. The argument is based on the premise that low-priced consumer goods and services from EMEs were available worldwide. Yet, other regions such as the Euro area as a whole did not exhibit large current account deficits throughout the current decade. In fact, it exhibited a surplus except for a minor deficit in 2008. Thus, even with flexible exchange rate policies in some of the EMEs the US current account deficit would have continued to remain large, though the source of imports for the US could have varied. The perceived lack of exchange rate flexibility in the Asian EMEs cannot, therefore, fully explain the large and growing current account deficits in the US (Mohan, 2009).

2.23 The current account surpluses of the emerging countries were used to purchase assets in economies with market-based financial systems,

such as the US. The depth of the US financial markets together with rapid innovation of new products for effective risk management has made the US an attractive destination for global investors' funds. Another factor is the special international status of the US dollar. Because the dollar is the leading international reserve currency, and because some emerging-market countries use the dollar as a numeraire when managing the values of their own currencies, the saving flowing out of the developing world has been directed relatively more into dollar-denominated assets, such as U.S. Treasury securities.

Chart II.2: US Real Interest Rate and Effective Fed Funds Rate



Monetary Policy Easing and Low Real Interest Rates

2.24 The global imbalances were accentuated by the excessively loose monetary policy in advanced economies, especially the US. To some extent the lack of adequate exchange rate flexibility in some EMEs, which gave rise to excess liquidity and low interest rates, exacerbated the problem. In fact, since the technology stocks meltdown in 2000, there has been significant monetary accommodation by the major economies such as the US, the Euro area and Japan, particularly during the first half of the decade. The US Fed funds rate remained at its lowest when compared with the previous two decades. The real interest rate[2] in the United States was consistently below 1 per cent from mid-2001 up to the end of 2005; indeed, for much of this period it was negative (Chart II.2). It was generally accepted that the Fed had followed an excessively loose monetary policy in 2002-2006 (Taylor, 2007). In response to sluggish growth in the Euro area, the ECB held short-term real interest rates below 1 per cent for most of the period between mid-2001 and 2005; in Japan, real interest rates hovered around 0 to 1 per cent for most of the past decade. The low interest rates were possible because of improved macroeconomic performance in terms of not only higher growth and low inflation, but also in terms of their reduced volatility. The period since the early 1990s which witnessed substantial decline in macroeconomic volatility in the US economy was termed as 'Great Moderation'. Bernanke (2004) offered three explanations for this phenomenon, which include structural change (institutional reforms, globalisation and technological progress), improved macroeconomic policies (explicit focus on price stability) and good luck (smaller and infrequent shocks). Moreover, relatively cheaper goods and services from China and other EMEs helped keep measured inflation low in the advanced economies.

2.25 Along with a fall in short-term real interest rates, the long-term real interest rates also remained low during the first half of the current decade. There are two different views on this. First, given the global savings glut, one theory suggests that the real long-term interest rate must fall to establish global equilibrium at a higher level of investment (Bernanke, 2005). The other theory is that financial crises and high saving in emerging markets, combined with limited financial development, created a global shortage of low-risk assets, leading to lower long-term bond rates (Caballero *et al.*, 2008).

[2] The real interest rate is the US Fed Funds rate less consumer price inflation.

2.26 The low interest rate regime had a variety of effects. Low interest rates combined with ample liquidity provided the impetus for strong credit growth in a number of economies, and led to a build-up of domestic imbalances. For instance, credit in the United States and the United Kingdom rose annually by 7 per cent and 10 per cent, respectively, between 2003 and mid-2007. While cheap credit formed the basis for the housing boom and the dramatic rise in household revolving debt, the low interest rate also increased the present discounted value of the revenue streams arising from earning assets, thereby driving up asset prices and creating asset bubbles. Real housing prices in the United States, the United Kingdom and a number of European countries increased by more than 30 per cent between 2003 and 2007. Monetary policy, however, failed to respond to this asset price inflation, guided by the now notorious Greenspan orthodoxy, according to which, first, asset price bubbles are hard to identify on a real-time basis and the fundamental factors that drive asset prices are not directly observable. Second, monetary policy is too blunt an instrument to counteract asset price booms. And third, a central bank cannot presume to know more than the market because financial markets are all-efficient, rational and self-correcting. Thus, it was considered more cost-effective for monetary policy to wait for the bubble to burst and clean up afterwards rather than prick the bubble in advance (Subbarao, 2010).

2.27 Further, at unusually low levels of interest rates, financial institutions found it difficult to generate the returns promised in their generally long-term nature of contracts, which induced them to take on more risks in the hope of generating the returns needed to remain profitable. The credit boom, therefore, created grounds for rapid financial innovations and increased risk-taking behaviour. Even as financial imbalances were building up, however, macroeconomic stability was maintained (a reflection of Great Moderation), which encouraged under-pricing of risks. The immediate cause was the 'originate and distribute' mortgage model and structured finance products like asset-backed securities (ABS) and collateralised debt obligations (CDOs), which facilitated a general increase in risk-taking. The housing boom, the surge in debt-financed consumer expenditure and the search for yield distorted the macroeconomic structure in many economies.

2.28 Thus, global imbalances accompanied by a 'savings glut' in the emerging economies and loose monetary policy in the US and other advanced economies led to an era of low real interest rates and rapid search for yield that resulted in many of the financial excesses. Both these factors were clear precursors of unsustainable bubbles, which were ignored in general because of the pre-crisis phase of high global growth with low inflation (Chakrabarthy, 2009). Theoretically, the period after 2000 can be characterised as a period when both the IS and the LM curves shifted to the left, thus maintaining output at low interest rates (Portes, 2009). Concern had been expressed that the continued widening of global imbalances could have a disorderly unwinding with a sudden stop of capital flows from emerging markets to the US that would trigger a crisis in the US leading to substantial dollar depreciation (Obstfeld and Rogoff, 2005). However, the trigger for the crisis came not from the global imbalances but from the housing bubble in the US economy. Even as financial imbalances were building up, macroeconomic stability was maintained, which in turn, encouraged under-pricing of risks. Financial innovations, regulatory arbitrage, lending malpractices, excessive use of the originate-and-distribute model, together with securitisation of sub-prime loans and their bundling into AAA tranches without risk being adequately assessed culminated into excessive leverage of financial market entities in the United States.

Domestic Imbalances in the United States

2.29 While global imbalances represent the general macroeconomic or "macrofinancial" explanation for the current crisis, the immediate explanation, which in a sense complements the former, focuses on uneven functioning of the US

housing market and the shortcomings of specific types of financial products which recently gained prominence in the US.

Functioning of US Housing Market

2.30 Until the mid-1990s, the bulk of housing loans in the US mortgage market was given to prime borrowers. Since the late 1990s, the US home loan growth has been very high, registering even higher growth rates than the US GDP. A major part of this lending was essentially sub-prime lending. Within 12 years, their share in total mortgage origination jumped from 4.5 per cent in 1994 to more than 20 per cent in 2006 (Table 2.6). Sub-prime lending refers to the practice of making loans to borrowers who do not qualify for market interest rates because of their poor credit history or the inability to prove that they have adequate resources to support the monthly installments of the loan. Sub-prime loans or mortgages are risky for both creditors and debtors because of the combination of high interest rates, bad credit history and murky personal financial situations often associated with sub-prime applicants. Except during the recessionary years of 2001 and 2002, (following the bursting of the dot-com bubble) when the house price (Case-Shiller) inflation showed some deceleration, sub-prime lending exhibited strong growth, particularly during the period 2003-06.

2.31 On the demand side, the low interest rates to make housing affordable for everyone increased housing prices. The combination of the 'originate-to-distribute' mortgage model and the securitisation of loans together with rapid innovation in financial products on the supply side resulted in a large increase in the availability of funds and made house loans attractive. While credit quantity increased, its quality got eroded. Most of these loans were with low margin money and with low teaser payments.

2.32 Under any conventional banking arrangement, when a bank provides a housing loan, it has to assume the credit risk (risk of borrower default), the market risk (risk of the interest rate changing over the tenure of the loan), and the liquidity risk (since long-term illiquid housing loans could be issued against liquid deposit liabilities). With the creation of a secondary market for mortgages, these risks, namely, credit risk, market risk, and liquidity risk could be shifted from the banks to the mortgage agencies. This system was functioning in the US from 1938 when the Federal

Table 2.6: Mortgage Originations

Year	Total Mortgage Originations (US$ billion)	Sub-prime Originations (US$ billion)	Prime and Alt-A Originations (US$ billion)	Sub-prime Share in Total Originations (% of $ value)	Sub-prime Mortgage-Backed Securities (US$ billion)	Sub-prime Originations Securitised (% of $ value)
1	2	3	4	5	6	7
1994	773	35	738	4.5	NA	NA
1995	636	65	571	10.2	NA	NA
1996	785	97	689	12.3	NA	NA
1997	839	125	734	14.5	NA	NA
1998	1,430	150	1,280	10.5	NA	NA
1999	1,275	160	1,115	12.5	NA	NA
2000	1,048	138	910	13.2	NA	NA
2001	2,215	190	2,025	8.6	95	50.4
2002	2,885	231	2,654	8.0	121	52.7
2003	3,945	335	3,610	8.5	202	60.5
2004	2,920	540	2,380	18.5	401	74.3
2005	3,120	625	2,495	20.0	507	81.2
2006	2,980	600	2,380	20.1	483	80.5

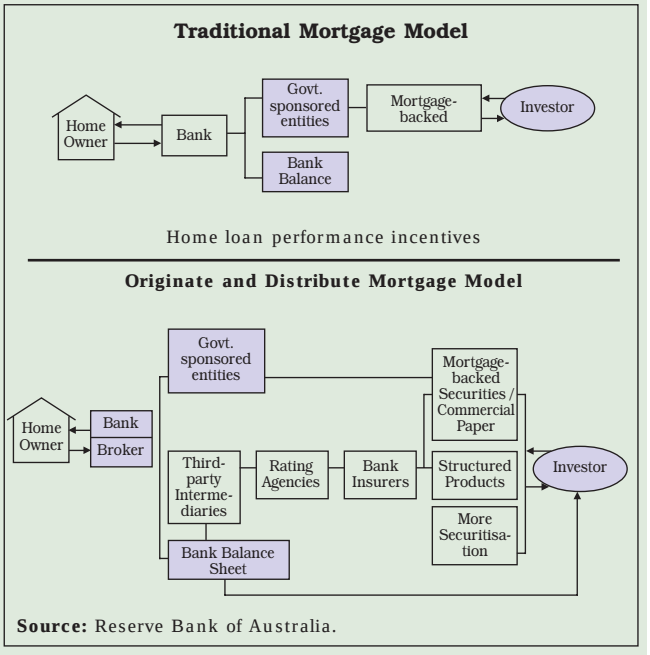
Source : The Subprime Lending Crisis - Report and Recommendations by the majority staff of the Joint Economic Committee, October 2007.

National Mortgage Association (FNMA), commonly known as Fannie Mae, was established. Fannie Mae began buying mortgages from banks and other originators, thereby supporting mortgage lending, especially for low- and middle-income families. In 1968, the activities of Fannie Mae were privatised and de-linked from the Federal budget, and the emphasis shifted to mortgage-backed securities (MBSs), which were intended to help Fannie Mae shift credit, market, and liquidity risk to the market by pooling mortgages, securitising them, and selling them in the market. The MBSs derived their value from the cash flows associated with the pool of mortgages. In 1970, the Federal Home Loan Mortgage Corporation (FHLMC), commonly known as Freddie Mac, was set up to compete with the privatised Fannie Mae and also to further boost the MBSs market. As a result, with a large percentage of 'prime' home loans securitised and sold through these two institutions, the housing finance market had shifted from an 'originate-and-hold' basis to an 'originate-and-distribute' mode (Box II.1).

Box II.1
Originate-to-Distribute Model

The global banking system has seen a transformation in terms of lending practices. Bank credit has evolved from its traditional "relationship banking" model to the "transaction-oriented" model. Bank credit has been transformed from the "Originate-to-Hold (OTH)" model, where the borrower's loan remains on the balance sheet of the lender till the time the loan gets matured/written off, to an Originate-to-Distribute (OTD) model, where banks can originate loans, earn their fees, and then distribute them to other investors. The OTD model has emerged over the past two decades in response to the explosive growth in the secondary syndicated loan market[3]. The reliance on the OTD model has increased over the period because of the advantages associated with this model, such as diversification of risk, capital relief and lower cost of capital. Depending on the nature of a bank's private information about a loan, the uncertainty in a loan's potential payoff can be decomposed into two components: one for which the bank's informational advantage is relatively small and the other for which such advantage is relatively large. The bank can enter into a secondary syndicated loan market and use a credit-derivative contract to transfer the former risks to outsiders, while retaining the risks at the bank in the case of the latter. As the bank's informational advantage is unlikely to be constant over the life of the loan, there is scope to leverage upon the opportunity. Thus, the OTD Model has the capacity to distribute risk widely and efficiently.

It has been argued that the lack of transparency in the OTD model has been one reason for the crisis in the credit market. With the presence of secondary markets, lenders were able to bundle the loans into securities in order to make money out of them, thus helping to spur the market boom that was at the heart of the financial crisis. Moreover, there was no incentive in *ex-post* monitoring of the loans issued by the originating banks as there was no direct link between the originator and the borrower of the loan. If a bank holds a loan, it has a greater incentive to monitor the loan (and thus increase its probability of repayment) than if it sells it. The breakdown of lending relationships is expected to have an adverse impact on the decision-making of borrowers as they might start



Source: Reserve Bank of Australia.

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[3] From 1997 to 2007, the secondary syndicated loan market has grown from $60 billion to $342 billion in annual trading volume, fueled by securitisation and the tremendous growth in collateralised debt obligation (CDO) and collateralised loan obligation (CLO) funds.

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making sub-optimal investments and operating decisions. Thus, even good loans might end up with bad performance. Also, there were certain "unknown risks" originating from the structured products created in recent years bundled with traditional asset-backed securities and new products based on sub-prime mortgages. This created pervasive uncertainty about where the risks were concentrated and how sensitive they might be to the economic cycle. In this environment, everyone suddenly became suspect when things turned wrong as a result of the crisis situation in all segments of the economy. Empirical evidence also supports the fact that the OTD model has resulted in the origination of inferior quality mortgages and the underperformance of borrowers involved in the active secondary market (Brendt *et al.*, 2009; Purnanandam, 2009).

All this does not mean that OTD should be abandoned as the secondary syndicated loan market. There is no wisdom in throwing the baby out with the bath water. The OTD model has several advantages and it provides enhanced liquidity and leverage opportunities to financial agents. Therefore, steps need to be taken to make this model more resilient.

Measures to make OTD more resilient

1. Include additional disclosure requirements and make available to investors relevant information about the risks inherent in the securitisation structures.
2. Keep a certain proportion of loans on the balance sheet of the originators to limit the moral hazard and adverse selection problems.
3. Rebuild the risk management practices of banks so that there is an effective analysis of all potential risks involved in lending to a particular project. The turmoil showed that institutions using the originate-to-distribute model poorly managed the non-credit risks associated with the securitisation business, such as market risk, liquidity risk, concentration risk and, of course, pipeline risk. This means that market participants need to have adequate controls over their exposures, including effective scenario analyses and stress-testing procedures.
4. Align the incentives of all participants – originators, arrangers, managers, distributors, credit rating agencies and investors – so that no participant has an unfair advantage.
5. Make the role played by the credit rating agencies more responsible as their information creates the basis for decision-making by various financial institutions.

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2.33 Thus, securitisation of loans was not something new. It was prevalent in the US market from the 1930s. However, only the prime loans sold on to agencies like Fannie Mae and Freddie Mac were being securitised until recently. Moreover, the loan portfolio bought by these agencies conformed to certain underwriting standards. However, what was new in the current decade was the extension of securitisation to sub-prime loans and dilution of the underwriting standards.

Use of Complex Derivatives and Structured Finance Products

2.34 The housing boom generated tremendous interest in the market for MBS, collateralised debt obligations (CDOs) and other complex derivative instruments. The ferocious search for yield led to the generation of new toxic financial instruments through the process of securitisation and creation of structured finance products.

2.35 The US housing market prior to the crisis saw securitisation getting expanded to include a gamut of new products ranging from standard MBSs or, more generally, asset-backed securities (ABS), to include a range of structured finance products, including structured MBS and ABS, CDOs, and asset-backed commercial paper (ABCP).

2.36 "Structured" finance normally entails aggregating multiple underlying risks (such as market and credit risks) by pooling instruments subject to those risks (*e.g.*, bonds, loans, or mortgage-backed securities) and then dividing the resulting cash flows into "tranches," or slices paid to different holders (IMF, GFSR, 2008). Unlike a simple MBS (discussed earlier), complex MBS are structured or sliced into different risk tranches. In a simple three-tranche example, the structure for the security might include (in order of increasing risk) a 'senior', 'mezzanine' and an 'equity' tranche. Risk and returns are lowest for the senior tranche and accordingly have the highest credit rating. The 'mezzanine tranche' comes next, with much greater risk and return in relation to the senior tranche, and hence carry a below-investment grade rating. The 'equity tranche', the third and final layer from the slicing, is the most risky and generally carries no rating. Default on the underlying pool of MBSs would imply maximum loss to the equity tranche. In the absence of default, the return on the equity tranche would be the highest. It is basically the hedge funds which invested in the equity tranches to get the highest returns. Structured finance differs from securitisation in that the cash flows are not "tranched" and are instead provided to holders of securitised instruments on a *pro rata* basis. In fact, securitisation diversifies risks by pooling instruments.

2.37 Given the high risk of sub-prime mortgage-backed securities, sometimes it became difficult to entice investors to purchase such securities. In such circumstances, the MBS were bundled up again into CDOs with the support of a good rating. The CDO issuances saw a substantial surge during the period prior to the crisis (Table 2.7). High-rated debt was again created from seemingly low quality collateral. The underlying asset exposures became more opaque and investors increasingly relied on credit ratings to assess credit quality. The asymmetric information (or Akerlof's lemon) problem could be seen at its starkest in the case of CDOs, with buyers having no information about the underlying risk and blindly believing in the ratings, while the sellers took advantage of this lack of information to sell underlying assets with high risk as highly-rated assets with low risk (Pattnaik, 2009). This process of rebundling and restructuring was repeated multiple times to produce CDO squared, CDO cubed and even multiples. This created the so-called Matryoshka or 'Russian Doll' structure (Chart II.3). Thus, exposure to sub-prime risk was

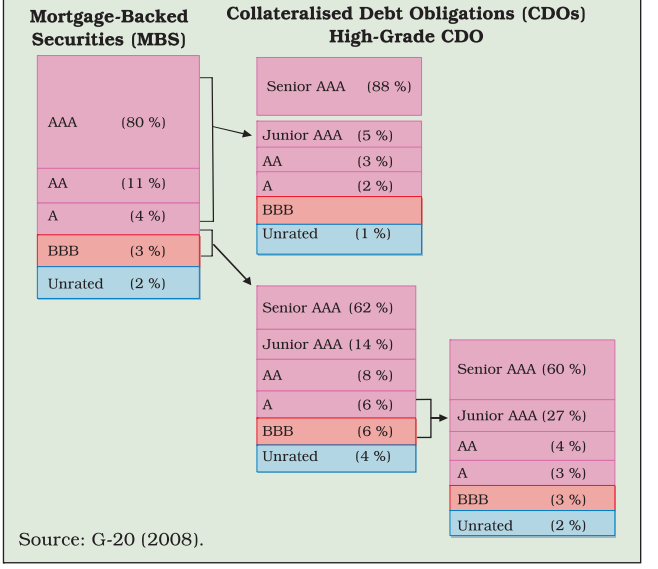
Table 2.7: Global Issuance of Credit Debt Obligations (CDOs)

(US$ billion)

	2005	2006	2007	2008
1	2	3	4	5
Underlying Guarantees	**271.8**	**520.6**	**481.6**	**56.1**
High-Yield Loans	71.2	171.9	138.8	23.7
Investment Grade Bonds	4.0	24.9	78.6	14.7
High-Yield Bonds	3.1	0.9	2.1	-
Structured Finances	176.6	307.7	259.2	16.6
Mixed Guarantees	0.1	Neg.	-	-
Other Swaps	2.5	0.7	1.1	-
Others	4.3	14.4	1.7	1.0

Source: Securities Industry and Financial Markets Association, 2009.

Chart II.3: Structured Finance Products: Matryoshka 'Russian Doll' Structure



Source: G-20 (2008).

created in an almost unlimited way (G-20 Study Group on Global Credit Market Disruptions).

2.38 In this context, concerns have been raised about the ratings given by the rating agencies, the models that they used as well as their role in the overall sub-prime crisis (Box II.2). Over 80 per cent of these sub-prime structured products were rated with the highest ratings *i.e.*, AAA by the CRAs. Thus, the period prior to the crisis witnessed the highest form of financial sophistication that managed to turn lead into gold

Box II.2
Credit Rating Agencies (CRAs): Boon or Bane?

Need for Credit Rating Agencies

Credit Rating Agencies (CRAs) are mainly commercial institutions which earn revenue for the publication and evaluation of the creditworthiness of their clients. They have been playing an important role in the management of financial market risk, particularly in global securities and banking markets: they issue creditworthiness opinions that help to overcome the information asymmetry that exists between those issuing debt instruments and those investing in these instruments. CRAs originated in the USA at the turn of the 20th century and concentrated on rating of corporate bonds. Their activities subsequently increased in scope and scale. At present, no major type of security, issuer or geographic area is excluded. CRAs now define a truly global benchmark for credit risk. Since the Great Depression, the CRA's benchmark has also been used in the regulation of financial markets. For example, banks and certain other types of investors are only allowed to hold lower risk securities rated 'investment grade' as per the Basel norms. Over the past few decades these companies have engaged in providing ratings for a wide range of more complex financial instruments, known as structured finance products.

Under the 2004 Basel Committee on Banking Supervision (BCBS) new capital adequacy framework (Basel II), banks can use ratings assigned by a recognised CRA in determining credit risk weights for many of their institutional credit exposures. Policymakers have been giving increasing attention to CRAs over the past decade on a number of occasions, generally coinciding with the increase in stress in financial markets. Regulators worldwide turned their attention to the role of CRAs following their failure to weather the difficulties of East Asian economies in July 1997, the corporate collapses at the beginning of this century notably in the EU and the US (Enron, Dotcom, and Parmalat), and the recent financial crisis.

Role of Credit Rating Agencies in the Recent Financial Crisis

CRAs were close to the origin of the problems with sub-prime markets as they were giving favourable opinions on instruments that were financially engineered to give high confidence to investors. The investors – relying on CRAs' expertise – often took little or no interest in the risk characteristics of these instruments, the performance of underlying assets and the general market outlook. The CRAs gave AAA ratings to numerous issues of sub-prime mortgage-backed securities, many of which were subsequently downgraded to junk status. Critics cite poor economic models, conflicts of interest, and lack of effective regulation as reasons for the rating agencies' failure. Another factor is the market's excessive reliance on ratings, which has been reinforced by numerous laws and regulations that use ratings as a criterion for permissible investments or as a factor in required capital levels.

CRAs helped to develop the Mortgage Based Securities (MBS) and Collateralised Debt Obligations (CDOs) that sparked the crisis. CRAs advised issuers on how to structure and prioritise the tranches of an MBS or a CDO. The goal was to help issuers squeeze the maximum profit from a CDO or an MBS by maximising the size of its highest rated tranches. The purpose of tranching was to create at least one class of assets with a higher credit rating than the average rating of a CDO or an MBS's underlying asset pool. CRAs rated each tranche based on the creditworthiness of the loans in that tranche and its priority. Tranches got higher credit ratings by "prioritisation": issuers guaranteed that the "senior" tranches would be paid before "junior" or "subordinated" tranches. At the height of the housing boom, almost all senior tranches got the highest rating possible, namely, AAA.

The CRAs failed to adequately assess the credit risks in MBSs and CDOs. The CRAs held an over-optimistic view of the housing market. Their rating model assumed that housing prices would continue to increase generally. CRAs underestimated the complexity of the MBSs and CDOs. The SEC found that the growth in the quantity and complexity of structured finance deals since 2002 proved too much for some CRAs.

In July 2008, the SEC concluded that the CRAs failed to manage conflicts of interest between MBS and CDO issuers

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and the CRAs. CRAs were supposed to serve investors, but conflicts of interest led some CRAs to cater to MBS and CDO issuers by inflating ratings. The causes of the conflicts of interest include: (i) Relationship conflicts: CRAs have had a close, ongoing working relationship with the largest MBS and CDO issuers; (ii) Issuer-paid ratings: 98 per cent of the ratings produced by the CRAs have been paid for by issuers, not investors. The pay incentive led some CRAs to try to inflate ratings of paying issuers in hopes of gaining repeat business from those issuers; and (iii) Advising-rating combination: CRAs advised issuers on how to structure MBSs and CDOs to get high ratings. Then CRAs "confirmed" that advice by issuing the "promised" ratings.

The furore over Enron, Dotcom and the recent sub-prime crisis has led to calls for regulatory changes in the rating industry. Regulatory issues are always extremely complex and interdependent. The IOSCO (International Organisation of Securities Commission) in its consultation paper of March 2008 laid down some important recommendations on the functioning of the CRAs. These include:

- A CRA should take steps to ensure that the decision-making process for reviewing and potentially downgrading the current rating of a structured finance product is conducted in an objective manner.
- CRAs should establish an independent function responsible for periodically reviewing both the methodologies and models and the changes to the methodologies and models used in the rating process.
- CRAs should adopt reasonable measures to ensure that the information they use is of sufficient quality to support a credible rating.
- Where a CRA rates a structured finance product, it should provide investors and/ or subscribers (depending on the CRA's business model) with sufficient information about its loss and cash-flow analysis so that an investor allowed to invest in the product can understand the basis for the CRA's rating.

Studies have also suggested moving towards a system where credit ratings are paid for by investors, and where arrangers and servicers disclose for free the complete data on the individual loans underlying the structured finance products. As a second-best policy, the current practice of issuers paying the CRAs may be continued. The payment, however, has to be made upfront (the so-called "Cuomo Plan"), irrespective of the rating issued, and credit shopping (and paid advice by rating agencies to issuers) should be banned (Pagano *et al*, 2009). The need to enhance transparency by determining the information that issuers and rating agencies must disseminate to the investing public has also been emphasised.

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(Ferguson, 2008). Credit rating agencies are now under scrutiny for giving investment-grade ratings to derivative instruments like mortgage-based CDOs. Rating agencies lowered the credit ratings on US$ 1.9 trillion in MBSs between Q3 of 2007 to Q2 of 2008, another indicator that their initial ratings were not accurate.

Role of Hedge Funds

2.39 As a result of the slicing of risk and the support of credit ratings, the CDOs could be marketed to investors with different appetites for risk. Investors, particularly hedge funds, who wanted to maximise yield with higher risk exposure would buy the equity tranche of the CDOs. Hedge funds further created leverage by borrowing against the assets they added to their investment portfolio (like CDOs and MBSs). For example, in the United States, two hedge funds of Bear Stearns had large leveraged exposure to CDOs. When the sub-prime default concerns gripped the market, the values of the CDOs were marked down, requiring the hedge funds to face margin calls from brokers (that is, demands for more assets to back the leverage). Investors in the hedge funds recognised the potential for losses and suddenly asked the funds to return their investments. For the hedge funds, the options were either to borrow more (which was difficult and costlier in the face of the credit squeeze) and repay the impatient investors or to go for a 'fire sale' (of CDOs at falling value) and

face the investors' call on their investment with them. The more extreme option was to default, meaning not to pay back the investors on demand. This is what Bear Stearns had to face when it closed down two of its hedge funds that were ultimately bailed out by the US Federal Reserve and taken over by JP Morgan. The agency-wise sub-prime exposures and losses in the US are given in Table 2.8.

Regulatory Weaknesses

2.40 The sub-prime crisis is also viewed as the best example of several weaknesses in the regulatory structure for financial institutions in terms of lax supervisory oversight and relaxation of normal standards of prudent lending. Several issues have been highlighted in this regard – lack of countercyclical regulation; inability to recognise systemic risks; the need for prudential regulation; non-recognition of off-balance-sheet items of banks; operation of non-banks beyond the regulatory purview; the complex and non-transparent nature of new financial instruments; and regulatory oversight of systemically important financial institutions. Regulators in the financial sector did not have adequate skills to cope with rapid growth in the variety and complexity of innovations in financial products in the markets. Despite the prevalence of a well-established regulatory structure in terms of capital requirements and risk assessments, financial institutions found it relatively easy to move to activities outside the regulatory perimeter. While the regulatory capital requirement did limit the build-up of leverage on bank balance sheets, bank managers engaged in various off-balance sheet activities to increase risk and return without increasing the capital they were required to hold.

Table 2.8: U.S. Sub-prime Exposures and Losses

	Exposure*			Losses		
	2005	2006	2007+	2005	2006	2007+
1	2	3	4	5	6	7
	Total amount (in billions of US dollars)					
Banks#	155	264	127	-9	-63	-29
Hedge Funds	70	98	78	-7	-27	-20
Insurance Companies	78	106	84	-2	-21	-15
Finance Companies	25	30	24	-1	-5	-4
Mutual Funds/ Pension Funds	15	18	14	-0	-3	-2
Total	**343**	**516**	**326**	**-18**	**-118**	**-70**
	As a per cent of total					
Banks#	45	51	39	49	53	41
Hedge Funds	20	19	24	37	23	29
Insurance Companies	23	20	26	9	18	22
Finance Companies	7	6	7	3	4	5
Mutual Funds/ Pension Funds	4	4	4	2	2	3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

* Par amounts for securities and notional amounts for derivatives.
\+ As of Nov. 2007; # Including investment banks.
Source : Global Financial Stability Report, 2008.

Role of Off-Balance Sheet Entities (OBSEs)

2.41 One of the major reasons for originators to leverage their loan portfolio was that soon after they originated the loan, the same was sold in the secondary market, which left them free of any financial responsibility. Banks failed to identify the risks involved in the complex securitisation process. Indirectly, banks' balance sheets remained exposed to developments in the sub-prime market through off-balance sheet entities (OBSEs) such as Structured Investment Vehicles (SIVs) that were investing in MBSs and CDOs by borrowing in the short-term commercial paper (CP) market. OBSEs, such as SIVs, are entities that allow financial institutions to transfer risk off their balance sheet and permit exposures to remain mostly undisclosed to regulators and investors; and achieve relief from regulatory capital requirements under Basel I. Although financial institutions were required to disclose the nature of the relationship between the parent and a subsidiary when the parent did not own, directly or indirectly through subsidiaries, more than half of the voting power (International Accounting Standards 27.40) of the OBSEs, such information was often in a footnote in a firm's report (GFSR, IMF, 2008). Banks with the objective of meeting Basel I norms were engaged in a process of continuous shifting of risk to the market through securitisation of loans and the use of credit default

swaps (CDS) to buy protection in the market, thus, freeing up capital for more lending. This created a 'shadow banking system', which remained almost completely unregulated (Box II.3).

2.42 Financial institutions transferred the mortgage claims to SIVs they had established and then the SIVs, by issuing and selling securitised products, transferred the risks and returns to investors, earning commissions in the process. By doing so, financial institutions could maintain their own financial soundness and circumvent restrictions on capital adequacy ratios, while earning a steady flow of income. To generate greater profit from these commissions, each of which was small, it became necessary to expand the provision of mortgage loans and engage in securitisation on a large scale. This business model

Box II.3
The Concept of Shadow Banking

The shadow banking system or the shadow financial system consists of non-bank financial institutions which play an increasingly critical role in lending businesses the money necessary to operate. The term "shadow banking system" is attributed to Paul McCulley who coined it at the Jackson Hole Conference in 2007, where he defined it as "the whole alphabet soup of levered up non-bank investment conduits, vehicles, and structures", though the concept of credit growth by unregulated institutions (if not the terminology) dates back to 1935 by Friedrich Hayek (1935). By definition, shadow institutions do not accept deposits like a depository bank and, therefore, are not subject to the same regulations. Some complex legal entities comprising the system include hedge funds, SIVs, conduits, monolines, investment banks, and other non-bank financial institutions. Many "shadow bank"-like institutions and vehicles emerged in American and European markets, between the years 2000 and 2008, and played an important role in providing credit across the global financial system.

Operationally, shadow institutions, like investment banks, borrowed from investors in short-term, liquid markets (such as the money market and commercial paper markets), meaning that they would have to frequently repay and borrow again from these investors. At the same time, they used the funds to lend to corporations or to invest in longer-term, less liquid (*i.e.*, harder to sell) assets. In many cases, the long-term assets purchased were MBSs/CDOs. When the housing market began to deteriorate and the ability to obtain funds from investors through investments such as mortgage-backed securities declined, these investment banks were unable to fund themselves. Investor refusal or inability to provide funds via the short-term markets was a primary cause of the failure of Bear Stearns and Lehman Brothers during 2008.

Technically, these institutions are subject to market risk, credit risk and especially liquidity risk, since their liabilities are short-term while their assets are more long-term and illiquid. This creates a potential problem in that they are not depositary institutions and do not have direct or indirect access to their central bank's lender-of-last-resort support. Therefore, during periods of market illiquidity, they could go bankrupt if unable to refinance their short-term liabilities. They were also highly leveraged. This meant that disruptions in credit markets would make them subject to rapid deleveraging, meaning that they would have to pay off their debts by selling their long-term assets.

In early 2007, lending through the shadow banking system slightly exceeded lending via the traditional banking system based on outstanding balances. Analysts have placed significant blame for the freezing of credit markets on a "run" on the entities in the shadow banking system by their counterparties (Geithner, 2008). The run on the shadow banking system has been described as the "core of what happened" to cause the crisis (Krugman, 2009). It has also been stated that the so-called shadow banking system, including securitisation of loans, is likely to be smaller and subject to more regulatory oversight than before the financial crisis (Bernanke, 2009).

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seems to have led to a relaxation of lending standards and excessive mortgage lending. SIVs first came to light during the Enron scandal. Since then, their use has become widespread in the financial world. In the years leading up to the crisis, the top four U.S. depository banks moved off the balance sheet an estimated US$ 5.2 trillion of assets and liabilities into special purpose vehicles or similar entities.

Role of Basel Norms

2.43 The Basel I minimum capital adequacy requirement has generally been instrumental in encouraging banks to shift risk from their balance sheets through securitisation or through shadow banking conduits in the way described above. Some believe that if Basel II had been in place in more countries, the recent stressful episode could have been less severe. Implementation of Basel II in more countries prior to the crisis would have helped in addressing certain, if not all, sub-prime-related problems. This could have happened by ensuring capital charges even for off-balance sheet exposures that were assumed through shadow banking conduits, more risk-sensitive treatment for securitisation-related exposures, greater risk differentiation while changing the exposure from prime to sub-prime loans or from corporate lending to leveraged lending, greater disclosures and more rigorous risk assessment frameworks within the banks. Under Basel I, capital charges were not required to be applied to supporting liquidity facilities that essentially represent loan assurances/ guarantees of financial support to back an OBSE with less than a one-year commitment, while they were required for those with longer terms. For most banks in the US and Europe, the implications for the originating banks of these supporting facilities were not fully realised until difficulties arose in early August 2007[4]. Basel II requires banks to hold regulatory capital for various liquidity and other support facilities, thus, enhancing the transparency to investors and regulators.

2.44 Although there are elements in Basel II that would have reduced some of the pressures, it is difficult to conclude that the event could have been avoided (GFSR, 2008). Considering that Basel II encourages the banks' hedging of risk exposures to lower risk weights on asset holdings, the use of credit default swaps (CDSs) would have expanded. While hedging credit risk through CDSs could be helpful, counterparty risk to those issuing such swaps is still present. Besides, while the enhanced disclosure and capital requirements of Basel II could discourage the originating banks from issuing below-investment-grade instruments as higher leverage and riskiness of exposures will be accounted for more clearly in the bank's capital requirements, it could not have prevented another crisis. Basel II's excessive emphasis on ratings and models for valuation and calculation of risks very often distorts the true picture. In a macroeconomic context, it has been argued that the implementation of Basel II capital requirements could have a pro-cyclical effect on the business cycle. Specifically, in an economic downturn, anticipated losses would require banks to increase their capital (depending upon the sensitivity of rating models to economic conditions), putting further downward pressure on the provision of credit, and thereby accentuating the downturn. Incidentally, against this backdrop, Basel II provisions are being improvised to take into account some of these factors.

2.45 Besides, there have been a host of non-bank financial institutions such as insurance companies, hedge funds, pension funds, and mutual funds that were not directly affected by the disclosure requirements for OBSEs under Basel II, yet they remained potential channels for systemic risks. Hedge funds that were holding the riskiest tranches of structured products are *de facto* not subject to any disclosure requirements. While the

[4] Using the standards of Basel I, Fitch Ratings estimated that, under a worst-case scenario, if liquidity lines were to be fully drawn down, declines in the Tier 1 capital ratio of European banks would peak at 50 per cent and for U.S. banks at almost 29 per cent (Fitch Ratings, 2007).

recent turmoil strengthens the case for mandatory disclosures by hedge funds[5] before regulators, one cannot deny that there needs to be a balance between disclosure that provides market and regulatory confidence while not constraining hedge fund flexibility in contributing to the smooth functioning of the market.

2.46 Thus, regulatory arbitrage between banks and non-bank financial institutions and lack of co-ordination among regulatory structures could also have contributed to the crisis. Regulatory arbitrage across borders was also misused to the maximum. In a bid to attract financial services, regulators in international financial centres, such as London and New York, adopted a policy of relatively soft regulations or what has been described as light touch regulation. The eagerness to develop some centres as global financial centres resulted in a race to the bottom in regulation (Reddy, 2009b).

Risk Measurement, Accounting and Incentive Structure

Risk Measurement

2.47 Another microeconomic cause of the crisis is related to problems in risk measurement. Five issues are relevant in this context. First, the use of historical data was restricted to the very recent period (period of Great Moderation) for pricing new financial instruments, which yielded misleading results. Risk was reduced through (1) hedging, whereby two risks were thought to offset each other because their payoffs were negatively correlated; and (2) diversification, whereby risk was spread among assets whose returns were less than perfectly correlated. Though generally true, at times historical correlations may lead to misleading results. Thus, even very sophisticated statistical models failed to accurately measure and price risks, resulting in mismanagement of risks on many occasions. The limitations of historical correlation was one of the problems associated with securitising sub-prime mortgages in the United States, whereby large numbers of what were objectively low-quality loans were pooled together out of which a mix of high-quality and low-quality securities backed by the pool were created (originate) and sold to an entirely new class of borrowers (distribute). The major flaw, however, was that originators generally retained little of the default risk and, as the boom developed, the quality of the loans progressively worsened. Before the crisis, the 'originate-and-distribute' model worked well as it provided diversification on the assumption that asset prices in various regions of the world would not move together. For example, before the crisis, investing globally was thought to reduce risk, as prices in various regions of the world would not move together. This assumption turned out to be false. When asset prices that previously moved independently (providing diversification) or in opposite directions (providing a hedge) started to move together, the risks rose instead of falling. When the bad times came, correlations became large and positive. What was risk reduction became risk concentration.

2.48 Second, it was difficult to assess the low probability of such large events. Measuring, pricing and managing risk require modern statistical tools based largely on historical experience. Given its simplicity, the natural assumption is that returns of many different assets are normally distributed (and so have thin tails). And, although tail events are infrequent, in reality they are more frequent than is predicted by a normal distribution. Even though the problem with assuming a normal distribution was well known, the assumption persisted with the not-so-surprising result that insurance against infrequent catastrophes was underpriced.

2.49 Third, apart from problems in measurement, there were also governance problems in risk management practices in financial institutions. The financial institutions found it relatively easy to move activities outside the regulatory perimeter through structured investment vehicles. More generally, the crisis showed that the enlarged financial sector – comprising both traditional banks and an increasingly important parallel financial system comprising non-bank intermediaries and off-

[5] One needs to mention here the UK hedge fund industry initiative, which launched a working group backed by 14 of the largest UK hedge funds to develop a set of guidelines for the industry.

balance sheet entities – had become much riskier than in the past. The failure of governance is also evidenced by the failure of all relevant institutional defences against serious financial instability. Thus, the Board, the management, risk management practices and internal controls allowed excesses. The rating agencies, the advisors, the analysts and the auditors failed to give an alert on the build-up of risks, possibly due to relevant incentives or counterparty dealings. The financial regulators allowed these excesses to occur. Finally, the market discipline on which reliance has generally been placed and which may include media and public opinion did not prevent these excesses.

2.50 Fourth, more generally, the crisis showed that the enlarged financial sector – comprising both traditional banks and an increasingly important parallel financial system composed of non-bank intermediaries and off-balance sheet entities – had become much riskier than in the past. The absence of a national uniform regulatory authority resulted in oversight of the mortgage market and the scale of the financial sector's involvement in sub-prime mortgage products. Multiple regulators facilitated regulatory arbitrage by the market participants and thus exacerbated the risks. Despite the fact that financial markets had globalised, the framework for cross-border regulation was weak.

2.51 Fifth, there was a large disconnect between the risk officers and the top executives who are the decision-makers. With the former rarely having sufficient day-to-day contact with top decision-makers, they often could not communicate their assessments effectively. Besides, on certain occasions when what was happening was profitable, it was difficult to get managers and directors to listen (BIS, 2009).

Accounting Procedures

2.52 It is generally perceived that the accounting procedures that the market participants followed also contributed to the crisis. The accounting standards were pro-cyclical, especially due to the policy of mark-to-market rules of valuation of assets and liabilities. Mark-to-market (MTM) is an accounting act of recording the price or value of a security or portfolio to reflect its current market value rather than its book value. However, considering that not all securities are liquid enough to have a tradable market price, they are marked at the fair value usually based on a model. The model is fed with inputs for which there are market prices (prices of similar securities, interest rates, etc.) or assumptions about the input values. The problem with MTM accounting is that it relies on the notion that the market is an asset's best arbiter of value. Most of the time, that is a fair assumption, but it breaks down in a market crisis. When investors are gripped by fear, panic selling can produce prices that are out of sync with underlying asset values. Worse, a market may stop trading altogether.

2.53 Given the large size of the market for structured finance products and related derivatives in the Over-the-Counter (OTC) markets prior to the crisis, it had become nearly impossible to determine their fair value. As is clear, in the recent crisis, fair value accounting was at fault not for the values chosen to represent various on-balance sheet positions, but for the various off-balance sheet extensions of commercial and investment banks to warehouse risks that, for reputational reasons, would have to be brought back onto the balance sheet if and when cumulative losses developed. Besides, at large and complex financial institutions, individual managers had strong incentives to discover and to exercise reporting options that overstate their capital and understate their exposure to loss. This expands their ability to extract implicit subsidies that risk-taking can generate from implicit safety-net support.

2.54 It is this potential for a complete reversal of fortunes for the best performing financial firms just because of mark-to-market accounting that has necessitated a review of international accounting norms. There is also a viewpoint that in creating and deepening the securitisation crisis, the role of fair value accounting is being overstated. In the US, a major purpose of adopting fair-value accounting was to require some of the developing losses at troubled financial firms to be recognised and

resolved more promptly than in the past. But in reality, under fair value accounting, portfolio positions were "marked to model" rather than to an actual transaction price, thus providing the opportunity to clever managers to adjust model outcomes until they produce pre-specified results (Caprio *et al.*, 2008). This had more to do with the incentive structure of the firm managers than with the accounting norms.

Incentive Structure

2.55 The crisis highlighted the faults in the incentive structure faced by investors and fund managers. First, with regard to investors, as income/ earning levels were growing, they failed to pay due attention to the balance sheets of the banks where they were doing business or of the finances of the firms in which they were invested through the purchase of equity or debt securities. Apart from lack of knowledge, the belief that someone else was watching – be it a trusted manager, an equity analyst, a credit rating agency or the regulator – made them assume that the system was sophisticated and that their investments were safe, while in reality the system was complex and opaque. The complexity of the financial system and the financial products was mistaken for sophistication of the system (BIS, 2009).

2.56 Second, managers of financial firms also were functioning under a distorted incentive structure. Compensation schemes based on the volume of business encouraged managers to go in for excessive risk-taking in financial firms. They saw a need to drive up returns on their equity to satisfy shareholders as well as to enhance their pay packages and sometimes also to retain their jobs in the race. Large annual bonuses running into several million dollars indirectly provided the incentive to take undue risk, innovate new financial instruments and market them to investors in search of higher yields, thus increasing leverage and creating fragile institutions and also an unstable financial system. Equity holders (because of limited liability) and asset managers (because of their compensation system) were unduly rewarded for risk-taking. Greed became the accepted norm even if it meant giving up on the firm's credentials in the short run. Here one needs to emphasise the role of animal spirits in encouraging people to take rash decisions, not to consider the future rationally in their decisions about savings and ultimately in encouraging corruption (Akerlof and Shiller, 2009). As a result, even if managers recognised a bubble in the price of some asset, they could not take advantage of that knowledge by selling short for fear that investors would withdraw funds. Such rewards were inconsistent with performance since governments invariably ended up providing funding support to prevent systemically important financial institutions from failing.

2.57 To sum up, while there is no single explanation in the realm of macroeconomic management that appears totally satisfactory, there is a common thread to most of the explanations, namely, serious underestimation of potential for market failures as it relates to macro-economy in general and the financial sector in particular (Reddy, 2009c). The linkage of the different causes, though not very obvious, seems to be as follows: As a consequence of the global imbalances, savings from Asia got invested in advanced countries, driving down their real interest rates. This led to massive expansion in credit quantity with erosion of quality because of the predatory search for yield. This, in turn, led to the generation of new toxic financial products through slicing, hedging and originating and distribution, all of which combined to brew the crisis to an explosive dimension (Subbarao, 2009). In light of the current global financial crisis, it would be worth exploring the history of financial crises in terms of their incidence, causes and effects.

II. FINANCIAL CRISES IN A HISTORICAL PERSPECTIVE

Definition and Categorisation

2.58 Financial panics or crises are as old as capitalism itself and can be traced at least to the Dutch tulip mania of 1636-37 and the South Sea

Bubble of 1719-20. The primary objective of the study of financial crises has been to better comprehend the underlying analytics of a crisis so that future occurrence may be predicted and minimised. Thus in the present context, an analysis of the financial crises witnessed by the global economy in the past is crucial in understanding and analysing the recent crisis.

2.59 One feature common to all financial crises has been that they have often arrived with fierce force and departed with important lessons for policy makers. Kindleberger (1978) has aptly called financial crisis a "hardy perennial". Financial crises are admittedly difficult to define and often have no precise beginning or end. They may be defined as episodes of financial market volatility marked by significant problems of illiquidity and insolvency among financial market participants that require official intervention to contain such consequences. Financial crises may alternatively be defined as financial events that eliminate or impair a significant portion of the banking system's capital.

2.60 Some economists have also defined financial crisis as a situation in which the supply of money is outpaced by the demand for money. This implies that liquidity evaporates quickly because available money is withdrawn from banks (called a run), forcing banks either to sell other investments to make up for the shortfall or to collapse. Another definition of financial crisis has been put forth by Mishkin (1991a) who defines a financial crisis as a disruption to financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities. As a result, a financial crisis can drive the economy away from equilibrium with high output in which financial markets perform well to one in which output declines sharply.

2.61 The literature on financial crisis can be split into two schools of thought, one view expounded by the monetarists and the other more eclectic view put forth by Kindleberger and Minsky. Monetarists like Freidman and Schwartz (1963) have linked financial crises with banking panics and concluded that banking panics result in monetary contractions which, in turn, lead to severe contractions in economic activity. Financial crisis events which did not result in banking panics were not classified as a financial crisis by the monetarists and they termed these events "pseudo- financial crises". The opposite view of financial crises has been outlined by Kindleberger (1978) and Minsky (1972) whose definitions of financial crises are broader. In their view, financial crises either involve sharp declines in asset prices, failures of large financial and non-financial firms, deflations or disinflations, disruptions in foreign exchange markets, or some combination of all these. One may conclude from these definitions that financial crises indicate stress on the financial system, on banks and other financial intermediaries, usually resulting in failures of systemically important institutions and sharp contractions in the national economy.

2.62 The literature has, in general, categorised financial crises into the following: debt crises, banking crises, currency crises, and crises due to financial contagion. An economy may be affected by any of these crises or may simultaneously experience the occurrence of more than one variant of the economic crisis. Financial crises experienced in the past 150 years can be classified as one of these variants.

Debt Crises

2.63 Debt crises are the earliest known variant of financial crises and have been very frequent. A debt crisis occurs either when the borrower defaults or lenders perceive this as significant risk and therefore withhold new loans and try to liquidate existing loans. Debt crisis can apply to commercial (private) and/or sovereign (public) debt. If there is a perceived risk that the public sector will cease to honour its repayment obligations, this is likely to lead to a sharp curtailment of private capital inflows, in part because it casts doubt on the government's commitment to allowing private sector debt repayment. By contrast, if (part of) the private sector is unable to discharge its external obligations, this

need not lead to a wider crisis; but in practice, if private sector default is on a significant scale, commercial debt often becomes sovereign debt through guarantees, bank bailouts, and so on. A government may fail to repay its sovereign debt. This often leads to a sudden decline in capital inflows and a spike in capital outflows.

Banking Crises

2.64 A banking crisis is triggered by a sudden withdrawal of bank deposits by several clients, a situation known as a 'bank run'. Banks may not have sufficient funds to simultaneously pay back numerous depositors, since they loan their funds. Thus, a banking crisis occurs when actual or potential bank runs or failures induce banks to suspend the internal convertibility of their liabilities or compel the government to intervene to prevent the collapse of the bank by extending assistance on a large scale. There can be a bank run as suggested by Radelet and Sachs (1998), *i.e.*, a self-fulfilling collapse *via* either literal bank runs – a view promulgated by Chang and Valesco (1998a, 1998b) – or some kind of balance sheet-driven financial contraction. Banking crises tend to be protracted and have severe effects on economic activity through their impact on financial intermediation, confidence, capital flight, currency substitution and public finances. A banking crisis generally results in the erosion of most or all of aggregate banking system capital. Banking crises were relatively rare during the Bretton Woods era, due to capital and financial controls, but have become increasingly common since the 1970s often in tandem with currency crises (Kaminsky and Reinhart, 1999).

Currency Crises

2.65 A currency crisis occurs when a speculative attack on the exchange rate results in a devaluation or sharp depreciation, or forces country authorities to defend the currency by expending large volumes of reserves or by significantly raising interest rates. A currency crisis is normally the result of a forced change in parity, abandonment of a pegged exchange rate, or an international rescue (Bordo *et al.*, 2001). Currency crises can either be an 'old style' currency crisis where a cycle of overspending and real appreciation weakens the current account, often in the context of extensive capital controls, and ends in devaluation, or a 'new style' crisis where investor concerns about the credit worthiness of the balance sheet of a significant part of the economy (public and private) lead to a rapid build-up of pressure on the exchange rate in an environment of more liberal and integrated capital and financial markets (Dornbusch, 2001). There is no generally accepted definition of a currency crisis. The key element is a sort of circular logic, in which investors flee a currency because they fear that it might be devalued, and in which much (though not necessarily all) of the pressure for such a devaluation comes precisely from capital flight. Currency crises played a large role in the economic turmoil of the Inter-War era, in the break-up of Bretton Woods, in the early stages of the Latin American debt crisis of the 1980s and the Asian financial crisis in 1997.

Contagion

2.66 Considering the increasingly enhanced linkages in both trade and capital across nations, the issue of financial contagion, the process by which a shock in one part of the financial system spreads to other parts through a series of 'linkages', has also become important. The channels of contagion generally include flow of information and interbank claims. A fall in prices in one market may be interpreted as a negative signal about fundamentals. If these fundamentals are common to other markets, the expected returns and, hence, prices in those markets will also fall. Similarly, if one currency depreciates, other countries with common fundamentals may also experience a depreciation of their currency. Besides, considering that it is optimal for banks to hold deposits in banks in other regions or sectors in order to provide liquidity if demand is unusually high, when one region suffers a banking crisis, the other regions suffer a loss because their claims on banks in the

troubled region fall in value. If this spillover effect is strong enough, it causes a crisis in adjacent regions. The crisis gets stronger as it passes from region to region and becomes a contagion (Allen and Gale, 2000b; Kodres and Pritsker, 2002). The East Asian crisis is an example of how contagion can affect several economies in the region.

2.67 Many of the recent financial crises in emerging market economies, such as the Mexican crisis and the East Asian crisis, have been characterised by currency, debt and banking crises occurring at the same time or in rapid succession. An analysis of the financial crises suggests that in countries with capital controls, currency crises are more frequent while banking crises are less frequent. The relationship between banking crises and currency crises has also been explored empirically (Kaminsky and Reinhart, 1999). It has been observed that in the 1970s, when financial systems were highly regulated, currency crises did not coincide with banking crises. After the financial liberalisation of the 1980s, currency crises and banking crises have become more intertwined. Although banking crises typically precede currency crises, their common cause is usually a fall in asset values caused by a recession or weakness in the economy. Often, the crisis is part of a boom-bust cycle that follows financial liberalisation.

2.68 Indeed, as international capital and domestic financial markets have become increasingly integrated with increasing globalisation, the distinction between different types of financial crises has become blurred. Recent analyses focus on the linkages between the corporate, banking and public sectors during times of internal financing pressure. Attention is paid to crisis dynamics and spillover effects propagated through more traditional flow variables, such as the current account and fiscal deficits. Thus, creditors may lose confidence in a government's ability to service its debt, in the banking system's ability to finance deposit outflows or in the corporate sector's ability to service its loans. Problems in one sector are liable to spread to other sectors; for example; concerns about the government's balance sheet could undermine confidence in banks that hold government debt and could spark a run on deposits; or banking sector problems could expose large contingent liabilities that could lead to difficulties for the government in servicing its debt and could even give rise to solvency concerns that could cause a run on the currency. Thus, increasingly the distinction between the different types of crises is getting blurred due to increased integration of markets within the shores as well as across borders.

Incidence of Financial Crises

2.69 The nature of financial crises has changed over the years with changes in the economic landscape. The earliest recorded episodes of financial crises generally took the shape of external default. During the period 1300-1799, Europe witnessed around 19 incidents of external default. The defaulting countries included Austria, England, France, Germany, Portugal and Spain. With the development of the banking sector in the eighteenth century, banking crises were witnessed by a number of developed countries as well as emerging markets. The earliest advanced economy banking crisis occurred in France in 1802; early crises in emerging markets befell China (several episodes during the 1860s-1870s) and Peru in 1873 (Reinhart and Rogoff, 2008).

2.70 Reinhart and Rogoff (2008) have given a wider view of the history of financial crises during the period 1800 to 2006. According to them, there were 239 episodes of sovereign default during the period 1800-2006, of which 126 episodes of sovereign default were witnessed in Latin America followed by 73 episodes of sovereign default in Europe, 26 in Africa and 14 in Asia. There were five pronounced peaks or default cycles during the period 1800-2006 when a high percentage of all countries were in a state of default or restructuring. The first spike took place during the Napoleonic war. The second took place during the 1820s-1840s when nearly half the countries in the world including all of Latin America were in default. The third episode is placed between the 1870s and the 1890s. The 1873 global financial crisis originated

in the German and Austrian stock market collapse. The fourth episode began in the Great Depression of the 1930s to 1950s when again nearly half of all countries stood in default. The most recent default cycle encompassed the emerging market debt crises of the 1980s and 1990s.

2.71 The history of financial crises during the period 1880-2000 has been examined in detail by Bordo *et al.* (2001) as well. Drawing from their analysis, the period between 1875 and 2007 can be broadly divided into four periods: Gold Standard Era: 1875-1913; Inter-War Years: 1919-1939; Bretton Woods Period: 1945-1971; and Recent Period: 1973-2007.

Gold Standard Era: 1875-1913

2.72 The Gold Standard Era has been relatively benign of the four periods even though capital markets were globalised during this period. The occurrence of crises was low during the Gold Standard Era (1873-1913). During this period there were 35 episodes of sovereign default. The defaulting nations were largely Latin American with some European countries like Greece (1893), Portugal (1890), Russia (1885) and Spain (1882). Banking crises were relatively infrequent during this period; the most notable banking crisis was in the US which started in 1873. The US faced another major banking crisis in 1893 and once again in 1907.

Inter-War Years: 1919-1939

2.73 The Inter-War Years (1919-1939) were quite turbulent. This is not surprising as the Great Depression took place during this period (Box II.4). Banking crises and currency crises were widespread during the Inter-War years. There were

Box II.4
The Great Depression

The worldwide economic downturn which has come to be known as the Great Depression began in 1929 and lasted until about 1939. It has been the longest and the most severe depression witnessed by the industrialised western world. The Depression originated in the United States and its outcome was severe decline in output and employment, and acute deflation in almost the entire global economy (Romer, 2003).

Backdrop

The US economy had experienced rapid economic growth and financial excesses in the late 1920s and initially the economic downturn was seen as simply part of the boom-bust-boom cycle. There was over-production in agriculture, leading to falling prices and rising debt among farmers. During the mid-1920s Wall Street attracted a sizeable number of middle-class investors. Speculation was rising and in February 1929, the Federal Reserve issued statements to curb lending for speculative purposes by the banks. This led to a decline in stock prices. The stock markets bounced back again by March 1929; however, in September 1929, there was a sharp decline. At the same time there was a major banking crisis including the 'Wall Street Crash' in October 1929.

Causes

The fundamental cause of the Great Depression in the United States was the decline in aggregate demand which led to a decline in production and a pile-up of inventories. Several factors led to the contraction in aggregate demand which varied during the course of the Depression. The main factor depressing aggregate demand was a worldwide contraction in world money supplies. This monetary collapse itself was the result of a poorly managed and technically flawed international monetary system (the gold standard as reconstituted after World War I). Monetary shocks played a major role in the Great Contraction and these shocks were transmitted around the world primarily through the working of the gold standard (Bernanke, 2000).

The fall in output in the United States which started in the summer of 1929 is widely attributed to the tight US monetary policy to stem the rise in stock market speculation. Stock prices in the US had risen more than four-fold between 1921 and 1929 when the stock prices peaked. The Federal Reserve raised interest rates between 1928 and 1929 with the aim of limiting stock market speculation. This hike in interest rates led to a decline in interest rate-sensitive spending in areas such as construction and automobile purchases which resulted in reduced production. By September 1929, the speculative bubble had built up in the US stock market and prices had reached levels that could not be justified by reasonable anticipations of future earnings. This bubble burst in October 1929. This was preceded by minor declines in stock prices which dented investor confidence leading to panic selling. Panic selling began on Black Thursday, *i.e.*, October 24, 1929. US stock prices spiralled downwards and fell by 33 per cent during September 1929 to November 1929. This stock market crash led to a sharp contraction in the aggregate demand in the US. The reduction in consumer and firm spending led to rapid declines in real output in late 1929 and 1930.

In addition to the reduction in aggregate demand due to the stock market crash, banking panics and the resultant monetary contraction led to a further decline in demand. The United States experienced widespread banking panics in the fall of 1930, spring

(Contd...)

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of 1931, fall of 1931 and fall of 1932. Finally a National Bank Holiday was declared on March 6, 1933 which closed all banks, permitting them to reopen only after being deemed solvent by government inspectors. Default and bankruptcy plagued almost every class of borrower except the Federal Government.

During 1930-33, around 20 per cent of the banks in the US failed. These bank failures led to a dramatic rise in the demand for currency *vis-à-vis* bank deposits. Money supply contracted by 31 per cent between 1929 and 1933 due to the steep rise in the currency-to-deposit ratio. In September 1931, the Federal Reserve effected an interest rate hike leading to further contraction of money supply and a subsequent contractionary effect on output.

Friedman and Schwartz (1963) identified four main policy mistakes made by the Federal Reserve that led to a sharp and undesirable decline in the money supply :

1) Tightening monetary policy (resulting in increasing interest rates) beginning in the spring of 1928 and continuing until the stock market crash of October 1929.

2) Raising interest rates to defend the dollar in response to speculative attacks, ignoring domestic banking panics and failing to act as lender of last resort to domestic banks in September and October 1931.

3) Despite lowering interest rates early in 1932 with positive results, raising interest rates in late 1932.

4) Ongoing neglect of problems in the US banking sector throughout the early 1930s, and failing to create a stable domestic banking environment.

According to some economists, the Federal Reserve's decision to allow huge declines in the money supply in the US was to preserve the gold standard. Under the gold standard, imbalances in trade or asset flows gave rise to international gold flows. There have been other international linkages as well. US lending abroad fell in 1928 and 1929 as a result of high interest rates and the booming stock market in the United States. This reduction in foreign lending may have resulted in further credit contractions and declines in output in borrower countries like Germany, Argentina and Brazil (Romer, 2003).

The economic downturn was further compounded by the 1930 enactment of the Smoot-Hawley tariff in the United States and the worldwide rise in protectionist trade policies. In addition, the Revenue Act of 1932 increased tax rates in America in an attempt to balance the Federal Budget, which led to further contraction of the economy by discouraging spending.

Manifestation

The timing and severity of the Great Depression varied substantially across countries. In the United States, the downturn began in the summer of 1929 which became markedly worse in late 1929 and continued until early 1933. Real output and prices fell sharply and during this period, the United States witnessed a decline of 47 per cent in industrial production, 30 per cent in the real GDP and 33 per cent in the wholesale price index.

Virtually every industrialised country witnessed declines in wholesale prices of 30 per cent or more between 1929 and 1933. Commodity prices declined even more dramatically during this period.

Recovery

Recovery in the US economy set in from early 1933. Between 1933 and 1937, real GDP rose at an average rate of 9 per cent per year. US output finally returned to its long-run trend level in 1942. Recovery in other parts of the world varied greatly. Britain started recovering from the end of 1932. Early 1933 witnessed recovery in Canada and other smaller European countries. France could enter the recovery phase only around 1938.

The recovery was primarily led by currency devaluations and monetary expansion as monetary contraction and the gold standard had played a key role in the Great Depression. Worldwide monetary expansion resulted in lower interest rates and improved credit availability which, in turn, stimulated spending. Devaluations allowed countries to expand their money supplies without concern about gold movements and exchange rates.

Legacy

The impact of the Great Depression was steep declines in world output and employment. The Depression and the policy response also impacted the world economy. The Great Depression led to the demise of the international Gold Standard. In many countries it resulted in increased government regulation of the economy, particularly financial markets. It led to the establishment of the Securities and Exchange Commission in 1934 in the United States to regulate new stock issues and stock market trading practices. The Banking Act of 1933 (Glass-Steagall Act) established deposit insurance in the United States and prohibited banks from underwriting or dealing in securities. The Depression also played a crucial role in the development of macroeconomic policies intended to temper economic downturns and upturns. The Depression led to the development of Keynesian theory that underscored the importance of increases in government spending, tax cuts and monetary expansion in staving off downturns and depressions. This insight, combined with a growing consensus that government should try to stabilise employment, has led to a more activist policy since the 1930s.

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21 episodes of banking crises during this period and they spread across all continents including North America, Europe, Africa and Latin America. Asia was the only exception. Sovereign defaults were also common during this period with 30 episodes of external debt crisis.

Bretton Woods Period: 1945-1971

2.74 There was relative calm during the late 1940s to the early 1970s (Bretton Woods period). The first post-1945 global crisis was the breakdown of the Bretton Woods system of fixed exchange rates. This calm may be partly explained by booming world growth, repression of domestic financial markets (in varying degrees) and the use of capital controls that followed for many years after World War II. The financial markets were not very open till the end of the 1960s due to a combination of regulation, lack of capital mobility, diverse standards, and the limits of technology that created geographic barriers in the global economy. Banking regulation was made stringent and many banks were brought under state control. There was strict regulation of competition between banks and other types of financial institutions, and many countries used their financial systems to directly promote export industries and protect domestic producers and distributors. As a result, there were few banking crises during this period, with the exception of the twin crises in Brazil. However, currency crises were a regular feature of the financial landscape during the Bretton Woods Period as a fixed exchange rate was almost inconsistent with the macroeconomic policies followed during the period. The controls on capital flows in suppressing currency crises were less efficacious. During this period, 14 countries faced external debt/currency crises; the majority of the countries were in Latin America.

2.75 The situation changed dramatically after the breakdown of the Bretton Woods system of fixed exchange rates in 1971-72. After the collapse of the Bretton Woods System, developed countries in North America, Europe and Japan moved over to a floating exchange rate system. In addition, they also simultaneously embarked upon a programme of liberalising their capital accounts and allowing cross-border financial investments. At the same time, they began deregulating their national financial institutions to allow more competition and new forms of financial activity. These developments paved the way for the steady growth of capital flows across borders including rapid growth of international banking credit during the 1970s and 1980s, but it was limited mainly to the industrialised economies.

Recent Period: 1973-2007

2.76 The post-Bretton Woods Period (1973-2007) has, however, been crisis-prone. An analysis of the data regarding the incidence of financial crisis reveals that the number of financial crises around the world has risen during this period, and even more sharply over the past thirty years. Since the early 1970s, with the liberalisation of capital account in the advanced countries, episodes of banking crises have increased. After a long hiatus, the number of countries facing banking difficulties first began to increase in the 1970s (Reinhart and Rogoff, 2008). The 1970s were characterised by the Latin American debt crisis and its impact on banks. Apart from the break-up of the Bretton Woods system of fixed exchange rates, sharp spikes in oil prices also catalysed a prolonged global recession, resulting in financial sector difficulties in a number of advanced economies as well. There were seven episodes of banking crises during the 1970s, *viz*., in Uruguay (1971), UK (1974), Chile (1976), Central African Republic (1976), Germany (1977), South Africa (1977) and Venezuela (1978).

2.77 In the early 1980s, the collapse of global commodity prices combined with high and volatile interest rates in the United States contributed to a spate of banking and sovereign debt crises in emerging economies, most famously in Latin America and then Africa. There were 40 episodes of banking crises during the decade of the 1980s compared with 73 episodes during the 1990s. The early 1980s witnessed crises in Chile and Morocco. The 1980s saw the United States experiencing the

'savings and loan associations' (S & L) crisis. In the 1990s, many economies including Nordic countries like Sweden, Finland, and Norway and most of the transitional socialist economies were hit by the crisis. The Nordic countries witnessed banking crises following a sharp surge in capital inflows and real estate prices. India faced a balance of payments crisis in 1991 in the wake of domestic imbalances, the Gulf War and the break-up of the USSR. Several countries including UK that formed part of the European Exchange Rate Mechanism suffered crises in 1992-93 and were forced to devalue or withdraw from the mechanism. In 1994-95, it was the Tequila crisis that impacted Mexico followed by Brazil and Venezuela; in 1997, Thailand, Indonesia, Korea, and Malaysia faced crises popularly known as East Asian crisis (Box II.5). In 1998, Russia's default sent tremors that had an impact as far away as Brazil. Following the asset price bubble burst in the late 1980s and

Box II.5
East Asian Crisis

The East Asian financial crisis which impacted the fast-growing economies of South Korea, Malaysia, Thailand and Indonesia is remarkable in several ways. The crisis hit the most rapidly growing economies in the world, and prompted the largest financial bailouts in history. It was the least anticipated and sharpest financial crisis to hit the developing world since the 1982 debt crisis (Radelet and Sachs, 1998).

Backdrop

The fundamental aspects of macroeconomic management in the affected economies remained sound throughout the early 1990s. Government budgets regularly registered surpluses in each country and sovereign debt was at prudent levels. Inflation rates were below 10 per cent during the 1990s in the region. Domestic savings and investment rates were very high. Conditions prevalent in the global financial markets also did not portend a crisis as the world interest rates were unusually low and key commodity prices were relatively stable. The crisis was largely unanticipated by international lenders and most market observers and rating agencies also did not signal increased risk until after the onset of the crisis itself. Long-term sovereign debt ratings remained unchanged throughout 1996 and the first half of 1997 for each of the Asian countries except the Philippines, where the debt was actually upgraded in early 1997.

The only indication of growing concern was that stock prices witnessed a bearish trend, with prices in the Thai, Seoul and Malaysian stock markets witnessing a continuous downslide. In Indonesia, however, both stock market and bank lending showed continued confidence until mid-1997.

Other areas of concern were the growing current account deficits, overvalued exchange rates and the slowdown in exports. Other important indicators of growing financial vulnerability were the rapid expansion of commercial bank credit and growing short-term foreign debt.

The financial sector exhibited signs of growing risk as financial institutions became increasingly fragile throughout the 1990s. Credit to the private sector expanded very rapidly with much of it financed by off-shore borrowing by the banking sector. The credit was utilised primarily for speculative investments.

Banks became increasingly vulnerable. Banks borrowed in foreign exchange and lent in local currencies and were, therefore, exposed to the risk of foreign exchange losses from depreciation. Moreover, banks borrowed off-shore in short term maturities and lent on-shore with longer pay-back periods. The financial fragility was further exacerbated by the fact that the countries' short-term debt exceeded available foreign exchange reserves.

With this background, bank failure in Thailand, corporate failures in Korea and political uncertainty in the region hastened credit withdrawals, leading to panic runs. This was further worsened by a contagion effect where the economic and political stability of the entire region was considered vulnerable by the creditors.

Causes

The Asian crisis was caused by a boom in international lending followed by a sudden withdrawal of funds. At the core of the Asian crisis were large-scale foreign capital inflows into financial systems that became vulnerable to panic (Radelet and Sachs, 1998).

According to estimates, the reversal of flows for the five East Asian countries hit hardest by the crisis (Indonesia, Korea, Malaysia, Philippines and Thailand) dropped from $ 93 billion to -$12.1 billion, a swing of $ 105 billion on a combined pre-shock GDP of approximately $ 935 billion

(Contd....)

(....Concld.)

or a swing of 11 per cent of GDP. The sudden drop in bank lending followed a sustained period of large increases in cross-border bank loans.

Manifestation

The sudden and sharp withdrawal of foreign capital had several macroeconomic and microeconomic effects. First, the nominal as well as the real exchange rates depreciated dramatically after the initial defence of a pegged exchange rate in Thailand and the Philippines and a crawling peg in Indonesia, Malaysia and Korea. Domestic interest rates increased sharply due to the reversal of foreign inflows, resulting in a tightening of domestic credit conditions.

The combination of real exchange rate depreciation and high interest rates led to a surge in the level of non-performing loans (NPLs) in the banking sector, especially as real estate projects went into bankruptcy. The combination of sharply rising NPLs and direct balance sheet losses due to currency depreciation wiped out a substantial portion of the market value of bank capital in Indonesia, Thailand and Korea.

Impact

The sudden withdrawal of foreign financing had an enormous contractionary impact. The collapse of domestic bank capital further compounded the contraction by severely restricting bank lending. Banks cut back their own lending, both because the banks themselves were illiquid (as a result of the withdrawal of foreign credits and, in some cases, deposits) and because they were decapitalised. The decapitalised banks restricted their lending in order to move towards capital adequacy ratios required by bank supervisors and reinforced by the IMF.

In December 1997, Moody's downgraded the sovereign debt of Indonesia, Korea and Thailand, putting them below investment grade. As a result of creditor panic, bank runs, and the sovereign downgrades, Korea, Indonesia and Thailand were thrown into partial debt defaults. The economies in the affected countries experienced severe downturns. In Thailand, 97.7 per cent of GDP was the estimated output loss and GDP declined by 10.5 per cent. In Korea, output loss was 50.1 per cent and GDP declined by 6.9 per cent. In Malaysia, non-performing loans peaked between 25-35 per cent of banking system assets and fell to 10.8 per cent by March 2002. Output loss was 50.0 per cent of GDP and GDP declined by 7.4 per cent.

Legacy

The East Asian crisis brought into focus the vulnerability associated with short- term capital flows. It highlighted how balance sheet vulnerabilities can impact the financial stability of an economy. Post-crisis, the economies made a dramatic turnaround, turning the capital account deficit into surplus and built up huge foreign exchange reserves as an insurance against sharp capital reversals.

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early 1990s, Japan also experienced a banking crisis which started in 1992 and lasted for almost a decade. In the current decade, various emerging market economies, *viz*., Turkey (2001), Paraguay (2002), Uruguay (2002), Argentina (2001, 2002) and Moldova (2002) experienced financial crises. Notably, Argentina, Uruguay and the Dominican Republic faced triple crises. The US witnessed the dot-com meltdown in 2001 which impacted world demand severely.

2.78 The incidence of financial crisis has been the highest over the past three decades or so (Table 2.9). According to the database compiled by Laevan and Valencia (2008), there were 124 episodes of banking crisis, 211 episodes of currency crisis and 64 episodes of sovereign debt

Table 2.9: Incidence of Financial Crisis

Period	Number of Crises
1	2
1875-1913	58
1919-1939	51
1945-1971	17
1973-2007	399

Source : Laeven and Valencia (2008).
Reinhart and Rogoff (2008).

crisis. Of these 42 were twin crises and 10 were triple crises (Table 2.10).

2.79 The incidence of crises has been frequent under different monetary and regulatory regimes. Financial crises have impacted both advanced as well as emerging market economies in varying degrees (Table 2.11). An analysis of the incidence of financial crisis over the past 150 years reveals that though crisis occurs without warning, the incidence can largely be explained in terms of the prevailing macroeconomic conditions, the financial regulatory regime, currency regime, fiscal discipline and global capital and trade flows.

Table 2.10: Frequency of Financial Crisis : 1973-2007

	Banking Crisis	Currency Crisis	Sovereign Debt Crisis	Twin Crisis	Triple Crisis
1	2	3	4	5	6
1970s	4	26	7	–	–
1980s	40	74	42	11	4
1990s	73	92	7	27	3
2000s	7	19	8	4	3

Note : Twin crisis indicates a banking crisis in Year t and a currency crisis in Year (t-1, t+1). Triple crisis indicates a banking crisis in Year (t-1, t+1) and a debt crisis in Year (t-1,t+1).

Source : Laeven and Valencia (2008).

Table 2.11: Major Financial Crises: 1873-2007

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
German and Austrian Stock Market Collapse, May 1873	French war indemnity paid to Prussia in 1871 led to speculation in Germany and Austria. In early 1873, a speculative movement in the stock market led to tripling of stock prices in a few months. On May 9, 1873 two big banks failed in Austria. Following this, the German and Austrian stock market collapsed in 1873. The crises were connected due to the international capital markets. A large infusion of cash in the US railroad industry took place leading to the build-up of a speculative bubble. Capital flows to the US fell in the wake of the German crisis. Jay Cooke's investment banking firm failed in September 1873, setting off panic.	The recession which ensued after the crises in Germany, Austria and the US resulted in a dramatic fall in trade and capital flows. The failure of Jay Cooke Bank set off a chain reaction of bank failures. The New York Stock Exchange closed for 10 days starting September 20, 1873. A total of 18,000 business houses failed between 1873 and 1875. Unemployment reached 14 per cent by 1876. Real estate values fell and corporate profits declined sharply. The ensuing world recession (1873-1879) led to debt servicing problems in the other countries through reduced exports and tax revenues. Initial defaults in Central American nations in January 1873 led to a fall in bond prices. The crisis quickly spread to Italy, Holland and Belgium, England, France and Russia. By 1876, the Ottoman Empire, Egypt, Greece and 8 Latin American countries had defaulted.
Barings Crisis, 1890	It was triggered by central bank tightening in England, France and Germany. Argentina stopped dividend payments in April 1890, leading to a domestic bank run. The House of Baring, a major lender to Argentina, declared itself insolvent in November 1890. This crisis soon spread to other Latin American countries.	It impacted Britain as Argentina and Britain had strong economic links through trade and financial integration. The crisis impacted Uruguay which defaulted in 1891. This led to a series of sudden stops and current account reversals.
USA 1907	Rapid industrial and economic growth took place during 1897-1906, with lots of mergers and corporate consolidations. The San Francisco earthquake of April 1906 led to tightening of Eastern US and international financial markets. There was rapid expansion of trust companies, *i.e.*, lightly regulated banks. A speculative attempt to corner the market in a copper company's stock in October 1907 collapsed; some banks and trust companies were implicated. Runs on trust companies and banks in New York City set off the panic in the latter half of October 1907.	JP Morgan organised a co-operative arrangement of trust companies to pool $ 10 million to support the banks and trust companies facing runs. In 1908, Congress passed the Aldrich-Vreeland Act. The crisis of 1907 occurred during a lengthy economic contraction lasting from May 1907 to June 1908. The interrelated contraction, bank panic and falling stock market resulted in significant economic disruption. Industrial production dropped, and 1907 saw many bankruptcies. Production fell by 11 per cent, and imports by 26 per cent, while unemployment rose to 8 per cent from under 3 per cent.
USA 1929	The 1920s experienced a major stock market boom associated with massive investment. It also saw major innovations in industrial organisations and corporate finance. The US stock market crashed in 1929 following	The recession began in 1930. It reduced output via wealth effects on consumption, reduced investment and reduced velocity. A series of banking panics erupted in 1930-33. The banking panics in turn impacted the real economy

Table 2.11: Major Financial Crises: 1873-2007 *(Contd.)*

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
	a tight Federal Reserve policy after a speculative build-up. The financial crisis began in the fall and winter of 1930-31, when large numbers of US banks failed, leading to a deflationary downward spiral and deepening recession. In May 1931, the Austrian Creditanstalt failed. The crisis then spread to Germany which defaulted on its large foreign debts and left the Gold Standard. Pressure then shifted to the US which saw a run on its gold.	through the collapse in money supply, which produced massive deflation and financial disintermediation. The deflation spread abroad through the fixed exchange rate links of classical gold standard. The year 1932 is considered to be the worst year in US economic history.
Latin American Debt Crisis 1980s	In the 1960s and 1970, many Latin American countries notably Brazil, Argentina and Mexico borrowed huge sums of money from international creditors for industrialisation, especially in infrastructure programmes. Between 1975 and 1982, Latin American debt to commercial banks increased at an annual cumulative rate of 20.4 per cent. Debt service grew even faster. When the world economy went into recession in the 1970s and 1980s, countries started facing a liquidity crunch. Interest rates increased in the US and Europe in 1979, making it harder for borrowing countries to pay back their debts. In August 1982, Mexico defaulted on its debt. In the wake of the Mexican default, commercial banks halted new lending to Latin American countries.	More than 70 institutions (accounting for 16 per cent of commercial bank assets and 35 per cent of finance company assets) were liquidated or subjected to intervention between 1980 and 1982. In March 1980 a number of financial institutions were forced to rely heavily on Central Bank financial assistance when faced with deposit withdrawals. Failed institutions included the largest investment bank and the second largest private commercial bank. Massive capital outflows took place, particularly to the US. The exchange rates of the affected countries depreciated sharply, thereby raising real interest rates. Real GDP growth for the region was only 2.3 per cent during 1980-85 but in per capita terms the affected countries experienced a negative growth of almost 9 per cent.
Savings and Loan Crisis USA 1980	The savings and loan crisis of the 1980s and 1990s was the failure of 745 savings and loan (S&L) associations in the US. In an effort to take advantage of the real estate boom and high interest rates of the late 1970s and early 1980s, many S&L associations lent far more money than was prudent, and lent to risky ventures. In 1982 a large number of customers' defaults and bankruptcies ensued. The US FSLIC had insured S&L accounts. From 1986 to 1989, FSLIC closed or otherwise resolved 296 institutions with total assets of $ 125 billion. The failure of S&L associations resulted in many other bank failures.	The US government paid $ 105 billion to resolve the crisis. There was a net loss to taxpayers of approximately $ 124 billion. The concomitant slowdown in the finance industry and the real estate market may have been a contributing cause of the 1990-91 recession.
World 1987	Black Monday refers to Monday, October 19, 1987, when stock markets around the world crashed, shedding a huge value in a very short time. The crash began in Hong Kong, spread west through international time zones to Europe, hitting the United States after other markets had already declined by a significant margin. The Dow Jones Industrial Average (DJIA) dropped by 508 points to 1738.74 (22.6 per cent).	By the end of October, stock markets in Hong Kong had fallen 45.8 per cent, Australia 41.8 per cent, Spain 31 per cent, the United Kingdom 26.4 per cent, the United States 22.7 per cent, and Canada 22.5 per cent. New Zealand's market was hit especially hard, falling about 60 per cent from its 1987 peak, and taking several years to recover.
UK 1991	The first major crisis of the 1990s was the collapse of the European Exchange Rate Mechanism (ERM) in 1992. The British pound-under massive speculation from hedge funds-was withdrawn from the ERM and the Scandinavian banking system faced overnight interest rates of more than 100 per cent. In September 1992, the British government was forced to withdraw the pound from the European Exchange Rate Mechanism (ERM) after they were unable to keep the sterling above its agreed lower limit. From the beginning of the 1990s, high German interest rates set by the Bundesbank to counteract inflationary effects caused significant stress across the whole of the ERM. UK and Italy had additional difficulties as they had twin deficits,	The effect of high German interest rates and high domestic interest rates put the UK into recession and a large number of businesses failed. The housing market crashed. Other ERM countries whose currencies had breached their bands returned to the system with broadened bands.

Table 2.11: Major Financial Crises: 1873-2007 *(Contd.)*

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
	while depreciation of the US dollar in which UK's exports were priced hurt it even more.	
Nordic Countries (Finland, Norway and Sweden) 1991	The three Nordic countries, *i.e.*,. Finland, Norway and Sweden, went through a financial liberalisation process that led to a lending boom. However, they suffered the adverse consequences of higher German interest rates.	Savings banks were badly affected; the government took control of three banks that together accounted for 31 per cent of system deposits. In Finland, output loss was placed at 59.1 per cent of GDP and GDP declined by 6.2 per cent. In Sweden, output loss was placed at 30.6 per cent of GDP and GDP declined by 1.2 per cent in the crisis year.
Mexican Crisis 1994	The following factors led to the financial fragility of the Mexican economy: (1) a semi-fixed exchange rate; (2) a sizeable current-account deficit resulting to a large extent from a huge credit expansion; (3) a substantial rise in U.S. interest rates; and (4) a trigger, consisting of the political tensions accumulated during 1994. The combination of the exchange-rate regime with a rapid expansion of credit, a substantial part of which was of poor quality, led to the crisis. The surge of bad credits was due to flimsy bank capitalisation and the failure to ensure that some bankers met the ``fit and proper'' criteria to own or manage the institutions. Thus, the original sin that led to the Mexican crisis was the expropriation of commercial banks that weakened them and rendered them a fragile conduit for privatisation and credit expansion The crisis was the result of severe constraints on monetary policy that arose as the government wanted to maintain a fixed or quasi-pegged exchange rate. Hoping to avoid an economic slowdown, Mexico tried to limit the amount of monetary tightening during 1994 while maintaining its quasi-pegged exchange rate by engaging in massive sterilised intervention. Such a policy could not be sustained for long and resulted in a collapse of the exchange rate, soaring interest rates, and recession.	Of 34 commercial banks in 1994, 9 were intervened and 11 participated in the loan/ purchase recapitalisation programme. The nine intervened banks accounted for 19 per cent of financial system assets and were deemed insolvent. By 2000, 50 per cent of bank assets were held by foreign banks. The output loss amounted to 4.2 per cent of GDP and the real GDP growth declined by 6.2 per cent in the affected year.
East Asian Crisis 1997	Under the framework of a pegged exchange rate regime, Thailand had enjoyed a decade of robust growth performance, but by late-1996 pressures on the baht emerged. Pressure increased through the first half of 1997 amidst an unsustainable current account deficit, a significant appreciation of the real effective exchange rate, rising short-term foreign debt, a deteriorating fiscal balance, and increasingly visible financial sector weaknesses, including large exposure to the real estate sector, exchange rate risk and liquidity risk. Finance companies had disproportionately the largest exposure to the property sector and were the first institutions affected by the economic downturn. Following mounting exchange rate pressures and ineffective interventions to alleviate these pressures, the baht was floated on July 2, 1997. In light of weak supportive policies, the baht depreciated by 20 per cent against the U.S. dollar in July. The devaluation of the Thai baht in July 1997, the subsequent regional contagion, and the crash of the Hong Kong stock market sent shock waves to the Korean financial system. Korea's exchange rate remained broadly stable through October 1997. However, the high level of short-term debt and the low level of usable international reserves made the economy increasingly vulnerable to shifts in market sentiment. In Korea, while macroeconomic	By May 2002, the Bank of Thailand had closed 59 (of 91) financial companies that in total accounted for 13 per cent of financial system assets and 72 per cent of finance company assets. It closed 1 (out of 15) domestic bank and nationalised 4 banks. Non-performing loans peaked at 33 per cent of total loans and were reduced to 10.3 per cent of total loans in February 2002. 97.7 per cent of GDP was the estimated output loss and GDP declined by 10.5 per cent. In Korea, through May 2002, 5 banks were forced to exit the market through "purchase and assumption" and 303 financial institutions shut down (215 were credit unions); another 4 banks were nationalised. Output loss was 50.1 per cent and GDP declined by 6.9 per cent. In Malaysia, the finance company sector was restructured, and the number of finance companies was reduced from 39 to 10 through mergers. Two finance companies were taken over by the Central Bank, including the largest independent finance company. Non-performing loans peaked between 25-35 per cent of banking system assets and fell to

Table 2.11: Major Financial Crises: 1873-2007 *(Contd.)*

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
	fundamentals continued to be favourable, the growing awareness of problems in the financial sector and in industrial groups (chaebols) increasingly led to difficulties for the banks in rolling over their short-term borrowing. In Malaysia the persistent pace of credit expansion at an annual rate of nearly 30 per cent to the private sector, in particular to the property sector and for the purchase of stocks and shares, exposed the financial system to potential risks from price declines in property and other assets that occurred in 1997. In the wake of market turbulence and contagion effects in the second half of 1997, concerns among market participants about the true condition and resilience of the financial system increasingly became a central issue, highlighted by known fragilities among finance companies.	10.8 per cent by March 2002. Output loss was 50.0 per cent of GDP and GDP declined by 7.4 per cent.
Russia 1998	From mid-1997 to April 1998, the Central Bank of Russia (CBR) was relatively successful in defending the fixed exchange rate policy through a significant tightening of credit. However, the situation became increasingly untenable when significant political turmoil in Russia - starting with the President's dismissal of the government of Prime Minister Chernomyrdin and prolonged by a stalemate over the formation of a new cabinet - cast increasing doubt on the political resolve to come to grips with Russia's fiscal problems. However, well before the crisis, there was widespread recognition that the banking system had a series of weaknesses. In particular, bank reporting and bank supervision were weak, there was excessive exposure to foreign exchange rate risk, connected lending, and poor management. From mid-July, when the Duma refused to pass key fiscal measures, the situation deteriorated rapidly, leading to a unilateral restructuring of ruble-denominated treasury bills and bonds on August 17, 1998. The ruble was allowed to float three days later despite previous announcements that it would not be devalued.	A large devaluation in real effective terms (over 300 per cent in nominal terms), loss of access to international capital markets, and massive losses to the banking system ensued. Two key measures implemented were a 90-day moratorium on foreign liabilities of banks and the transfer of a large fraction of deposits from insolvent banks to Sberbank. Nearly 720 banks, or half of those operating, were deemed insolvent. These banks accounted for 4 per cent of sector assets and 32 per cent of retail deposits. The GDP declined by 5.3 per cent in the crisis year. In 1998 inflation reached 84 per cent and welfare costs grew considerably. Other countries like the Baltic States, Belarus, Kazakhstan, Moldova, Ukraine and Uzbekistan were badly affected.
Dot.com bubble 2000	The "dot-com bubble" (or the "I.T. bubble") was a speculative bubble covering roughly 1998-2001 (with a climax on March 10, 2000 with the NASDAQ peaking at 5132.52) during which stock markets in Western nations saw their equity value rise rapidly from growth in the recent Internet sector and related fields. The period was marked by the founding (and, in many cases, spectacular failure) of a group of new Internet-based companies commonly referred to as dot-coms. A combination of rapidly increasing stock prices, market confidence that the companies would turn future profits, individual speculation in stocks, and widely available venture capital created an environment in which many investors were willing to overlook traditional metrics such as price-to-earnings ratios in favour of confidence in technological advancements. Over 1999 and early 2000, the Federal Reserve increased interest rates six times, and the economy was beginning to lose speed. The dot-com bubble burst, on March 10, 2000, when the technology-heavy NASDAQ Composite index peaked at 5,048.62 (intra-day peak 5,132.52), more than double its value just a year before. The massive initial batch of sell orders processed on Monday, March 13 triggered a chain	The financial Internet bubble finally burst in the spring of 2000. The Nasdaq plunge erased 62 per cent of the Nasdaq's value, which plummeted from a high of 4,260 to a low of 1,620 12 months later. Many dot-coms ran out of capital and were acquired or liquidated; Various supporting industries, such as advertising and shipping, scaled back their operations as demand for their services fell. Telecoms loan defaults totalled $ 60 billion; there were redundancies in the thousands at investment banks; more than 300,000 jobs were destroyed in six months at telecoms equipment manufacturers and as many as 200,000 jobs in components suppliers and associated industries. The stock market value of all telecom operators and manufacturers fell by $ 3800 billion since its peak of $ 6300 billion in March 2000. In comparison, the combined cost of the crisis of the late 1990s was only $ 813 billion.

Table 2.11: Major Financial Crises: 1873-2007 *(Concld.)*

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
	reaction of selling that fed on itself as investors, funds, and institutions liquidated positions. In just six days the NASDAQ lost nearly 9 per cent, falling from roughly 5,050 on March 10 to 4,580 on March 15.	
Argentina 2001	In March 2001, a bank run started due to increasing doubts about the sustainability of the currency board, strong opposition from the public to the new fiscal austerity package sent to the Congress, the resignation of president of the Central Bank, and the amendment to the convertibility law (change in parity from being pegged to the dollar to being pegged to a basket composed of the US dollar and Euro). During the second half of 2001, bank runs intensified. On December 3, 2001, as several banks were on the verge of collapse, partial withdrawal restrictions (corralito) were imposed on transactional accounts while fixed-term deposits (CDs) were reprogrammed (corralon) in order to stop outflows from banks. On February 4, 2002, bank assets were asymmetrically pacified, adversely affecting the solvency of the banking system.	In 2002, two voluntary swaps of deposits for government bonds were offered but received little interest from the public. In December 2002, the corralito was lifted. By August 2003, one bank had been closed, three banks nationalised, and many others had reduced their staff and branches. The output loss was 42.7 per cent of GDP and real GDP declined by 10.9 per cent in the crisis year.

Causes of Financial Crises

2.80 In the literature, two broad approaches have been used to describe the causes of the crises. The first view, expounded by Kindleberger (1978), is that crises occur spontaneously as the result of mob psychology or panic. If everyone expects a crisis and acts as if one is about to occur, then the crisis becomes a self-fulfilling prophecy and *vice versa*. The second view asserts that crises are an intrinsic part of the business cycle and result from shocks to economic fundamentals (Mitchell, 1941). When the economy goes into a recession or depression, asset returns are expected to fall, borrowers have difficulty in repaying loans and depositors, anticipating an increase in defaults or non-performing loans, try to protect their wealth by withdrawing bank deposits. Banks are caught between the illiquidity of their assets and their relatively liquid liabilities and may become insolvent. This results in panic though the actual cause is different. Empirical evidence on the cause of crises is mixed. While some support the panic view (Friedman and Schwartz, 1963), many counter it and provide a wider range of evidence that crises are fundamental based rather than panic based. (Calomiris and Gorton, 1991; Calomiris and Mason, 2003a). In the literature, several explanations for the causes of crises are given. In this section, some of these debates are captured under the following heads:

Financial and Panic Dimensions of Crises

2.81 A crisis normally has two fundamental dimensions – one is financial and the other is panic, which is often the trigger. First, shocks to bank liquidity, payments systems, and solvency are obvious characteristics of financial crises. Second, a panic strike – a sudden and dramatic loss of depositor and investor confidence – is often the precipitating event. When both financial and panic dimensions collide, they set off a chain reaction and a country begins to spiral downward, as panic and loss of confidence increase problems in the banking system as well as the real economy at the microeconomic level (Barton *et al.*, 2003). Contagion between countries occurs as well. Financial crises are largely attributed to rapid reversals in international capital flows and prompted chiefly by changes in international investment conditions. Flow reversals are likely to trigger sudden capital account adjustments and, subsequently, currency

and banking crises (Eichengreen and Rose, 1998; Frankel and Rose, 1996).

Imbalances in Domestic Economy

2.82 An analysis of the history of financial crises indicates that five elements contribute to a crisis: the real economy; the financial sector; the macro-economy; international money and capital flows; and asset pricing. When these elements are in balance, the economy generally runs well but when any of these elements run out of balance and affect other elements, the conditions become ripe for a financial crisis (Barton *et al*, 2003).

(i) Imbalances can be caused by real sector under-performance, leading to a gradual erosion of the value of assets over time when companies fail to earn adequate return above their cost of capital.

(ii) Imbalances can be caused by much needed but poorly executed market liberalisation, where aggressive reforms are introduced that outpace the economy's ability to absorb them.

(iii) Unsustainable imbalances can also build up in the financial systems of countries with the uneven opening up of the market to foreign capital flows or deregulation in the financial sector. This was the case in most of the emerging market crises during the 1980s and 1990s and most notably the East Asian crisis.

(iv) Imbalances can also arise as a result of unsustainable macroeconomic policies such as untenable fiscal deficits, overvalued currencies and too rapid credit growth in the economy fuelled either by foreign funding flows or unsustainable monetary policies.

2.83 Most of the debt crises can be attributed to these factors. All these factors acted as precursors to the Latin American debt crisis. The pattern over time starts with trouble in the real and banking sectors and then builds until either external shocks (such as currency attacks) or internal shocks (such as bank runs by depositors) finally trigger a full-blown crisis.

Crisis Led by Financial and Technical Innovation

2.84 Historians, notably Charles Kindleberger, have pointed out that crises often follow soon after major financial or technical innovations that present investors with new types of financial opportunities, which he called "displacements" of investors' expectations. Unfamiliarity with technical and financial innovations may help explain how investors sometimes grossly overestimate asset values. Also, if the first investors in a new class of assets (for example, stock in dot-com companies) profit from rising asset values then, as other investors learn about the innovation, more people may follow their example, driving the price even higher as they rush to buy in hopes of similar profits. If such "herd behaviour" or "climbing onto the bandwagon" causes prices to spiral far above the true value of the assets, a crash becomes inevitable. If for any reason the price briefly falls so that investors realise that further gains are not assured, the spiral may go into reverse, with price decreases causing a rush of sales, reinforcing the decrease in prices. Early examples include the South Sea Bubble[6] and Mississippi Bubble of 1720, which occurred when the notion of investment in shares of company stock was itself new and unfamiliar, and the crash of 1929, which followed the introduction of new electrical and transportation technologies. More recently, many financial crises followed changes in the investment environment brought about by financial deregulation; the crash of the dot-com bubble in 2001 began with "irrational exuberance" about Internet technology.

Adverse Selection and Moral Hazard in Financial Markets

2.85 Mishkin (1991b) examined episodes of financial crisis from 1857 to 1987. According to this

6 Incidentally, Isaac Newton who lost heavily in South Sea Bubble is reported to have said that he could calculate the movement of heavenly bodies but not the madness of the people.

analysis, five factors in the economic environment can lead to substantial worsening of adverse selection and moral hazard in financial markets, which then cause a financial crisis and shift the economy from equilibrium with high output to one with low output because the financial system is unable to channel funds to those with the best investment opportunities. The factors causing financial crises are increase in interest rates, stock market declines, increase in uncertainty, bank panics, and unanticipated declines in aggregate price level as elaborated below :

(i) Increases in interest rates are generally the precursors of crises as individuals and firms who are willing to pay the highest interest rates are those with the riskiest investment projects. Generally, market interest rates experience a sudden spike driven up by increased demand for credit or a decline in the money supply. In this scenario, those with bad credit risks are still willing to borrow while those having good credit risks lose their appetite to borrow. The resultant adverse selection possibly leads to a steep decline in lending as lenders are not willing to extend credit which, in turn, leads to a substantial decline in investment and aggregate economic activity.

(ii) As emphasised by Greenwald and Stiglitz (1988), Bernanke and Gertler (1990), and Calomiris and Hubbard (1989), a sharp decline in the stock market can increase adverse selection and moral hazard problems in financial markets because it leads to a large decline in the market value of the firms' net worth. This results in decline in lending, which in turn causes investment and aggregate output to decline. The Great Depression of the 1930s was preceded by a sharp decline in the stock market in October 1929.

(iii) A dramatic increase in uncertainty in financial markets, due perhaps to the failure of a prominent financial or non-financial institution, a recession, or a stock market crash, makes it harder for lenders to screen good from bad credit risks. It increases the severity of adverse selection problems in credit markets, while the decline in net worth stemming from the stock market crash also results in increased moral hazard problems. This makes them less willing to lend, leading to a decline in lending, investment and aggregate economic activity.

(iv) Bank panics also result in financial crises as banks are important financial intermediaries. A financial crisis which results in a bank panic and the simultaneous failure of many banks, reduces the amount of financial intermediation undertaken by banks, and will thus lead to a decline in investment and aggregate economic activity (Bernanke, 1983).

(v) Finally, an unanticipated decline in price levels causes a substantial decline in real net worth and an increase in adverse selection and moral hazard problems facing lenders. The resulting increase in adverse selection and agency problems causes a decline in investment and economic activity.

2.86 Most financial crises in the US have begun with a sharp rise in interest rates, a stock market crash and an increase in uncertainty resulting from a failure of major financial or non-financial firms (for example, the Ohio Life Insurance & Trust Co. in 1857, the Northern Pacific Railroad and Jay Cooke and Company in 1873, Grant & Ward in 1884, the National Cordage Company in 1893, the Knickerbocker Trust Company in 1907, and the Bank of United States in 1930). Based on this analysis, it can be concluded that stock prices decline and the spread between interest rates for low- and high-quality borrowers rises in the run-up to the panic. Second, most of the panics are preceded by substantial increases in interest rates. Third, most panics follow a major failure of a financial institution. This failure is often the result of financial difficulties experienced by a non-financial corporation. Financial panics generally occur after the onset of a recession and finally the rise in the interest rate spread associated with panic is soon followed by a decline. However, in several

cases, most notably after the 1873 panic, the 1907 panic, and the Great Depression, the interest rate spread rises again if there is deflation and a severe recession.

Free Capital Mobility and Banking Crisis

2.87 The economic literature has also found a striking correlation between freer capital mobility and the incidence of banking crises. Historically, periods of high international capital mobility have been followed by international banking crises. Another striking correlation has been between inflation and default. Recently, moral hazard-driven investment, which leads to an excessive build-up of external debt and collapse, bank runs and balance sheet implications of currency depreciation have emerged as major causes of financial crisis. In addition to these three explanations for currency crises, there are contagion effects. Moreover, devaluation by one country could lead its trading partners to devalue in order to avoid a loss of competitiveness. Other channels such as financial linkages can also serve to transmit contagion effects (Calvo and Reinhart, 1996; Eichengreen *et al.*, 1995). Financial crises have always had an international dimension as Morgenstern (1959), Kindleberger (1978) and Bordo (1986) have shown. Contagion spreads quickly through asset markets, through international banking and through monetary standards. Stock market crashes and banking panics have often occurred in many countries within a few months of the original shock.

Monetarist Dimension

2.88 The monetarist literature adds an additional channel for how financial crises that involve bank panics could lead to a severe downturn in the aggregate economy. Friedman and Schwartz (1963) document how bank panics in the United States led to a sharp contraction in the money supply as a result of depositors' movement out of deposits into currency and banks' movement out of loans into reserves. These contractions lead to substantial declines in economic activity and the price level. Most of the crises during the period 1876 to 1970 can be attributed to the reasons outlined above, including the crises of 1876, 1907 and the Great Depression.

First, Second and Third Generation Models

2.89 The first generation of currency crisis models, pioneered by Krugman (1979), explained the collapse of exchange rate regimes on the grounds that weak fundamentals lead foreign investors to pull resources out of the country, and as a result, the depletion of foreign reserves needed to sustain the currency leads to the collapse of the exchange rate regime. The first generation models attributed a central role to fiscal imbalances as a fundamental determinant of crises. But this first generation view could not explain the exchange rate crisis faced by the UK in 1991 and the East Asian crisis as in these crises the crucial fiscal disequilibria were absent.

2.90 The crises in Mexico, Asia, Russia and Brazil have underscored that a satisfactory explanation for financial crises in emerging markets remained elusive. The second generation models emphasised the possibility of self-fulfilling speculative attacks and multiple equilibria. Currency crises have sometimes occurred even though central banks had more than enough resources to prevent them (Obstfeld, 1994). Central banks may decide to abandon an exchange rate peg when the unemployment cost of defending it becomes too large. This new perspective implied that crises could be driven by self-fulfilling expectations, since the costs of defending the peg will be maintained. An example is the events in Europe in the early 1990s which could be largely explained by the second generation of models which suggest that currency crises may occur despite sound fundamentals, as in the case of self-fulfilling expectations (Obstfeld, 1996), speculative attacks, and changes in market sentiment (Flood and Marion, 1996; Frankel and Rose, 1996). In this case, *seigniorage* was not an issue; the governments involved retained access to capital markets throughout and monetary policy was dictated by macroeconomic policy

considerations and not budget needs. It was a matter of policy choice with macroeconomic tradeoffs and decisions. The Exchange Rate Mechanism (ERM) crisis was caused by a conflict between the austerity needed to defend a fixed exchange rate and the expansion needed to remove high unemployment, leading to Britain's forced exit from the ERM in 1992 (Eichengreen and Wyplosz, 1993).

2.91 The second generation crisis models emphasised not the mechanical exhaustion of foreign exchange but the problems of macroeconomic policy. In this case a currency crisis can develop because doubts about the government's willingness to defend the parity force it to raise interest rates, and the need to keep interest rates high, in turn, raises the cost of defending the parity to a level that the government finds unacceptable. Obstfeld argued that crises involve a strong element of self-fulfilling prophecy and exchange regimes that could have survived indefinitely nonetheless collapse if subjected to an essentially random speculative attack. But this explanation of mounting unemployment and domestic recession, while appropriate for the ERM 1992 crisis, was at odds with the facts in Mexico in 1994 and East Asia in 1997 (Chang and Velasco, 2001). During the East Asian crisis, there were implicit government guarantees which fuelled moral hazard-driven excess investment. Second, the government's limited willingness or ability to honour these guarantees implied that they may not be fully credible. In the initial build-up to the crisis, the government was able to honour these guarantees but with the level of debt rising, there were self-fulfilling expectations that the government would renege, resulting in a sudden collapse with a sharp fall in output and capital stock. This was the third generation currency crisis in which there was large currency depreciation which created havoc with balance sheets and the economy plunged into crisis equilibrium. The third generation model stressed how financial fragility can lead to a currency crisis.

Common Elements in Crises

2.92 There are, however, some elements that are common to the financial crises in emerging markets witnessed in recent years. Elements in common include a dramatic swing in the current account, a large real depreciation and a significant decline in real output. The pattern in all these crises and a number of historical crises appears to involve three broad elements.

2.93 First, after a period of substantial capital inflows, investors (both domestic and foreign) decided to reduce their stock of assets in the affected country in response to a change in its fundamentals. This could be attributed to reasons such as concerns about the viability of the exchange rate regime, as in most of these cases, concern about large fiscal deficits, as in Russia and Brazil, concern about large current account deficits, as in Thailand and Brazil; and the increasing salience of long-standing financial sector weaknesses, arising from some combination of insufficient capitalisation and supervision of banks and excessive leverage and guarantee (Summers, 2000).

2.94 Second, after this process continued for some time in these emerging market economies, investors shifted their focus from evaluating the situation in the country to evaluating the behaviour of other investors. The rate of withdrawal increased as a bank-run psychology took hold.

2.95 Third, the withdrawal of capital and the associated sharp swing in the exchange rate and reduced access to capital exacerbated fundamental weaknesses, in turn exacerbating the response of the financial market. The real depreciation of exchange rate reduced real incomes and spending. Extrapolative expectations regarding a falling exchange rate increased pressure for capital flight. And, most importantly, the increased domestic value of foreign currency liabilities and reduced credit worthiness of domestic borrowers further degraded an already ailing financial system, in turn causing further reductions in lending and worsening of fundamentals.

2.96 In nearly all recent crises, serious banking and financial sector weaknesses played an important role. Fixed exchange rates without the concomitant monetary policy commitments were present as antecedents to the crisis in all cases. Traditional macroeconomic fundamentals in the form of overly inflationary monetary policies, large fiscal deficits or even large current account deficits were present in all episodes. National balance sheet weaknesses, including large short-term liabilities either of the government or the private sector were important elements in each of the crises.

2.97 In short, among the many causes of financial crises the important ones are: a combination of unsustainable macroeconomic policies (including large current account deficits and unsustainable public debt), large capital inflows and balance sheet fragilities, and excessive credit booms, combined with policy paralysis due to a variety of political and economic constraints. In some financial crises, currency and maturity mismatches were a salient feature, while in others off-balance sheet operations of the banking sector are prominent. An analysis of the causes of the financial crises reveals that though the trigger points differ, some common threads run through the financial upheavals: first, an excessive use of credit; second, a discernible lowering of credit standards; and third, heavy reliance on leverage. Institutional weaknesses typically aggravate the crisis and complicate crisis resolution. Bankruptcy and restructuring frameworks are often deficient and disclosure and accounting rules for financial institutions and corporations are also weak. Many financial crises, especially those in countries with fixed exchange rates, turn out to be twin crises with currency depreciation exacerbating banking sector problems through foreign currency exposures of borrowers or banks themselves (Laeven and Valencia, 2008).

Effects of Crisis

2.98 Financial crises can be damaging and contagious and have often been followed by the economies experiencing deep recessions and sharp current account reversals. Most macroeconomic and financial variables exhibited procyclical behaviour during recessions, except for two key policy-related variables – short-term interest rates and fiscal expenditures – which often behaved countercyclical during recessions. An analysis of the impact of financial crises which occurred in the past 150 years reveals that there are several channels through which the financial crisis, the associated increase in risk aversion and the ensuing recession have affected the macro economy. Financial and macroeconomic variables closely interacted through wealth and substitution effects, and through the impact that they had on the balance sheets of firms and households (Blanchard and Fischer, 1989; Obstfeld and Rogoff, 1999).

2.99 It was found that the recessions were often characterised by sharp declines in investment, industrial production, imports, and housing and equity prices, modest declines in consumption and exports, and some decrease in employment rates. After any financial crisis, most countries generally experienced an increase in both corporate and sovereign bond rates, indicating an increase in risk premiums. The resulting increase in the cost of borrowing affected investment activity. There was a general decrease in the availability of credit. Liquidity constraints affected not only the price of credit, but also the quantity available as financial institutions rationed credit, regardless of price. Banks became wary of extending loans. Moreover, the real effects of the economic slowdown and lower demand affected revenue cash flows which had knock-on effects for debt servicing capacity and overall profitability. Generally, countries experiencing financial crises witnessed unforeseen exchange rate movements. These movements also had an impact on the balance sheet and debt servicing capacity of the economic entities.

2.100 Some financial crises have had little effect outside the financial sector, like the Wall Street crash of 1987, but other crises have had a substantial adverse impact on growth in the rest of

the economy. Over the past 120 years, on average, crises have been followed by economic downturns lasting from two to three years and costing 5 to 10 per cent of GDP (Bordo *et al.*, 2001). Twin crises (both banking and currency) generally resulted in large output losses. Recessions that coincided with crises turned out to be more severe than recessions that did not coincide with crises. More often than not, the aftermath of severe financial crises shared three characteristics. First, asset market collapses were deep and prolonged. Real housing price declines averaged 35 per cent stretched out over six years, while equity price collapses averaged 55 per cent over a downturn of about three and a half years. Second, the aftermath of banking crises resulted in profound declines in output and employment. The unemployment rate rose by an average of 7 percentage points over the down phase of the cycle, which on an average lasted more than four years. Output fell (from peak to trough) by an average of over 9 per cent. The duration of the downturn, averaging roughly two years, was considerably shorter than for unemployment. Third, the real value of government debt rose sharply, rising by an average of 86 per cent in the major post–World War II episodes (Reinhart and Rogoff, 2008). The major drivers of debt increases were the inevitable collapse in tax revenues that governments suffered in the wake of deep and prolonged output contractions, as well as often ambitious countercyclical fiscal policies aimed at mitigating the downturn.

2.101 In the aftermath of a financial crisis, commercial banks, the most common source of credit, generally imposed more stringent credit standards and also increased interest rate spreads and fees. In addition, deteriorating financial positions in both the business and the household sectors reduced the creditworthiness of business enterprises and thereby constrained their access to credit. A financial crisis implies poor functioning of financial markets. The inadequate performance of financial markets led to the limited entry of new firms, low production in the firms, and greater financial constraints for business enterprises (Anna and Robert, 2005). According to Milesi-Ferreti and Razin (1998), currency crises and the resultant currency crashes in emerging market economies have normally led to sharp declines in output. Bank runs have been a common feature of currency crises, with 62 per cent of crises experiencing momentary sharp reductions in total deposits. The result of a banking crisis associated with a currency crisis was large-scale capital flight, forcing official intervention to support the banking system and the imposition of capital controls to prevent the collapse of the currency. Severe bank runs have often been system-wide; however, a flight-to-quality effect within the system from unsound banks to sound banks has generally been witnessed. During the Indonesian crisis in 1997, private national banks lost 35 trillion rupiah in deposits between October and December 1997, while state-owned banks and foreign and joint venture banks gained 12 and 2 trillion rupiah, respectively (Batunanggar, 2002).

2.102 A financial crisis and the resultant recession quite often led to a drop in imports. The weakening or collapse of the financial system, in particular the banking system, weakens the country's export capability, affecting overall trade. During a currency crisis, the exchange rate scenario also becomes more uncertain. Due to sharp currency depreciation, consumers suffer wealth losses due to money holdings, forcing consumers to decrease their consumption. Furthermore, financial crises (including currency crises, banking crises or both) have also affected trade, besides the exchange rate. Reinhart (1999) pointed out that financial crises usually caused capital account reversal ("sudden stop") and triggered an economic recession. Mendoza (2001) showed that in an economy with imperfect credit markets these sudden stops could be an equilibrium outcome. The economic recession reduced not only domestic demand, but also total output. Several Latin American countries (*e.g.*, Mexico, Brazil and Venezuela) stopped repaying their foreign debt during debt crises in the 1980s.

2.103 In the early models, crises were thought of as monetary events with few real consequences.

However, an analysis of the history of financial crises reveals that most of the recessions have been caused for the most part by financial crises. One important example is the Great Depression, which was preceded in many countries by bank runs and stock market crashes. The most severe panic episodes were in 1857, 1873, 1893, 1907 and 1930-33, which resulted in the most severe economic contractions in 1857-58, 1873-79, 1893-94, 1907-08 and 1929-33.

2.104 To sum up, financial crises have been a part of the economic landscape since the beginning. The definition and categorisation of financial crises has evolved with time. The crisis chronologies suggest that financial crises have been chronic problems not only in the present era but in earlier periods as well. An analysis of the history of financial crises indicates that imbalance in the real economy combined with weakness in the financial sector, ebbs and flows in international money and capital, and asset mis-pricing generally contribute to a crisis. Financial crises have generally been followed by severe economic contractions.

III. HOW THE RECENT CRISIS DIFFERS FROM EARLIER CRISES

2.105 The recent global financial crisis that had turned into an economic crisis is the first major financial crisis of the 21st century and it is essential to understand how it differs from the crises of the 20th century. While there is still considerable debate on the appropriate policies to be adopted to set the world house in order, there are now ample indications and an almost unanimous view that the recent global crisis is the worst since the Great Depression of the 1930s in terms of geographical spread and intensity. With all the advanced economies in a synchronised recession, global GDP is estimated to have contracted for the first time since the Second World War. Though the recent crisis is being compared with the Great Depression, this crisis is different because it is the first truly global crisis. Amongst the crises that have originated in the United States or elsewhere, this is the first crisis that has affected the whole world which even the Great Depression did not (Table 2.12). The United States and Europe, which had become dependent on the financial sector as their engine of growth, were at the epicentre of the crisis. Asia got affected because of the sharp decline in demand for their exports from the developed world, Eastern Europe was hit by the reversal of capital flows, and African and South American economies suffered through the huge drop in commodity prices and deterioration in their terms of trade. India was impacted both during Great Depression as well as during the recent financial crisis. However, India being a British colony, the nature of impact during the Great Depression was more complex (Box II.6).

2.106 Cross-crisis comparisons are usually based on the duration and depth of the crises (Bordo *et al.,* 2001; Cecchetti *et al.,* 2009). Duration is defined as the number of quarters it takes for output to recover to its pre-crisis level. Crisis depth is defined as the peak-to-trough percentage decline in GDP; in addition, crisis depth is proxied by the cumulative loss in GDP over the length of the crisis, taken as a fraction of its peak (pre-crisis) level. Estimates suggest that while the recent crisis is comparable with some of the previous crises in terms of crisis duration, the cost of the recent crisis in terms of cumulative GDP loss has undoubtedly been more severe than that of the Great Depression

Table 2.12: Global Crises Originating in the USA

	Affected Countries	
	Advanced	Developing
1	2	3
New York Panic of October 1907	US, Denmark, France, Italy, Japan, Sweden	Mexico
Great Depression of 1929	US, France, Italy, Belgium, Finland, Germany, Greece, Portugal, Spain, Sweden	Brazil, India, Mexico, Argentina, China
Global financial crisis of 2007	US, UK, Euro zone, Japan	Asia, Africa, Latin America and Eastern Europe

Box II.6
The Great Depression and India

The Great Depression of 1929 had a very severe impact on India, which was then a colony of Britain. India was one of the earliest countries to have been hit by the Great Depression. The Depression started in India around the fourth quarter of 1929, just one quarter after the US. India was impacted through both direct and indirect channels. First, the US-originated Great Depression impacted India directly as the Indian economy was more open to trade and financial flows. Estimates indicate that pre-independent India's share in world trade was about 10 per cent unlike around 1 per cent in recent times. Second, India being a British colony was also impacted indirectly as the United Kingdom was hit by the Depression. The fact that the Indian economy functioned under the colonial aegis further added complexity to the whole issue. The agricultural sector and the railways were the most affected.

The international financial crisis combined with detrimental policies adopted by the Government of India resulted in the soaring prices of commodities. Farmers who were cultivating food crops had earlier moved over to cash crop cultivation in large numbers to meet the demands of the textile mills in the United Kingdom. Due to the high prices, farmers were unable to sell their products in India; nor could they export the commodities to the United Kingdom which adopted a protective policy prohibiting imports from India. Unlike food grains like rice and wheat, cash crops could not be used for private consumption. As there was little sale of indigenous manufactures and limited exports, commodities accumulated and the flow of cash was restricted.

During the period 1929–1937, exports and imports fell drastically, crippling seaborne international trade. Due to a decline in exports and imports, and, thereby, in the transportation of goods, railway revenues decreased exponentially. All the expenses for the years 1930–31 and 1931–32 were paid from the Railway Reserve Fund.

In British India, apart from existing imports and exports, there was also a particular amount of money which colonial India contributed towards administration, maintenance of the army, war expenses, pensions to retired officers and other expenses accrued by Britain towards maintenance of her colony called 'Home charges'. Due to the drastic collapse of international trade and the very little revenues generated, India had to face a severe balance of payments crisis. India could only pay for her invisible imports through home charges by selling off her gold reserves. From 1931–32 to 1934–35, India exported Rs. 2,330 million worth of gold.

Like all agricultural countries, India also experienced deterioration in terms of trade. Export prices declined faster than import prices. Most agricultural countries such as Australia, New Zealand, Brazil and Denmark reacted by depreciating their exchange rates. However, the British Raj did not opt for this course of action. Another recommended policy action during this period could have been an increase in government expenditure. But the colonial Government did just the opposite, making the incidence of the Great Depression even more severe (Manikumar, 2003).

The policies of the Government of India during the Great Depression resulted in widespread protests all over the country. High prices along with the stringent taxes prevalent in British India increased the extent of discontent amongst farmers. The Salt Satyagraha of 1930 was one of the measures undertaken as a response to heavy taxation during the Great Depression. Furthermore, as the national struggle intensified, the Government of India conceded some of the economic demands of the nationalists, including the establishment of a central bank. Accordingly, the Reserve Bank of India Act was passed in 1934 and a central bank came into being on April 1, 1935 with Sir Osborne Smith as its first Governor.

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or any other crisis (Table 2.13). This is despite unprecedented monetary and fiscal measures and unprecedented international co-ordination.

Global Imbalances in the Past

2.107 While global imbalances have existed in the past, the unique feature of the recent situation is that the emerging economies have been the creditor countries financing the deficit in advanced countries. In the past, the reverse scenario was observed when capital flowed from rich to poor nations. For example, during the gold standard era (until 1914), a large flow of capital took place from industrial countries (mostly the United Kingdom and

Table 2.13: Duration and Depth of Financial Crises

Period	Average Duration of Crisis in Years	Average Crisis Depth (in terms of cumulative GDP loss relative to peak in per cent)
1	2	3
1880-1913 (includes Baring crisis of 1890, New York panic of 1907)	2.4	9.8
1919-1939 (includes period of Great Depression)	2.4	13.4
1945-1971	1.8	5.2
1973-1997 (includes Latin American crisis of 1980s, ERM crisis of 1992 and Asian and Russian crisis of 1997-98)	2.5-2.6	7.8-8.3
2007-08 (Global Recession of 2008)	2.5	20

Source: Estimates from Bordo *et al*., 2001; Cecchetti *et al.,* 2009.

France) to the (then) emerging markets, such as Canada or Australia with significant stability in exchange rates and no evidence of disorderly unwinding (Table 2.14). A similar nature of capital flow was observed during the 1990s when the advanced countries had invested in the EMEs in Asia, Latin America and Russia. Many of these EMEs, however, faced severe financial debt crises on account of the composition of their debt, marking a disorderly unwinding though the creditors did not suffer much. In addition, there were episodes where capital moved within emerging markets or among advanced economies. In the 1970s, a major terms of trade shock occurred in the world economy, implying a net transfer of resources from oil-importing countries (mostly in Latin America) to oil-exporting countries of the Gulf. The unwinding, however, was not smooth for either. On the contrary, the widening of the US deficits in the 1980s financed by surpluses in Japan, Germany and Netherlands saw a relatively orderly unwinding of the imbalances with the gradual depreciation of the US dollar (Bracke *et al.*, 2008).

Table 2.14: Previous Episodes of Global Imbalances

Era	Region		Orderly Unwinding for	
	Creditor	Debtor	Creditors	Debtors
1	2	3	4	5
Gold Standard (<1914)	Advanced	Emerging	Yes	Yes
1970s	Emerging	Emerging	No	No
1980s	Advanced	Advanced	Some	Yes
1990s	Advanced	Emerging	Yes	No
2000s	Emerging	Advanced	?	?

Source: ECB Occasional Paper Series, January 2008.

2.108 No country in the world today – neither the advanced nor the emerging market economies – has been spared from the consequences, although the impact has varied across nations. The recent crisis, in fact, can be considered either as an 'advanced country' crisis, an 'emerging market economies' crisis, a truly 'global crisis' or combination of all. Hence, studies have mostly attempted to compare the recent crisis with previous advanced country crises, EME crises of the recent past, and the Great Depression of the 1930s.

Recent Crisis vs. Advanced Country Crises

2.109 Each financial crisis has certain distinctive characteristics. Yet a comparison reveals that most of them at times exhibit remarkable similarities. The majority of historical crises are preceded by financial liberalisation (Kaminsky and Reinhart, 1999). While financial liberalisation has been an inherent feature of the US economy for years, the run-up to the recent crisis has generally been marked by several financial excesses that went beyond the regulatory purview. In addition, the current crisis exhibits several similarities to the previous advanced country crises with regard to the behaviour of asset prices, credit expansion, debt accumulation and current account deficits, though the extent has varied.

2.110 Reinhart and Rogoff (2008) compared the recent US sub-prime crisis with 18 other bank-centred advanced country financial crises from the post-War period. These crisis episodes include the Big Five Crises of Spain (1978-79), Norway (1987-88), Finland (1990-93), Sweden (1990-93) and Japan (1992-93) that are protracted large-scale financial crises associated with major declines in economic performance (recessions) for an extended period. The list also includes 13 other

banking and financial crises in advanced countries that were relatively milder with limited impact; these include Australia (1989), Canada (1983), Denmark (1987), France (Credit Lyonnaise bail-out in 1994), Germany (1977), Greece (1991), Iceland (1985), Italy (1990), New Zealand (1987), the United Kingdom (1973, 1991, Barings Investment Bank crisis of 1995), and the United States (Savings and Loan crisis of 1984).

2.111 As regards the impact on real per capita GDP, the average growth decline has been around 5 percentage points for the Big Five crises and about 2-3 percentage points for the other banking crises of the advanced countries. The cumulative output losses have varied amongst countries. The cumulative loss of GDP for the recent crisis is generally estimated to be greater than in some of the advanced country crises[7], though in terms of duration the recent crisis is expected to be milder than other advanced country crisis (Table 2.15).

2.112 As regards the initial conditions among advanced economies, the imbalances in the build-up to most of these crises were minor when compared with the recent crisis. The average current account balances for banking crises in advanced countries rarely exceeded 3 per cent of

Table 2.15: Systemic Crises: Broad Indicators

(in per cent)

Crisis/Countries	Starting Date	Average Duration of the Crisis (No. of quarters)	Average Crisis Depth*	Cumulative Loss relative to Peak	Minimum Real GDP Growth Rate	Gross Fiscal Cost (as % of GDP)	Share of NPL at Peak
1	2	3	4	5	6	7	8
Latin American Crisis (1980s)							
Argentina	Mar 1980	28	14.1	-44.5	-5.7	55.1	9
Chile	November 1981	21	20.2	-60.1	-13.6	42.9	35.6
Columbia	July 1982	0	0.0	0.0	0.9	5	4.1
Latin American Crisis (1990s)							
Argentina	January 1995	7	6.1	-5.2	-2.8	2	17
Brazil	December 1994	7	2.5	-1.9	2.1	13.2	16
Mexico	December 1994	9	10.4	-10.7	-6.2	19.3	18.9
ERM Crisis							
Estonia	November 1992	33	27.3	-116.8	-21.6	1.9	7
Finland	September 1991	25	11.8	-40.7	-6.2	12.8	13
Norway	October 1991	3	1.5	-0.6	2.8	2.7	16.4
Sweden	September 1991	16	5.8	-11.0	-1.2	3.6	13
Banking Crisis of Spain	1977	20	–	–	0.2	5.6	-
Japanese Crisis of 1990s	November 1997	15	3.4	-6.7	-2	14	35
United States Savings and Loan Crisis	1988	–	–	–	-0.2	3.7	4.1
Asian Crisis							
Indonesia	November 1997	21	18.1	-50.7	-13.1	56.8	32.5
Thailand	July 1997	23	14.9	-33.2	-10.5	43.8	33
Malaysia	July 1997	9	11.2	-13.8	-7.4	16.4	30
Korea	August 1997	7	9.2	-9.3	-6.9	31.2	35
Philippines	July 1997	6	2.7	-2.2	-0.6	13.2	20
Current Global Crisis							
United States	August 2007	10	5	-20	-2.7	–	4.8
United Kingdom	August 2007	10	5	-20	-4.4	–	–

* : Peak-to-trough decline in GDP in per cent.

Source: Ceccheti *et al* (2009), Laeven and Valencia (2008) and IMF database.

[7] The exceptions are Estonia and Finland in early 1990s.

GDP on the eve of crises, while US deficits reached over 6 per cent of GDP prior to the recent crisis (Table 2.16, also refer to Table 2.3). Most advanced country banking crises were associated with significant increases in housing prices in the period prior to the crisis though the increase has been much sharper in the United States during 2006 than in other episodes. Further, the public debt as a share of GDP has risen much more slowly in the United States in the years preceding the crisis than it did either in the run-up to the Big Five crises/ ERM or other advanced country banking crisis. This is essentially because unlike other episodes, the recent crisis has seen a substantial build-up of private US debt.

2.113 Another similarity is the mechanism of recycling petro dollars during the 1970s *vis-à-vis* the 2000s. During the 1970s, the US banking system stood as an intermediary between oil-exporting surplus countries and emerging market borrowers in Latin America and elsewhere that ultimately culminated in the 1980s' debt crises of the EMEs. In the recent crisis, a large volume of petro-dollars was again flowing into the United States; however, with many emerging markets running current account surpluses a large chunk of these petro-dollars got recycled to a developing economy that existed within the United States in the form of a "developing sub-prime mortgage economy" (Reinhart *et al.*, 2008). Thus, there were several qualitative, if not quantitative, parallels with the formative years of the previous post-war financial crises in industrialised countries.

Table 2.16: Cross-Country Crises: Initial Conditions

	Starting Date (t)	Currency Crisis (Y/N) (t-1, t+1)	Fiscal Balance/ GDP at t-1	Public Sector Debt/ GDP at t-1 (per cent)	Inflation at t-1	Net Foreign Assets / M2 at t-1	Current Account/ GDP at t-1	Significant bank runs (Y/N)	Credit Boom (Y/N)
1	2	3	4	5	6	7	8	9	10
Latin American Crisis (1980s)									
Argentina	March 1980	Y	-2.7	10.2	139.7	34.2	0.6	Y	Y
Chile	Nov 1981	Y	5.0	0.0	31.2	42.2	-6.4	Y	Y
Columbia	July 1982	N	-2.3	–	26.3	46.0	-4.1	N	N
Latin American Crisis (1990s)									
Argentina	Jan 1995	N	0.0	33.7	3.9	25.9	-2.8	Y	Y
Brazil	Dec 1994	Y	0.3	23.0	2477.2	22.7	-0.1	Y	N
Mexico	Dec 1994	Y	-2.5	27.3	8.0	18.1	-5.8	Y	Y
ERM Crisis									
Estonia	Nov 1992	Y	5.3	–	–	57.6	59.7	Y	–
Finland	Sept 1991	N	5.6	14.0	4.9	12.7	-4.9	N	N
Norway	Oct 1991	N	2.5	28.9	4.4	10.3	2.5	N	N
Sweden	Sept 1991	Y	3.4	–	10.9	4.8	-2.6	Y	–
Japanese Crisis of 1990s	Nov-1997	N	-5.1	100.5	0.6	1.6	1.4	N	N
Asian Crisis									
Indonesia	Nov 1997	Y	-1.1	26.4	6.0	21.6	-2.9	Y	N
Thailand	July 1997	N	2.4	14.2	4.8	25.1	-7.9	N	Y
Malaysia	July 1997	Y	2.0	35.2	3.3	23.2	-4.4	Y	N
Korea	August 1997	Y	0.2	8.8	4.9	15.6	-4.1	Y	N
Philippines	July 1997	Y	-0.2	–	7.1	19.0	-0.2	N	Y
Current Global Crisis									
United States	Aug-2007	N	-2.6	60.1	2.6	1.0	-6.2	N	N
UK	Aug-2007	N	-2.6	43.0	2.8	1.4	-3.6	N	N

Y : Yes. N: No
Source: Laeven and Valencia (2008) and IMF database.

2.114 In the case of advanced countries, studies show that recessions associated with financial crises have typically been more severe and protracted, whereas recoveries from recessions associated with financial crises have typically been slower, held back by weak private demand and credit. Highly synchronised recession episodes among advanced countries are generally longer and deeper than other recessions, and recoveries are very weak. Also, developments in the United States have generally played a pivotal role in both the severity and duration of these highly synchronised recessions (IMF, 2009b). The recent recession is also highly synchronised as is the case with some other previous episodes in 1907 and 1939. The rapid drop in consumption in the United States resulted in large declines in external demand in many other economies. Hence, recovery in the US has significant implications for advanced countries.

Recent Crisis vs. EME Crises

2.115 EMEs across the world have faced several crises that are either regional – the Latin American and Asian crises – or individual country crises as in Argentina, Russia and Turkey. At the macro level, these EMEs having learnt lessons from their own past currency and financial crises, built up reserves and strengthened their financial systems apart from consciously developing their financial markets. They have also been careful to ensure that their banks were not involved excessively in toxic assets or innovative transactions (Thorat, 2009). Even so, these countries have had to face the consequences of the recent crisis and the consequent fall in global trade and GDP, unemployment and slowing credit growth.

2.116 The recent crisis turned out to be more severe, affecting large parts of the world along with EMEs simultaneously and, hence, traditional coping mechanisms at national and sub-national levels became less effective than they were in the past. During previous EME crises that remained confined to individual countries or to a particular region, countries tended to rely on large exchange-rate depreciations to adjust to macroeconomic shocks. During the 2009 global crisis, however, the scope for real exchange-rate depreciation was more limited, leaving less room for the developing economies to adjust to the rapidly changing economic conditions. Besides, most of the previous EME crises were essentially traditional retail banking and currency crises. During these crises, richer countries buffered the fall by bailing out the troubled regions. In contrast, the recent crisis hit at the very heart of global finance with no buffer to fall back on. In fact, the major factor that differentiates the recent crisis from those of the past is that developing countries have become more integrated, both financially and commercially, into the world economy than they were 20 years ago. As a consequence, they were more exposed to changes in the international market.

2.117 Although the recent financial crisis did not originate in the EMEs, it has impacted capital flows to EMEs more severely than in earlier crises that actually originated in the EMEs (for instance, the Latin American and Asian crises). Net capital flows to EMEs fell from 4.2 per cent of GDP in 1981 to 1.6 per cent of GDP in 1986. They fell from above 5 per cent of GDP in 1996-97 to a trough of around 3 per cent in 1998-99. The recent crisis has seen a much sharper fall in capital flows from a peak of about 7.5 per cent of GDP in 2007 to an estimated marginal inflow in 2009 (Chart II.4). This decline has taken place over a very short time-frame compared with previous EME crises. This reflects the impact of greater financial integration of EMEs with the global economy, the increasing role of capital flows in meeting the external financing requirements of these economies and the substantial deleveraging in the US and other advanced economies. The peak capital flow in 2007 was much higher than those in earlier episodes of capital flows to EMEs. Also, unlike the earlier episodes, the surge in capital flows to EMEs prior to the recent crisis has generally been associated with surpluses in the current account as discussed in the section on global imbalances. A region-wise comparison reveals that the flow of capital flows

Chart II.4: Capital Flows to Developing Countries during Crisis Episodes (as % to GDP)

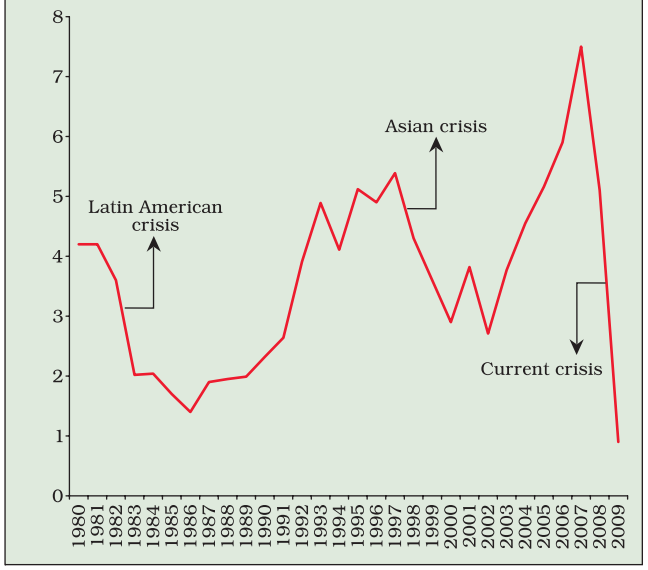
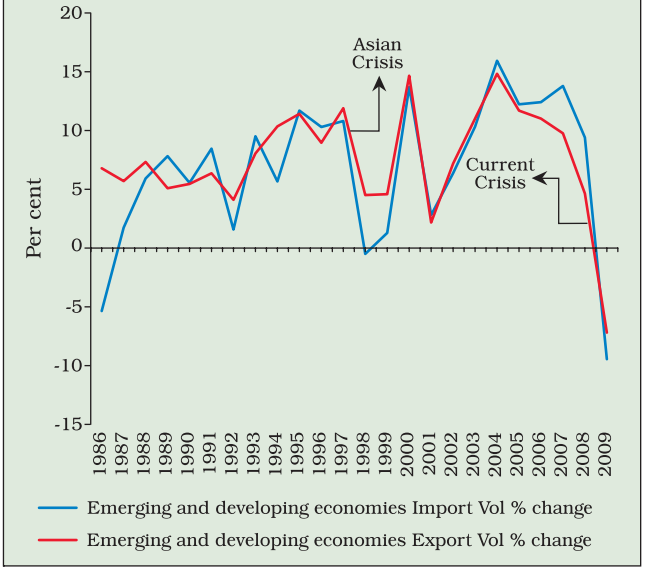


Chart II.5: Trends in EME Trade Volume during Crisis Episodes (percentage change)



was the maximum to the Latin American region in the early 1980s and to the Asian region since the mid-1990s. During the period prior to the crisis, capital flows surged to all regions in 2007 before contracting sharply in all regions in 2008, though the contraction has been relatively sharper for 'Emerging Europe', amounting to more than 10 per cent of GDP.

2.118 While comparing the various financial variables of the EMEs between the recent crisis and the previous episodes of crises, in the previous episodes there were frequent currency crises which often translated into debt crises because of the impact of large-scale devaluations of the local currency of foreign debt (Table 2.16). In the recent crisis, currency depreciations, though prevalent, generally did not have an adverse impact except in Eastern European EMEs. This could be attributed to stronger external financial positions than in the earlier episodes with large foreign exchange reserves and relatively strong domestic financial institutions[8]. Nonetheless, the impact on growth via trade and capital flows has been quite severe in the recent crisis. The volume of trade of EMEs has seen a dip in the recent period that is much sharper than during the Asian crisis (Chart II.5). Weaknesses in the equity market and export markets have played a bigger role in the recent crisis than in crises that hit the emerging world in the recent past. While in the episodes of earlier crises domestic demand collapsed more than the external demand, it is the other way round in the recent crisis. China, the largest and the leading emerging market economy that had remained virtually unaffected in the previous episodes, has been affected in the recent crisis.

Recent crisis vis-à-vis The Great Depression

2.119 The closest parallel to the recent crisis has been the Great Depression. In both cases, the United States has been at the epicentre of the crisis. Second, both crises had a global impact. Third, both crises were preceded by asset and credit booms. Fourth, rapid credit expansion and financial innovations accompanied the boom in both crises. Fifth, liquidity and funding problems of banks and financial intermediaries have been at the core of both episodes. Sixth, both crises were essentially banking and financial sector crises that turned into economic recessions/depressions. The transmission

[8] Korea is one exception to this where short term external bank liabilities posed some problems leading to large depreciations.

channel from the financial sector to the real sector that operated in both the episodes has been similar. Problems in the financial sector reduced the availability of funds for borrowers, led to a rise in the marginal cost of funds, and losses from falling asset prices reduced the net worth of borrowers. Seventh, large similarities exist between the paths and the levels of financial and economic variables such as loan ratios and stock prices during both crises (IMF, 2009b). Finally, both crises have changed the intellectual framework of managing economies and have revived the debate on the role of public policy in avoiding a crisis, the so-called Keynesianism.

2.120 Despite these similarities, the recent crisis differs from the Great Depression in several aspects. First, although both have been global crises, the scale of impact in terms of the number of countries affected has been much larger for the recent crisis than for the Great Depression. This is attributed to the levels of financial and economic integration today that are much higher than in the period prior to Great Depression, thus leading to a larger and faster transmission of shocks from the US to the rest of the world. Second, macroeconomic conditions were more favourable in the recent crisis *vis-à-vis* the Great Depression. The recent crisis was preceded by a period of high growth and low inflation with macroeconomic stability. On the other hand, global economic conditions were weaker in mid-1929; Germany was already in recession and consumer prices had either stagnated or had already started falling in Germany, UK and the US before the start of the recession. Third, while the credit boom prior to the Great Depression was more US-specific, the boom prior to the recent crisis was more global with increased leverage and risk-taking prevalent in advanced countries and in many EMEs (IMF, 2009a). Fourth, the origins of the recent crisis were in wholesale banking (and, therefore, more difficult to contain) rather than in retail banking which was the case with the Great Depression. Fifth, unlike in the 1930s, there is no gold standard, which could serve to restrict how much the money supply can be expanded. Finally, counter-cyclical

Table 2.17: United States: Great Depression *vs.* Recent Crisis

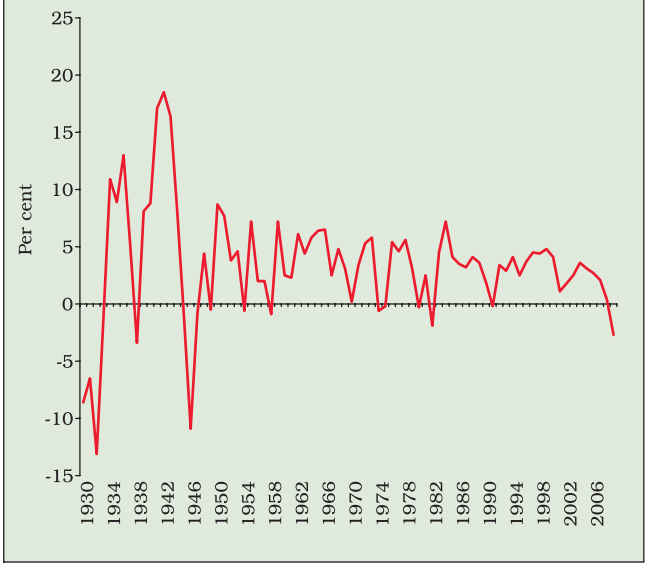
(Per cent)

	Great Depression	Recent Crisis
1	2	3
Peak Real GDP Decline	13 in 1932	6
Unemployment Rate	3 in 1929 to 25 in 1933	4.6 per cent in 2007 to 9 in 2009; 10 projected in 2010
Decline in Prices	24	4
Stock Price Decline	85	43
Increase in Fiscal Deficit	1.5	3.0

policy responses were absent in the early stages of the Great Depression. Policies were initiated only by 1933, after the Gold Standard was given up. In contrast, the recent downturn has seen strong and swift monetary and fiscal policy support, which was both global and well co-ordinated, to revive the world economy.

2.121 A comparison with the Great Depression solely on the basis of macroeconomic indicators for the US gives the impression that the recent crisis is not as bad as the Great Depression (Table 2.17). The decline in GDP in 2009 is the sharpest since the post-World War II period, yet the decline in GDP is less than that of the post-Great Depression and post-World War II periods (Chart II.6). However, a

Chart II.6: US GDP Growth since 1930s
(annual percentage change)



comparison based on world indicators such as the world output, world stock market, world trade and aggregate money supply indicates that the recent crisis is worse than the Great Depression (Eichengreen and Rourke, 2008). The only factor that places the recent crisis better than the Great Depression is in terms of the length/ duration of the crisis. This is because of the swift, large, lasting and the co-ordinated way in which the central bankers and policymakers across the world have responded to the recent crisis, probably learning from the lessons of the Great Depression for economic recovery today (details on policy responses in Chapter 4). It is these measures that have prevented the recent recession from deteriorating into a depression. While a Depression has been avoided, the recent problems in Greece and euro area highlight the fact that the recovery is still fragile. It may be noted here that while problems in Greek economy have been aggravated due to the recent financial crisis, the weaknesses in the Greek system are more structural (Box II.7).

2.122 To sum up, the recent crisis seems to be less adverse than the previous episodes of crises in terms of duration, although the extent of output loss for the recent crisis is estimated to be larger. The Great Depression seems to be the closest equivalent to the recent crisis. Though the US has been at the centre of both crises and both have been essentially financial and banking crises, the recent crisis has been more global due to the enhanced financial linkages that prevail today. While the Great Depression shifted the geopolitical and economic balance from the United Kingdom and Europe to North America, a similar shift is being talked about from America to Asia as a consequence of the recent crisis (Reddy, 2009b).

Box II.7
Genesis of Crisis in Greece

Greece faced a deep, structural and multifaceted crisis characterised by large fiscal deficit, enormous public debt and consistently eroding competitive position manifested in a gradually deteriorating current account balance. The economy faced a twin deficit - a general public deficit of around 13 per cent of GDP and public debt to GDP ratio at 115 per cent in 2009; and a current account deficit of 14.6 per cent of GDP in 2008 with a moderate decline to 11.2 per cent of GDP in 2009 (Table 1).

The country's heavy dependence on foreign borrowing amidst slowing growth and reduced global risk appetite had heightened concerns over long standing fiscal and external imbalances. The country's incapacity to correct the situation through changes in the exchange rate coupled with no fiscal latitude has raised questions about Greece's ability to honour its outstanding debt obligations undermining global confidence in Greek economy. The large fiscal and current account deficits in other EU economies namely Portugal, Ireland, Italy and Spain have raised concerns since early this year (Table 2). The intensity of the problem in the Eurozone periphery may be gauged from the systemic concerns emanating from the large holdings of sovereign debt paper with European banks.

Table 1: Select Macroeconomic Indicators of the Greek Economy

Indicators	2005	2006	2007	2008	2009	2010(P)
1	2	3	4	5	6	7
GDP Growth (%)	2.2	4.5	4.5	2.0	-2.0	-2.0
Inflation (%)	3.5	3.3	3.0	4.2	1.4	1.9
Unemployment (% of labor force)	9.9	8.9	8.3	7.6	9.4	12.0
Gross Fiscal Deficit (% of GDP)	-5.1	-3.1	-3.7	-7.8	-12.9	-8.7
Current Account Balance (% of GDP)	-7.5	-11.3	-14.4	-14.6	-11.2	-9.7
Exchange Rate (Euros/US$)	0.80	0.80	0.73	0.68	0.72	0.74
Government Bond Yield (%)	3.6	4.1	4.5	4.8	5.2	6.2

P: Projection.

Source: International Monetary Fund, World Economic Outlook Database, April 2010.

The problems of Greece are mostly structural and they existed even prior to the crisis. The global crisis only amplified the chronic weaknesses in the system and accelerated the downturn in the economy.

Fiscal Problem

- A large part of its fragile fiscal position is attributable to its low domestic saving rate. Domestic saving rate amounted to only 5.0 per cent of GDP in 2009 partly because of rapid rise in private consumption and largely due to high fiscal deficit.
- Expenditure on retirement benefits due to an ageing population, tax evasion coupled with steady depletion of growth promoting expenditure in education, research and infrastructure has resulted in a bloated public sector structure in Greece over the years.

(Contd...)

(...Concld.)

- Debt remains high not only due to annual deficits but also "deficit-debt" adjustments.[1] The frequent initiation of the 'Excessive Deficit Procedure (EDP)'[2] also raises skepticism about the right size of the fiscal debt. For example, EDP was initiated in March 2009 whereby debt to GDP ratio was revised upwards to 115.1 per cent from erstwhile 95.4 per cent in 2008.
- The weighted average borrowing cost of the Greek government rose from 3.8 per cent in 2006 to 4.4 per cent in 2007 and 4.6 per cent in 2008 and then flared up to 5.0 per cent in First quarter of April 2010.

Current Account Deficit

- Due to low domestic saving rate, public debt has to be financed from foreign sources, resulting in wide current account deficit and a growing external debt. Thus the fiscal problem gets intertwined with the external deficit and debt problem and the twin deficits fed each other in self fulfilling cycle.
- This is directly traceable to a large trade deficit, an average 20 per cent between 2001-09, reflection of its continuously depleting price and product competitiveness in international markets.
- According to Bank of Greece Annual Report 2008-09, lower productivity is due to poor penetration of new technologies in most sub-sectors; low vocational on the job training and the inefficiency of public administration. Greece ranks 96th among 181 countries in terms of World Bank 'Ease of Doing Business'. It is the last among OECD countries.

Greece slipped into the path of recession since 2009 as GDP contracted by 2 per cent and unemployment rate rose to 9.4 per cent. The debt crisis deepened in October 2009 and further in mid April 2010 when it became clear that budget deficit has blown up to unsustainably high levels. Assessing the situation, on April 22, 2010, Moody's downgraded Greece's sovereign rating to A3 followed by Standard & Poor's which downgraded Greece's and Portugal's long-term debt to BB+ (junk) and A-, respectively sparking off a marked dip in confidence in global equity markets. Several Greek banks were also downgraded subsequently which delimited their access to international financial markets. The probability of losing access to their most important refinancing source, European Central Bank also rose exponentially. The possible loss of the ECB funding source pushed up CDS premia and yield spreads in Greek sovereign bonds.

Table 2: Current Account, Government Deficit and Public Debt in the Euro Area

Country	CAD/GDP (%)			GFD/GDP (%)			Public Debt (% of GDP)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
1	2	3	4	5	6	7	8	9	10
Austria	-0.7	2.0	1.4	-1.9	-1.7	-3.6	66.5	63.9	66.5
Belgium	4.0	2.6	-0.3	0.0	-2.7	-5.8	107.9	92.1	96.7
Cyprus	-5.3	-5.9	-9.3	-2.3	-2.4	-6.1	48.7	69.1	56.2
Finland	8.1	3.6	1.4	6.8	2.6	-2.4	43.8	41.8	44.0
France	1.6	-0.4	-1.5	-1.5	-3.0	-7.9	57.3	66.4	77.6
Germany	-1.7	5.1	4.8	1.3	-3.3	-3.3	59.7	68.0	73.2
Greece	-7.8	-7.5	-11.2	-3.7	-5.1	-12.9	103.4	100.0	115.1
Ireland	-0.4	-3.5	-2.9	4.8	1.6	-11.4	37.8	27.6	64.0
Italy	-0.5	-1.7	-3.4	-0.9	-4.4	-5.3	109.2	105.8	115.8
Luxembourg	13.2	11.0	5.7	6.0	0.0	-1.1	6.2	6.1	14.5
Malta	-12.5	-8.8	-3.9	-6.2	-2.9	-4.1	55.9	70.2	69.1
Netherlands	1.9	7.3	5.2	2.0	-0.3	-4.9	53.8	51.8	60.9
Portugal	-10.2	-9.5	-10.1	-3.0	-6.1	-9.3	50.5	63.6	76.8
Slovak Rep.	-3.5	-8.5	-3.2	-8.7	-2.8	-6.3	50.3	34.2	35.7
Slovenia	-3.2	-1.7	-0.3	-1.2	-1.0	-6.1	..	27.0	35.9
Spain	-4.0	-7.4	-5.1	-1.0	1.0	-11.4	59.3	43.0	53.2
Memo									
United Kingdom	-2.6	-2.6	-1.3	1.3	-3.3	-10.9	41.0	42.2	68.1

Source: World Economic Outlook Database, IMF.

1 These are financial transactions of the Government which are not recorded in the deficit, but increase public debt.

2 Excessive Deficit Procedure (EDP) is initiated by the Economic and Financial Council of European Union when a Euro zone country records government deficit in excess of the 3 per cent reference value.

IV. CONCLUDING OBSERVATIONS

2.123 The recent global financial crisis that finally engulfed almost all economies marked a painful adjustment of a variety of imbalances at the macro level coupled with micro-level distortions and incentives created by past policy actions. The analysis of the various causes of the crisis has initiated a whole new debate on the relevance of various economic tenets and has challenged the economic doctrine that assumed the self-correcting mechanism of the markets. At the fulcrum of the crisis was excessive leverage. This was combined with inadequate regulation and flawed credit ratings. The low interest rate regime, which was the result of accommodative monetary policy, led to the debt levels acquiring unsustainable proportions. The global savings glut combined with aggressive marketing by the housing finance institutions and under-pricing of risks fuelled the build-up of sub-prime mortgages.

2.124 Thus, the crisis had its roots in macroeconomic causes that fed into the functioning of the financial markets as both investors and the financial institutions were induced to take excessive risks in their search for higher yields. Easy credit combined with under-pricing of risks, both by households as well as financial intermediaries, created speculative bubbles in real estate, energy and other sectors. However, in many cases domestic macroeconomic policies could not take into account the build-up of systemic risks in the financial system or domestic economic imbalances and asset price bubbles, thereby contributing to the crisis. This is because many central banks either focused or were mandated to focus exclusively on price-stability, through inflation-targeting regimes. In other cases, although central banks perceived that there were excessive risks in the system, they believed that risks were dispersed widely, especially among those who could afford to bear them, through the emergence of new intermediaries like hedge funds and new instruments like derivatives, and therefore sensed no major risks to the financial system as a whole, and hence, did not act appropriately. Regulatory bodies could not anticipate that the rapid innovation in financial instruments had not resulted in risk mitigation; on the contrary, it had concentrated and magnified risk. No public institution had a formal mandate to maintain financial stability and, hence, such stability in public policy was neglected. Moreover, the shadow banking sector remained beyond the purview of effective regulation. Furthermore, multilateral institutions like the International Monetary Fund (IMF) who were charged with the responsibility of surveillance failed to diagnose or bring out the vulnerabilities both at the global level and at the level of systemically important advanced economies (Reddy, 2009c).

2.125 The final trigger for the crisis came from the decline in U.S. home prices by mid-2006 and a gradual rise in the Fed Funds target rate that led to massive losses and foreclosures in the sub-prime mortgage market. The consequent crisis in global financial markets, the extreme level of risk aversion, the mounting losses of banks and financial institutions and the sharp correction in a range of asset prices, led to a sharp slowdown in growth momentum in the major advanced economies, especially from the second half of 2008. Globalisation rendered the international financial markets vulnerable especially in terms of syndication of debt and global supply chains, resulting in rapid transmission of the downturn. Highly integrated global financial markets were instrumental in the rapid spread of this turmoil to other emerging markets and countries.

2.126 The recent crisis has rekindled interest in the history of financial crises. An analysis of the history of the global economy reveals that financial crises are not a recent phenomenon and economic history is replete with several such episodes. Several definitions of financial crises have been put forth, but the common thread is severe stress on the financial markets/intermediaries. Financial crises have generally been categorised as a banking/currency/debt crisis and contagion, depending upon the underlying causes and the manifestation of the crisis. These have differed across a range of features, *i.e.*, the role of

fundamentals, exchange rate regimes and history, underlying structure and dynamics and the relative importance of bank/securitised debt or private/ sovereign debt. Financial crises have been a regular occurrence. However, their incidence has been highly erratic and has varied depending on the prevailing macroeconomic conditions, regulatory regime, financial structure, exchange rate regime and global capital flows. The causation of crisis has always been quite complex. There is no uni-causal theory and, in each crisis, the nature of the interaction among the underlying causes has been unique. These have generally been caused by a combination of unsustainable macroeconomic policies, balance sheet fragilities, heavy reliance on leverage, credit booms and asset price bubbles. Financial crises have generally been followed by severe economic contractions. Most of the economic parameters exhibit pro-cyclical behaviour during the crisis. The macroeconomy has generally been affected by the financial crisis through several channels. Increase in risk aversion and deleveraging results in reduced availability of credit and investment activity which, in turn, reduces the aggregate demand and culminates in the downturn of the economy. The recessions have often been characterised by sharp declines in investment activity, industrial output, trade specially imports, and asset prices, modest declines in consumption and exports, and aggregate employment.

2.127 There is now a consensus that the recent crisis is the worst-ever since the Great Depression of the 1930s in terms of its depth and extent. The recent crisis might be characterised as an example of the well-known boom-and-bust pattern that has been repeated many times in the course of economic history. Some resemblance can be found between the recent crisis and past episodes when one analyses the underlying causes. As in the past, the main causes of the recent crisis are linked to systemic fragilities and imbalances that contributed to the inadequate functioning of the global economy. Major underlying factors in the recent situation include inconsistent and insufficiently co-ordinated macroeconomic policies. These factors were made acute by major failures in financial regulation, supervision and monitoring of the financial sector, and inadequate surveillance and early warning. These regulatory failures, compounded by over-reliance on market self-regulation, overall lack of transparency, financial integrity and irresponsible behaviour, led to excessive risk-taking, unsustainable high asset prices, irresponsible leveraging and high levels of consumption which were fuelled by easy credit and inflated asset prices.

2.128 There are, nevertheless, some aspects that make the recent crisis different from its predecessors. The recent financial and economic crisis is different in nature and magnitude from those experienced earlier. First, the crisis originated in the US and the preceding boom was fed – at least to a large part – by the savings in the emerging market economies. Earlier episodes of global imbalances were largely confined to advanced economies in the role of creditor in contrast to the recent crisis with the US as the debtor nation. Second, the recent crisis has been more global in terms of reach; it has rapidly impacted the world economy as a whole due both to its unusual scale and to the existence of large diffusion channels related to globalisation. The global dimension of the recent crisis is due to increased linkages between the financial system both within and across economies which resulted in rapid transmission of the crisis from the epicentre to the periphery. The estimates of output loss place the recent crisis above most of the episodes in the past, with the majority of the advanced and emerging market economies facing a 'globalised synchronised slowdown'. The recent crisis has been more 'global' and more 'rapid' when compared with the Great Depression, yet one cannot deny that the better initial conditions together with swift policy responses may succeed in preventing the recent recessionary phase from turning into a depression as in the 1930s. The immediate impact of the crisis on advanced countries and EMEs seems to have been worse than that of the previous 'advanced country crises' and 'EMEs crises'. However, a detailed assessment of the impact of the crisis in terms of individual economic parameters is critical to understand the overall nature of the crisis.

3 MANIFESTATION OF THE CRISIS

3.1 As discussed in the previous chapter, the systemic risks posed by the immensely complex financial system were overshadowed by the benign macroeconomic outcomes observed for a sustained period of time before the crisis. The complex nature of new financial instruments and the inability to assess counterparty risks in financial markets in an environment of rapid growth in credit and booming asset prices made the financial system vulnerable. Due to the rapid global integration and deep and complex interconnections between financial institutions, the crisis which emerged in the US sub-prime housing market manifested itself across assets, markets, and economies. During the initial stages of the crisis, the impact was manifested in mounting losses on the exposures of banks and financial institutions to the sub-prime mortgages and structured finance products. These losses were exacerbated by illiquidity in the markets for those instruments, which led to substantial reductions in their mark-to-market valuations.

3.2 With the collapse of Lehman Brothers, the crisis entered a turbulent new phase in September 2008, after which the crisis rapidly developed into a crisis of confidence and engulfed the whole financial system in the US. Subsequently, it spread to other developed economies, resulting in a number of European bank failures, declines in various stock indices with consequent large reductions in the market value of equities and commodities, failure of key businesses, declines in consumer wealth and a significant decline in economic activity. Moreover, the deleveraging of financial institutions, as assets were sold to pay back obligations that could not be refinanced in frozen credit markets, further accelerated the liquidity crisis. In this phase, bank losses and write-downs became more closely linked and the impact was felt in terms of a surge in borrower defaults on the back of worsening macroeconomic performance.

3.3 Global trade and financial integration had given the US financial market crisis a global form as the increasingly integrated global trading and financial system magnified and accelerated the transmission process. There had been rapid transmission of shocks from the US and Europe to the rest of the world. The impact of the crisis was felt in almost all the economies of the world in varying degrees. The crisis spread to EMEs through all four channels – trade, finance, commodity and confidence channels. In the EMEs, the slump in export demand and tighter trade credit caused deceleration in aggregate demand; reversal of capital flows led to equity market losses and currency depreciations; global liquidity tightening resulted in lower external credit flows; and market rigidities and erosion of confidence led to widening of credit spreads.

3.4 The crisis that originated in the financial sector was transmitted to the real sector through several channels. The depth and spread of the crisis can be gauged from the successive revisions in the estimates of write-downs, decline in trade and, finally, the contraction in economic activity. The financial sector deleveraging, in conjunction with weak credit markets, falling production and rapidly shrinking global trade, led to a situation of a more prolonged recession, especially with the growth in EMEs showing significant moderation. In the financial sector, the estimates for global write-downs of loans and securities held by banks over 2007-10 amounted to US$ 2.3 trillion (WEO, April 2010). On the trade front, according to the IMF (WEO, April 2010), world trade volume (goods and services) has declined by 10.7 per cent during 2009 as against 2.8 per cent growth witnessed in 2008. In the real economy, the final impact of the crisis was reflected in deteriorating global growth outlook as can be observed from the successive revisions in the growth projections for 2009 from 3.8 per cent in April 2008 to (-) 1.1 per cent in

October 2009 which was revised further to (-)0.6 per cent in April 2010.

3.5 However, there are incipient signs of recovery in the global economy, while financial conditions are stabilising. According to the IMF, emerging and developing economies are further ahead on the road to recovery, led by resurgence in Asia. Already there are signs of strong revival in capital flows in line with improved macroeconomic conditions in these economies, sound policy framework and rebound in the risk appetite of global investors and financial market sentiments. The quick and strong policy responses across advanced and emerging economies played an important role in limiting the stress in the global economy as compared to earlier crises (see Chapter 2).

3.6 Against this backdrop, this chapter analyses the impact of the crisis on various sectors of the economy, such as financial markets, financial institutions, international trade, international capital flows, remittances and the real economy in a global context. Section I discusses the impact of the crisis on financial markets, while Section II covers the impact on the financial system. The impact on the external sector covering trade, services, current account deficit and capital flows is described in Section III. The impact on the real economy is discussed in Section IV, while some concluding observations are given in Section V.

I. IMPACT ON FINANCIAL MARKETS

3.7 Global financial markets have witnessed rapid changes during the past decade in terms of evolution of new products and instruments and increase in turnover volumes. Certain types of financial innovations turned increasingly complex and their usage increased dramatically in recent years, generating speculative bubbles. These products included adjustable rate mortgages (ARM), mortgage backed securities (MBS), collateralised debt obligations (CDO) and credit default swaps (CDS). Interestingly, these complex products were assigned safe ratings by credit rating agencies. Also, the strong demand for these instruments in an environment of easy liquidity and strong credit growth drove down lending standards. Eventually this speculative bubble proved unsustainable and manifested in financial market turmoil in the US, which in a year's time reached unprecedented heights.

3.8 The crisis moved rapidly from the US sub-prime market to the financial markets of Europe and other advanced economies. After the onset of the financial crisis, a number of features became common across the financial markets of the most affected economies, particularly in the US and Europe. These were a broad re-pricing of risk, severe shortages of market liquidity in many security and commercial paper markets, a shortage of funding liquidity in the interbank market, and, for some European financial institutions, a shortage of US dollar funding. Although the crisis started spreading across financial institutions, markets and countries from August 2007, the closing of the large US investment bank, Lehman Brothers, in September 2008 aggravated panic in the financial markets. The collapse of Lehman Brothers distorted the financial intermediation process – it gave rise to rapid increase in the cost of intermediation between financial organisations as well as counterparty risks.

3.9 Initially, the EMEs were much less affected by the recent crisis than during previous crisis episodes. Some spillovers were evident in financial markets, particularly associated with the rise in global risk aversion. However, as the financial market upheaval in developed economies persisted, particularly after the Lehman failure in September 2008, EME financial markets came under severe strain with increased volatility. Post-September 2008, as global investors scaled back their holdings of emerging market assets amid continued financial system deleveraging, Asian equities and external funding conditions became severely affected. Asian stock markets collapsed even more sharply than the mature markets and sovereign credit spreads widened significantly. Heightened financial volatility and a sharp reversal in risk appetite together with elevated funding costs narrowed external funding sources for Asian borrowers. This was accompanied by a sharp drop in Asian offshore bond issuance, massive capital outflows and unwinding of carry

trade. As a result, the region's currencies depreciated sharply. The impact of the crisis on various segments of the financial markets in advanced economies and EMEs is discussed in detail in the following sections.

Impact on Interbank/ Money Market

3.10 One of the first financial market segments to be affected by the crisis was the interbank market. The first symptoms of the crisis appeared in August 2007, when serious disruptions took place in the interbank market, putting pressures on liquidity. As uncertainty reigned over the extent of subprime-related losses and their concentration, banks became concerned about counterparty risk. Banks increased their demand for liquid funds and became reluctant to lend to one another. This resulted in severe tightening of funding conditions in the interbank credit markets. The illiquidity and increase in perceived credit risk caused spreads on interbank rates to widen. Later this crisis spread to the money markets, taking the form of abnormal levels of spreads, the shortening of maturities, and the contraction, or even closure, of some market segments. Through contagion, these tensions also affected non-financial corporations and the financing of the economy.

Spreads in Advanced Economies

3.11 An indicator of the severity of liquidity pressure in the interbank market is the spread between the interest rate in the London interbank offered rate (LIBOR) and the overnight indexed swap (OIS) rate of corresponding maturity. In principle, this spread provides a measure of the risk premium, which includes both credit and liquidity factors. This spread hardened from early August 2007 but reached unprecedented highs of 361 basis points in the US, 244 basis points in the UK and 199 basis points in the Euro area in the post-Lehman period (Table 3.1). The interbank market in Japan, however, was relatively less affected during the crisis with its spread peaking at 80 basis points at the height of the crisis.

3.12 In the post-Lehman period, this sharp rise in spread reflected heightened concerns about liquidity risks, particularly for US dollar term funding as also concerns about an increase in the credit risk of the banking sector, following the collapse or near-collapse of some large financial institutions. Similar trends were noted in the financial markets in Europe. Strains were particularly evident for foreign exchange swaps, where rising financial sector credit spread and the rising global demand for US dollar funds raised the implied cost of dollars to historically high levels above LIBOR. With the viability of key players at stake and perceptions of counterparty risk rising, the benchmark US investment grade CDX credit default swap index spread jumped by 42 basis points and US high-yield spreads rose by 118 basis points on September 15, 2008 alone. The resulting turmoil quickly spread through the intensely integrated global financial system leading to widening of credit spreads in other major markets (Chart III.1).

Table 3.1: Movement in Interbank Spreads

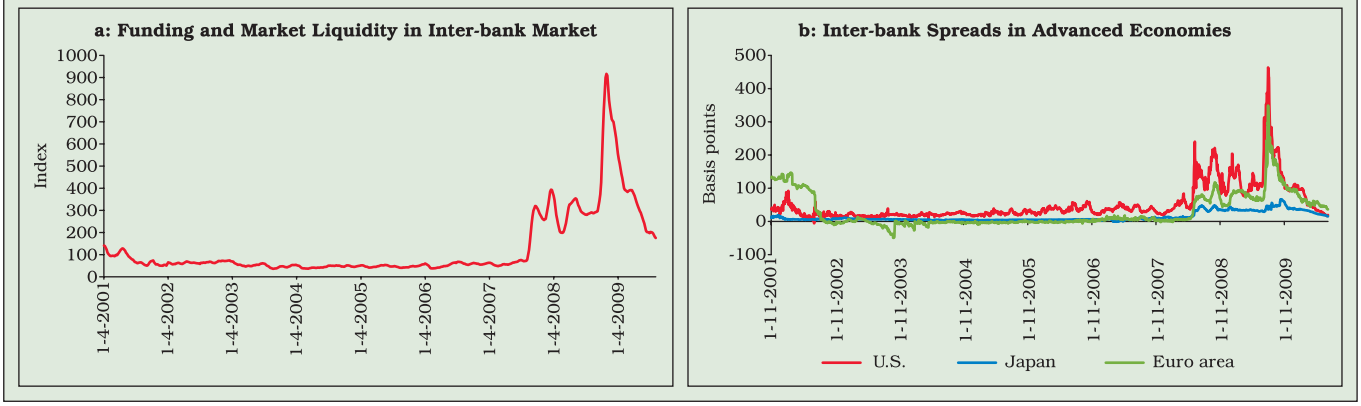
(basis points)

Indicator	Pre-Crisis End-March 2007	LIBOR-OIS peak level	End-Dec 2008	End-March 2009	End-June 2009
1	2	3	4	5	6
U.S. 3-month LIBOR-OIS	8	361	123	99	37
Euro 3-month LIBOR-OIS	6	199	160	82	50
Japan 3-month LIBOR-OIS	16	80	73	49	37
UK 3-month LIBOR-OIS	11	244	165	120	78

Source: IMF, Global Financial Stability Report, (GFSR), October 2009.

3.13 The funding problem in the interbank market quickly spilled over into the markets for commercial paper (CP) and bank certificates of deposit (CDs), where money market funds are a key investor group. Commercial paper markets suffered due to redemptions/ reallocations and illiquid secondary markets for these securities. Unsecured financial paper suffered the largest outflows: total outstanding CP volumes in the United States plummeted by more than US$ 325 billion between September 10, 2008 and October 22, 2008, from a total of about US$ 1.76 trillion. Foreign banks and those US institutions without their own retail deposit base thus lost access to an important source of funds at a time when they needed to support or

Chart III.1: Funding Liquidity and Inter-bank Spreads



take onto their balance sheets the money market funds that they sponsored. In response, the demand for US dollar interbank funds surged, causing short-term credit and money markets to seize up.

3.14 Responding to such tightness in the market, the Federal Reserve acted to relieve money market tensions with various credit facilities, which were extended and enhanced on July 30, 2008. The impact of these efforts, however, was partly offset by increased uncertainty following the default of large financial companies. In the euro area, the spreads between deposit rates and OIS rates were influenced by strong demand from European banks for US dollar liquidity, because funds borrowed in Euros had to be swapped for US dollars to support euro area banks' investment positions that were denominated in this currency. The European Central Bank (ECB) provided ample liquidity in its regular weekly operations in order to allow banks to meet their reserve requirements during maintenance periods. In addition, the ECB renewed its supplementary longer-term refinancing operations for maturities of three and six months.

3.15 Quantitative and credit easing policies, extraordinary liquidity measures and government guaranteed funding programs have helped to improve the functioning of short-term money markets. The money market conditions have continued to improve in the early months of 2010, accompanied by a decline in market and liquidity risks as asset prices have continued to recover across a range of asset classes (IMF, GFSR, April 2010).

Spreads in Asian Economies

3.16 The liquidity strains in major international interbank markets spilled over to several Asian interbank markets—particularly in the key Asian financial centres of Hong Kong, Singapore and South Korea, where short-term interest rates increased significantly in the second half of 2008. The rise in local currency interbank market rates prompted the monetary authorities in those countries to inject liquidity to normalise market operations. The domestic liquidity pressures in Asian money markets reflect several factors, including arbitrage across foreign and domestic currency markets, rising uncertainty about the economic outlook and increased risk aversion. Overall, domestic interbank markets in Asia, however, did not seize up as severely as their counterparts in developed countries. With authorities' support, domestic interbank markets in all three of these economies saw a return to normality.

3.17 The creation of a number of new central bank facilities and the willingness on the part of central banks to provide necessary liquidity appeared to alleviate concerns among banks about the availability of short-term liquidity. However, money market spreads increased for maturities longer than three months, suggesting growing counterparty credit risk concerns. Such cross-currency activity and the high correlation between changes in equivalent spreads of other major currencies indicate that global money markets have become increasingly interlinked as a result of the market turmoil.

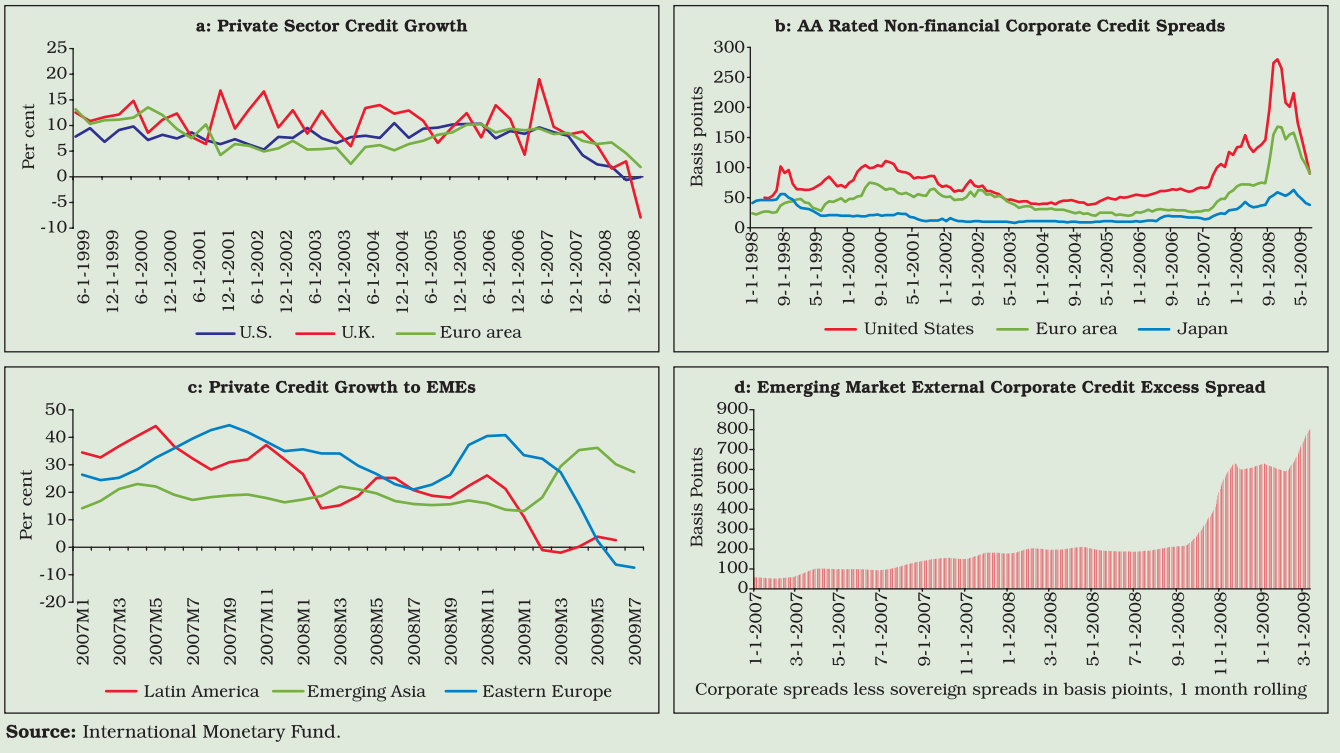
Impact on Credit Market

3.18 Declining credit growth, particularly in the advanced economies, worked as a catalyst to aggravate and spread the impact of the crisis from one market to another. Unlike the money market, credit flows, however, had been impacted by the crisis with a lag as credit flows were robust during the early stages of the crisis. However, to a large extent this reflected special circumstances. First, during the initial stages of the crisis, there was market and supervisory pressure on banks to consolidate previously off-balance sheet exposures to securitisation vehicles. This tended to swell balance sheets even without any fresh extension of credit. Second, borrowers pre-emptively raised funds in anticipation of credit tightening by drawing down credit lines that had been granted before the crisis, often at very favourable terms.

Slowdown in Credit Growth

3.19 A sharp slowdown in credit growth to the private sector was noted during the post-Lehman phase in many of the advanced economies, where banks sought to reduce leverage and rebuild capital bases (Chart III.2). The overall deceleration in lending to the private sector was broad based across the various money-holding sectors, although the level of adjustment varied from sector to sector. Lending standards tightened across all types of loans, although more sharply in the case of household credit, including mortgages. Nominal housing credit (excluding home equity loans) contracted at an annual rate of 1–2 per cent from the second quarter of 2008 to the first quarter of 2009 in the US, and it stopped growing in the euro area by March 2009. On account of tightening of lending standards, even households with good credit histories faced difficulties in obtaining mortgage loans or home equity lines of credit. Consumer credit growth also slowed significantly in many advanced countries, the exception being the US, where it grew at an annual rate of 9 per cent in the first quarter of 2009. Banks reduced credit card limits and increased refusals of automobile loan applications. Although business credit continued to expand in many countries, it was mainly driven by an increase in the use of existing

Chart III.2: Impact on the Credit Market



Source: International Monetary Fund.

credit lines rather than by new lending. In addition to the supply-side credit constraints, decline in credit growth to some extent also reflected a slowdown in demand as the major economies entered into recession with firms and households refocusing towards capital preservation as well as towards managing excess capacity and high levels of debt.

3.20 Credit growth continued to remain sluggish in the advanced economies during the early months of 2010, notwithstanding the improved private sector credit risks. Constraints on bank capital and sluggish non-financial credit growth continued to impair the supply of credit in those economies. The outlook for credit growth in the advanced economies remain sluggish and uneven, as banks continue to delever and private demand remains weak.

3.21 Within EMEs**,** the limited exposures of Asian banks to sub-prime and CDO assets, coupled with well-capitalised balance sheets allowed Asian interbank markets to remain relatively calm. There was no noticeable reduction in the growth of private domestic credit in most countries in the region during the initial phase of the crisis (Table 3.2). However, as the crisis deepened, credit growth in many countries weakened. Credit growth continued to remain sluggist in many of the emerging Asian economies during the second half of 2009. Credit to the household sector increased by 7.8 per cent in Singapore, 11.5 per cent in Indonesia, 2.4 per cent in Korea, 2.7 per cent in Taiwan and 5.7 per cent in Malaysia between June-December 2009. Credit growth to the corporate sector remained lower than the household sector for all these economies. (Regional Economic Outlook: Asia and Pacific, April 2010). Credit growth started accelerating in many of the emerging Asian economies in the recent months, while in emerging Europe, credit continues to contract though at a decelerating pace (IMF, GFSR, April 2010).

Table 3.2: Growth of Private Domestic Credit in Select Asian Economies

(year-on-year, per cent)

	2006	2007	2008Q1	2008Q2	2008Q3	2008Q4
1	2	3	4	5	6	7
China	12.1	18.0	19.1	16.9	14.8	13.2
Hong Kong	4.3	7.6	9.6	14.6	18.3	0.6a
India	28.1	22.8	22.4	24.2	24.8	27.8a
Indonesia	13.9	18.9	27.4	31.5	34.2	36.5
Korea	10.8	14.3	14.3	16.0	16.2	16.4b
Malaysia	8.6	9.0	10.9	10.8	9.7	9.5a
Philippines	1.2	5.9	8.4	8.9	16.9	16.5
Singapore	3.6	10.2	18.5	20.5	20.7	17.5
Thailand	6.4	3.3	5.4	6.8	9.5	9.7

a. November 2008. b. October 2008.
Source: ADB Outlook, 2009.

Widening of Credit Spreads

3.22 Credit default swap (CDS) indices in the US had reached historical highs across all categories, for both the financial and the non-financial sectors. At the same time, issuance of asset-backed securities (ABSs) and collateralised debt obligations (CDOs) remained sluggish. The US government's plans, the Troubled Asset Relief Program (TARP), which aimed at restoring confidence in the ABS market by authorising the US Treasury to take troubled assets off the balance sheets of financial institutions, followed by capital injections to banks, helped to reduce the perceived risk of further defaults, resulting in a tightening of banks' CDS spreads (ECB, 2009) (Table 3.3). Nevertheless, CDS premia for global large and complex banking groups (LCBGs) remained at relatively high levels, reflecting market uncertainty about the implementation of the programme, its influence on particular institutions and concerns over the impact of higher funding costs in the banking sector.

Table 3.3: Credit Market Spreads

(basis points)

	Pre-Crisis 30/06/2007	Time of Lehman Collapse 12/09/2008	A Year Later 31/08/2009
1	2	3	4
Residential Mortgage ABS			
United Kingdom	10	215	190
United States	26	875	1328
Commercial Mortgage ABS			
Europe	20	330	975
United States	30	290	650
Consumer ABS			
United Kingdom	12	255	465
United States	0-10	130-200	55-90

Source*:* IMF, GFSR, October 2009.

3.23 In sum, in view of soaring demand for liquid funds in the wake of the contraction in the money market mutual fund sector, global inter-bank markets came under pressure, squeezing banks' access to short-term funding. Money markets, which were already strained, failed to recuperate, despite massive central bank liquidity injections. As a result, interbank rates spiked to historic highs. The movements in other major markets, such as those for euro and sterling funds, also showed similar signs, *albeit* moderately. Thus, the turmoil transcended from credit and money markets to the global financial system more broadly. The contagion also spilled over to the emerging markets, which saw broad-based asset price declines amidst depressed levels of risk appetite. While policy intervention on an unprecedented scale helped to stabilise the money market conditions, credit growth, however, continued to remain sluggish, particularly in the advanced economies, even in the recent months.

Impact on Stock Market

3.24 The stock market is another segment of the financial sector that has borne much of the heat of the global financial crisis. During the recent financial crisis, equity markets all over the world witnessed high volatility and sharp declines in prices. However, in contrast to other markets, the impact of the crisis was more pronounced on the EME stock markets compared to their matured counterparts.

Advanced Economies

3.25 From the beginning of the year until mid-March 2008, equity prices in the euro area, the United States and Japan followed a declining trend. This trend was partly reversed when JPMorgan Chase took over Bear Stearns in March 2008. The Bear Stearns rescue package was favourably perceived by market participants, who changed their risk perceptions, thereby contributing to sustaining equity markets. Against this background, from mid-March to the beginning of June 2008 the Dow Jones EURO STOXX increased by almost 10 per cent, the Standard & Poor's 500 by around 8.5 per cent, and the Nikkei 225 by 22.5 per cent. Stock price fluctuations, however, became pronounced from September 2008, reflecting uncertainties generated in global financial markets following the collapse of Lehman Brothers and the failure of many other significant financial institutions. Growing concerns about the health of loss-making financial institutions and the deteriorating economic outlook and its impact on company earnings put downward pressure on major stock indices during the last quarter of 2008. Moreover, declining actual and expected earnings growth also contributed to the negative performance of stock markets in the US and the euro area.

3.26 Along with sharp declines in prices, the stock markets of the matured economies have also experienced high volatility since September 2008. In September 2008, volatility in the S&P 500 spiked to levels not seen since the 1987 stock market crash. Overall, at the end of 2008 equity prices in the euro area, the United States and Japan, as measured by the Dow Jones EURO STOXX, the Standard & Poor's 500, and the Nikkei 225 indices, respectively, were lower by around 46 per cent, 39 per cent and 42 per cent, respectively, as compared with their levels at end-2007.

Emerging Market Economies

3.27 The severe impact of the crisis was felt in the EME stock markets, mainly in terms of a collapse in stock prices. There were significant sell-offs by FIIs in most of the emerging Asian equity markets from October 2007. Equity flows to the EMEs declined substantially during 2008, with the decline being more pronounced during the last two quarters of the year. Equity flows to EMEs declined sharply from US$ 207.8 billion in 2007 to US$ 54.2 billion in 2008. Within equity flows, while inflows under FDI remain relatively resilient during the crisis, portfolio flows were the worst sufferers. Equity flows, however, have bounced back strongly during the second quarter of 2009 (Table 3.4).

3.28 The fall in equity prices in EMEs was particularly strong from the middle of 2008 in contrast to matured economies, where the fall began in the middle of 2007. Within Asian EMEs, the stock market

Table 3.4: Emerging Market Equity Issuance

(US $ billion)

Country	2007	2008	2009	2008		2009			
				Q3	Q4	Q1	Q2	Q3	Q4
1	2	3	4	5	6	7	8	9	10
Asia									
China	48.3	12.8	39.9	1.6	1.3	6.3	9.7	8.7	15.2
India	21.7	6.0	16.6	0.2	0.0	0.0	3.8	8.4	4.4
Indonesia	3.0	2.3	1.6	0.4	0.0	0.0	0.9	0.1	0.7
Malaysia	1.8	0.7	4.0	0.0	0.0	0.1	0.4	0.5	3.0
Philippines	2.2	0.2	0.3	0.0	0.0	0.0	0.0	0.3	0.0
Thailand	0.8	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.0
Europe									
Hungary	0.2	0.0	1.2	0.0	0.0	0.0	0.0	1.2	0.0
Poland	0.5	1.2	2.8	0.0	0.6	0.0	0.2	0.4	2.2
Russia	29.6	2.9	1.0	0.0	0.0	0.0	0.2	0.5	0.3
Latin America									
Argentina	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brazil	39.2	10.4	18.2	2.3	0.0	1.0	4.9	3.0	9.3
Chile	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mexico	2.1	2.1	1.6	0.0	0.0	0.0	0.0	1.6	0.0

Source: IMF, GFSR, October 2009, April 2010.

valuation declined by 35 per cent in Korea, 33 per cent in India, and 36 per cent in China between June and December 2008, reflecting the wide-ranging effect of the world financial crisis (Table 3.5). The fall in equity prices took place amid heightened volatility and some EMEs even temporarily halted trading on their stock exchanges.

3.29 Overall, emerging market equity valuations lost about 50 per cent between May 2008 and end-November 2008. The Emerging Market Bond Index Global (EMBIG) spread widened by more than 400 basis points, and yields on long-term domestic bonds declined by 60 basis points. Risk aversion, repatriation of foreign capital and, in some cases, falls in commodity prices have weighed down on equity prices in EMEs (Table 3.6). Such effects have also weighed down on a range of EME currencies against the US dollar.

3.30 Amidst the decline in equity prices, there was a significant decline in global stock market turnover in 2008, though the decline was more pronounced in the case of emerging market economies compared to the advanced economies. Moreover, the decline was sharper during the last two quarters of 2008 than in the earlier quarters.

3.31 In line with the decline in turnover, the market capitalisation of major stock exchanges,

Table 3.5 : Stock Market Changes - Select Countries

(per cent)

Country	June-December 2008	December 2008-December 2009
1	2	3
Emerging Asia		
China	-36	76
Hong Kong	-37	49
India	-33	80
South Korea	-35	49
Latin America		
Argentina	-49	115
Brazil	-44	82
Mexico	-24	46
Advanced Economies		
Japan	-37	20
Euro area	-33	24
USA (S&P 500)	-34	25

Source: The Economist, various issues.

Table 3.6: Performance of Emerging Equity Prices

(August 29, 2008 to March 16, 2009)

Country	CDS Spread (Basis Points)	Changes in Equity Prices (Per cent)
1	2	3
EM Asia average	205	-18.7
EM Europe average	524	-47.6
Latin America average	563	-27.6
Africa/Middle East average	217	-43.0

Source: IMF, Global Financial Stability Report, April 2009.

Table 3.7: Cross-Country Stock Market Capitalisation

(US $ billion)

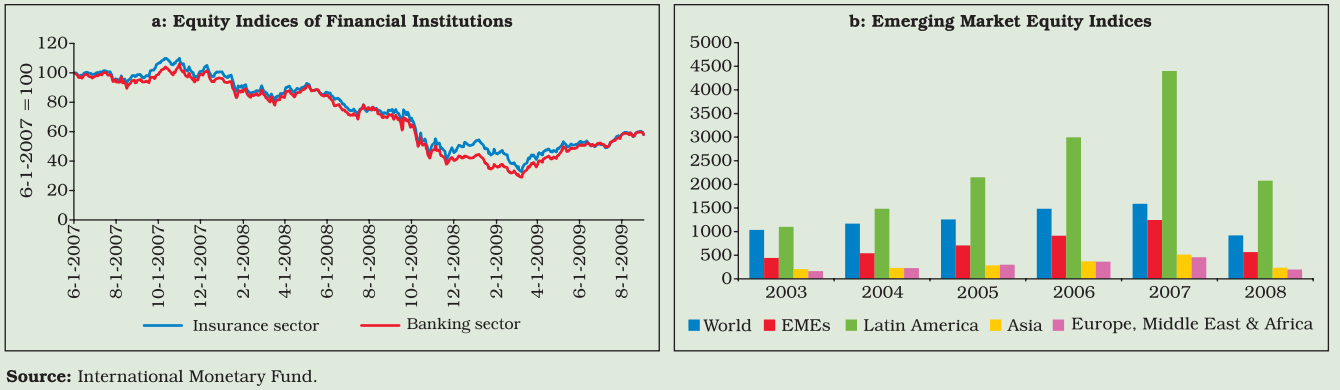
Country	1990	2000	2005	2006	2007	Jun-08	Sep-08	Dec-08	Mar-09	Jun-09	Sep-09	Dec-09
1	2	3	4	5	6	7	8	9	10	11	12	13
Americas												
US	311	3,597	3,604	3,865	4,014	3,175	2,904	2,249	2,168	2,590	3,026	3,239
Mexico	41	125	239	348	398	414	329	234	197	265	308	352
Asia - Pacific												
Australia	108	373	804	1,096	1,298	1,361	926	684	665	888	1,188	1,262
India	NA	NA	553	819	1,819	1,020	885	647	610	992	1,187	1,307
Malaysia	48	113	181	236	325	270	217	189	181	231	261	286
Sri Lanka	1	1	6	8	8	7	6	4	5	7	8	10
Hong Kong	83	623	1,055	1,715	2,654	2,096	1,615	1,329	1,307	1,825	2,059	2,305
Indonesia	8	27	81	139	212	195	155	99	100	156	201	215
Japan	2,929	3,157	4,573	4,614	4,331	4,043	3,334	3,116	2,611	3,204	3,413	3,306
Korea	110	148	718	834	1,123	898	656	471	507	622	807	835
Philippines	7	25	40	68	103	70	70	52	55	68	79	86
China	NA	NA	286	918	3,694	2,106	1,776	1,425	1,863	2,329	2,250	2,705
Singapore	34	155	257	384	539	485	349	265	249	368	445	481
Thailand	21	29	124	140	197	181	139	103	98	140	172	177
Europe - Africa - Middle East												
Spain	111	504	960	1,323	1,781	1,715	1,222	948	831	1,089	1,322	1,435
Italy	149	768	798	1,027	1,073	867	663	522	418	532	680	656
Hungary	NA	12	33	42	46	41	32	18	14	21	29	30
Turkey	19	70	162	162	287	192	188	118	110	165	216	234
South Africa	137	131	549	711	828	748	535	483	445	608	709	799
London	850	2,612	3,058	3,794	3,852	3,309	2,565	1,868	1,676	2,198	2,614	2,796
Poland	NA	31	94	152	212	182	146	91	69	93	123	151
Austria	26	30	126	199	236	198	118	76	72	91	119	114

Source: World Federation of Exchanges.

which started declining from the first half of 2008, continued the same trend till the first quarter of 2009. However, with the improvement of the general health of the global stock markets, there are indications that market capitalisation began to recover from the second quarter of 2009. Despite substantial recovery, stock market capitalisation remained lower than the 2007 level, for most of the emerging economies at the end of 2009 (Table 3.7).

3.32 From a sectoral perspective, both in the euro area and in the United States, stock prices of the financial industry suffered the heaviest losses between December 2007 and December 2008, declining by about 57 per cent and 51 per cent, respectively (Chart III.3). Stock prices of the non-financial sector also fell significantly, decreasing by around 41 per cent in the euro area and 36 per cent in the United States . There appears to have been greater initial contagion effects

Chart III.3: Movements in Equity Markets



Source: International Monetary Fund.

across financial stocks than total stocks in EMEs, perhaps reflecting the reliance of some of their financial institutions on external funding. A marked decline in the stock market performance of banks and finance companies in emerging East Asia relative to the overall stock market index reflected fears that banks in emerging East Asia could incur substantial losses in the aftermath of the crisis as economic growth slows. In general, most indexes of listed banks and finance companies on the Asian stock markets have performed below overall market indexes since August 2007.

3.33 In early 2009 the deteriorating global economic outlook as well as renewed concerns about the health of the financial system led to further declines in matured economy stock prices. Between the end of 2008 and February 27, 2009, the Dow Jones EURO STOXX and the Standard & Poor's 500 indices declined by around 17 per cent and 19 per cent, respectively. In the second half of 2009, however, the matured economies' stock prices posted some recovery with major stock indices in Japan, the euro area and the US gaining in the range of 10-15 per cent between December 2008 and October 2009. The Dow Jones Industrial Average crossed the 10,000 mark for the first time in a year on October 14, 2009 on the back of indications about US economic recovery. Between December 31, 2009 and June 16, 2010, however, the stock indices of Japan and Euro area declined by 5 per cent and 7 per cent, respectively, partly due to the uncertainty in the euro area growth prospects.

3.34 In contrast, the EME stock markets rebounded strongly in the first half of 2009, with the MSCI (All Country) Asia ex-Japan Index rising 68 per cent over its November 2008 trough, showing some return of risk appetite. During the year 2009 till October, the composite stock market index of China increased 66.4 per cent, perhaps reflecting the effects of China's huge fiscal stimulus package. Despite the rebound across emerging East Asian equity markets, they remained below their levels at the beginning of 2008. Moreover, notwithstanding stock market recoveries, financial share prices have performed less favourably than overall market indices. India's BSE crossed the 17,000 mark after a gap of 16 months (for the first time since May 2008) on September 30, 2009. As per the latest available trend, some of the emerging market stock indices recorded a decline over December 2009. For example, stock indices of China, Hong Kong and Brazil declined by 22 per cent, 8 per cent and 6 per cent, respectively, between end-December 2009 and June 11, 2010, while the others recorded marginal gains.

Corporate Bond Market

3.35 Corporate bond issuance from the EMEs declined sharply during the financial crisis amidst heightening of spreads, from the second half of 2008. In contrast, the corporate bond markets of advanced economies exhibited relative resilience during the crisis.

Advanced Economies

3.36 In the advanced economies, disruptions to non-financial corporate bond markets had been less severe than those seen in the credit or housing market during the recent financial crisis. However, there had been episodes of volatility in issuance and widening of spreads during periods of increased uncertainty in the global financial markets (Chart III.4). Overall, US corporate bond issuance has been much less affected than the US mortgage market, though there are reports that lower-rated firms have faced some difficulties in raising funds in bond markets during the crisis.

Emerging Market Economies

3.37 In recent years, cross-border corporate bond issuance in the form of Initial Public Offerings (IPOs) from some EMEs such as China, Brazil and Russia has rivalled developed economies in terms of their scale. Since the onset of the financial turmoil, international corporate bond issuance from EMEs fell sharply on account of both demand and supply factors (Table 3.8 and Chart III.4). On the demand side, firms might have decided to delay issuance in the hope of a return of more normal conditions in the coming months. Second, firms may have had access to other funds and, therefore, were reluctant

Table 3.8: Emerging Market Bond Issuance-Select Countries

(US $ billion)

Region	2007	2008	2009
1	2	3	4
Latin America			
Argentina	3.4	0.1	0.5
Brazil	9.9	6.7	10.1
Chile	0.3	0.1	3.0
Mexico	6.3	4.5	15.5
Emerging Europe			
Hungary	4.1	5.3	3.0
Poland	4.1	3.8	10.2
Russia	30.2	22.1	10.8
Asia			
China	2.1	2.1	3.3
India	7.5	1.4	2.2
Indonesia	1.8	4.2	5.5
Malaysia	0.9	0.4	0.1
Philippines	1.0	0.4	5.4
Thailand	0.8	0.5	-

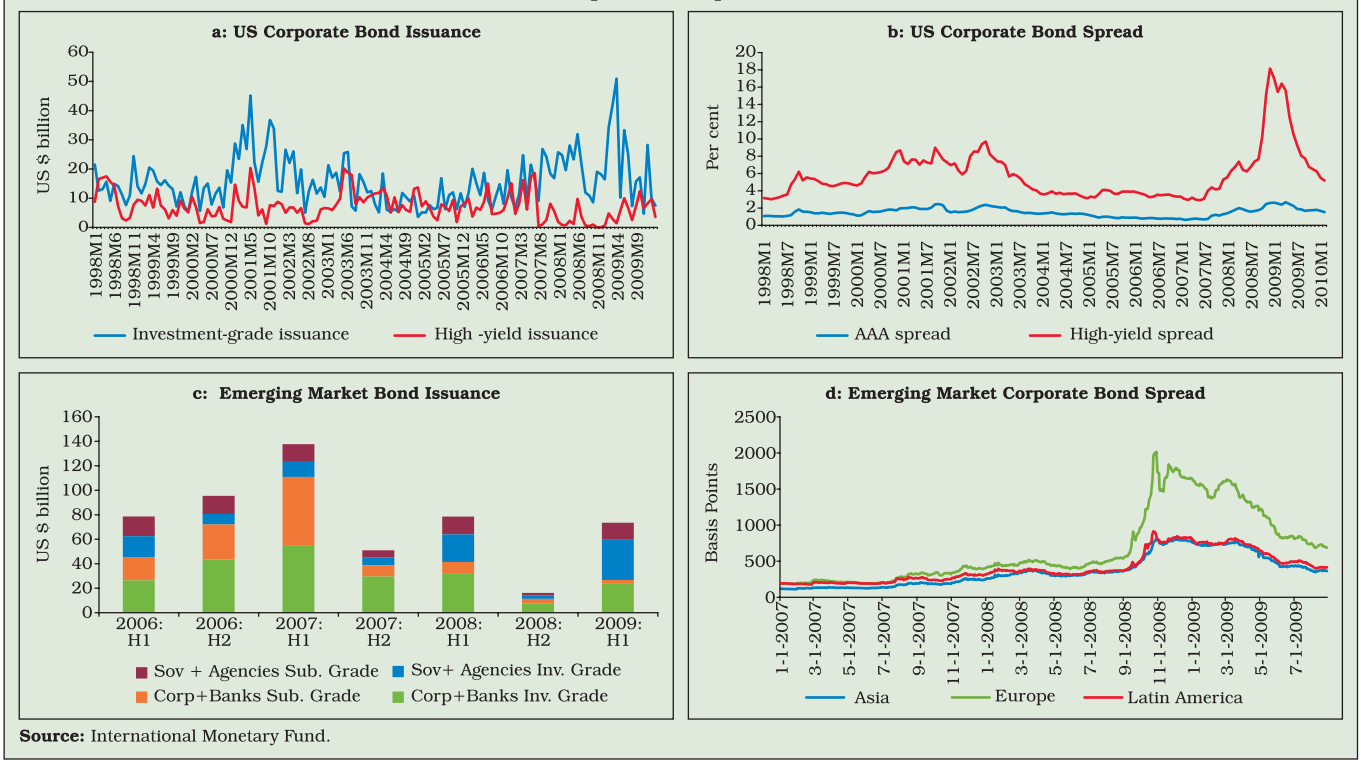
Source : IMF, GFSR, April 2010.

to issue bonds into a relatively illiquid market. On the supply side, there may have been some reluctance to lend, as there was a desire by lenders to hoard liquidity in the face of uncertainty. In such a situation, lower-rated firms became most vulnerable to the global reassessment of risk, which often rely on raising funds in external markets where investors are generally more willing to bear the risk.

3.38 Emerging market bond spreads reached historical highs during the recent financial crisis, touching their peaks following the collapse of Lehman Brothers in September 2008 and continued to remain at elevated levels in the first and second quarters of 2009. The spreads, however, narrowed down substantially during the third and fourth quarters of 2009, with the pick up in the corporate bond isssuance from the emerging market economies (Table 3.9).

3.39 During the second half of 2009 the corporate bond markets functioned more normally, which is critical for countries like the United States that rely heavily on non-bank market financing. Corporate credit and asset-backed spreads had tightened significantly and issuance had risen as firms seek alternatives to scarce bank credit. High-end issuance had also increased though still restricted to higher-quality credit, and spreads remained historically wide (IMF, GFSR Update, July 2009). In line with tentative signs of improvement in economic conditions,

Chart III.4: Impact on Corporate Bond Market



Source: International Monetary Fund.

Table 3.9: Emerging Market Bond Spreads – Select Countries

(basis points)

Region	2007	2008	2009	2008				2009			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	2	3	4	5	6	7	8	9	10	11	12
Latin America											
Argentina	410	1704	660	581	614	953	1704	1894	1062	784	660
Brazil	220	429	189	283	227	333	429	424	282	234	189
Chile	151	343	95	176	177	223	343	286	161	139	95
Mexico	172	434	192	193	194	275	434	441	280	234	192
Emerging Europe											
Hungary	84	504	186	163	134	174	504	540	373	220	186
Poland	67	314	124	112	115	169	314	319	219	148	124
Russia	157	805	203	208	197	388	805	630	418	299	203
Asia											
China	120	228	64	154	137	191	228	210	122	87	64
Indonesia	275	762	230	329	381	490	762	742	433	295	230
Malaysia	119	370	136	144	153	194	370	344	167	174	136
Philippines	207	546	206	273	303	324	546	432	324	265	206

Source: IMF, GFSR, October 2009, April 2010.

corporate bond issuance increased for most of the emerging market economies of Latin America and Asia in 2009, though some of the economies of emerging Europe, like Hungary and Russia have experienced some moderation (Table 3.8).

Impact on Government Bond Markets

3.40 Government bond markets all over the world were characterised by large swings in yields during the crisis period, driven mainly by direct and indirect consequences of the intensified financial crisis. During the recent crisis, due to declines in confidence levels and increases in counterparty risks, investors sought their way out mainly in the government instruments which at a certain point had a negative yield.

Advanced Economies

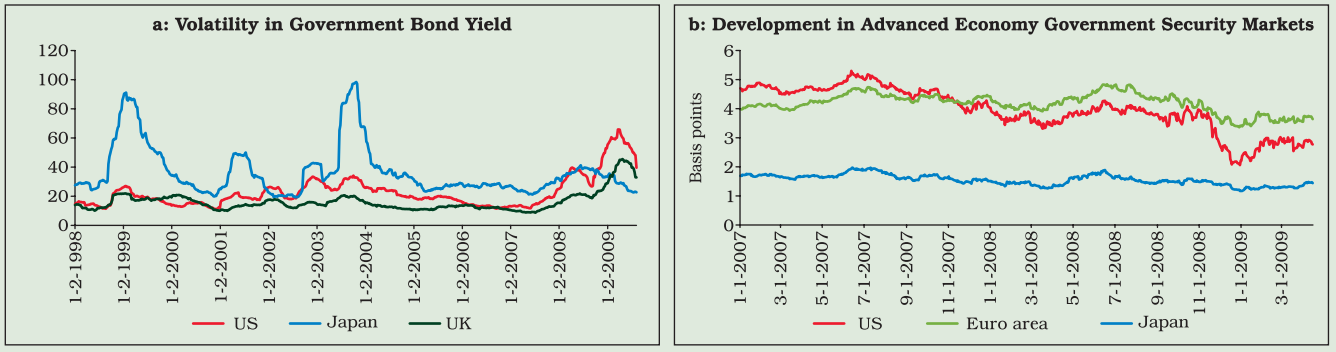
3.41 Amid high day-to-day volatility, long-term government bond yields in the euro area and the United States declined markedly, largely reflecting investors' ongoing preference for highly liquid and safe securities, significant reductions in monetary policy rates, and eventually sharp downward revisions in the market's outlook for economic activity and inflation.

3.42 As the crisis deepened, with continued decline in yields in government securities, a number of measures were announced both in the US and the euro area that aimed at supporting the financial system, strengthening consumer confidence, sustaining economic activity and ensuring credit availability for households and the corporate sector. Despite these measures, the declining trends in long-term government bond yields continued as investors shifted from stocks and other risky assets to sovereign bonds. In the US, the decline in bond yields was more pronounced than in Europe as US government bonds were viewed, on average, as being more liquid than euro area government bonds. At the end of 2008, euro area and US ten-year government bond yields stood at around 3.6 per cent and 2.2 per cent, respectively, which were 75 and 184 basis points lower than the levels prevailing a year ago (Chart III.5).

Emerging Market Economies

3.43 Within EMEs, generally, CDS spreads tended to rise earlier in countries with some external vulnerabilities or where governments rely on external debt financing or have lost some market confidence (Table 3.10). In the EMEs, until August 2008, sovereign debt bond spreads generally rose proportionately with CDS spreads, implying that repricing of risk was an important factor driving the rise in bond spreads over this period.

Chart III.5: Volatility in Government Bond Yields



Note: Volatility is calculated as rolling 100 days annualised standard deviation of changes in yield on 10-year government bond.
Source: International Monetary Fund.

Table 3.10: Sovereign External Borrowings in Emerging Europe

Country	Loans in foreign currency (per cent of total loans)	Increase in CDS Spreads (basis points)
1	2	3
Czech Republic	9.1	276
Hungary	61.9	451
Poland	34.0	320
Latvia	88.4	756
Estonia	85.3	588
Bulgaria	56.3	502
Lithuania	64.0	670

Source: IMF, WEO April 2009.

3.44 Since September 2008, however, spreads have risen sharply in the EMEs, reflecting a rise in global risk aversion that partly stemmed from concerns that slowing growth and financial turmoil in developed economies would increasingly spill over into EMEs. However, in contrast to developed economies, risk spreads for many EMEs remained below levels previously reached during periods of financial crisis in these economies.

Later on

3.45 Sovereign yield curves steepened considerably as conventional monetary policy easing anchored short-term rates, while the longer end of the curve rose sharply, reflecting in part improved recovery prospects, and reduced risk of deflation. With public debt levels expected to rise significantly in many mature market economies, increased focus on fiscal sustainability may have been reflected in sovereign credit default swap spreads remaining well above their pre-crisis levels (GFSR, July 2009 update, IMF). There has been a decline in sovereign debt spreads which has been driven almost entirely by improved global risk appetite and core market liquidity, whereas domestic economic fundamentals continued to deteriorate in many countries through the second quarter of 2009. More recently, some fundamentals have started to turn around, such as the external balance and official reserves, as well as growth prospects.

3.46 Bond yield curves shifted upward and also steepened in most of the emerging East Asian markets in the first half of 2009. The upward movement and steepening of the yield curves could be due to several factors, including (i) additional market liquidity as governments issued new debt to finance fiscal stimulus; (ii) expectations that the new liquidity could add to future inflationary pressures; and (iii) improved investor expectations about economic recovery. In China and Korea, where economic growth has been strong, there has been a significant upward shift and a slight steepening in the bond yield curves. In Malaysia and Thailand, concerns about the size of fiscal deficits may have caused the yield curves to steepen significantly as well as pushing them upward.

Recent Developments

3.47 Sovereign credit risk premiums have more recently widened across mature economies with fiscal vulnerabilities. Sovereign bond markets of some European economies came under renewed stress following the debt crisis in Greece. The rising investor

concerns were mirrored in the Greek bonds and credit default swap markets. The possible loss of the ECB funding source pushed up CDS premia and yield spreads in Greek sovereign bonds. Yield spreads widened when the acute fiscal problems surfaced in Portugal and Spain. The spreads of Greek long-term sovereign bonds over German bonds rose to more than 650 basis points on April 27, 2010. In May, 2010, the EU and the IMF reached an agreement to assist Greece out of the crisis. The measures have been well received by the global financial markets so far, as reflected in terms of various indicators of the credit, government securities, and equity markets.

Impact on Foreign Exchange Market

Advanced Economies

3.48 Development in the forex market during the current financial crisis is a by-product of the developments in other financial markets such as money and credit markets which have tightened since August 2007. In the period immediately following the onset of the crisis, some pressures were noted in the foreign exchange swap markets, movements in which are generally guided by covered interest parity conditions. However, after the onset of the financial turmoil, there was a divergence between actual US dollar LIBOR rates and the implied US dollar rate from the LIBOR of the euro, pound and yen converted by the relevant foreign exchange swap, suggesting pressures in obtaining US dollar funding. Over time, spillovers emerged in the longer-term cross-currency basis swap markets as well (these are generally used for foreign currency obligations of one year or more), as it was perceived that dollar funding requirements were likely to persist. With the deepening of the crisis, US dollar funding once again became scarce in markets outside of the US, particularly in Europe, as reflected in the significant widening of the spread. To alleviate the demand for dollars from overseas, the Federal Reserve had significantly expanded its swap operations with other major central banks.

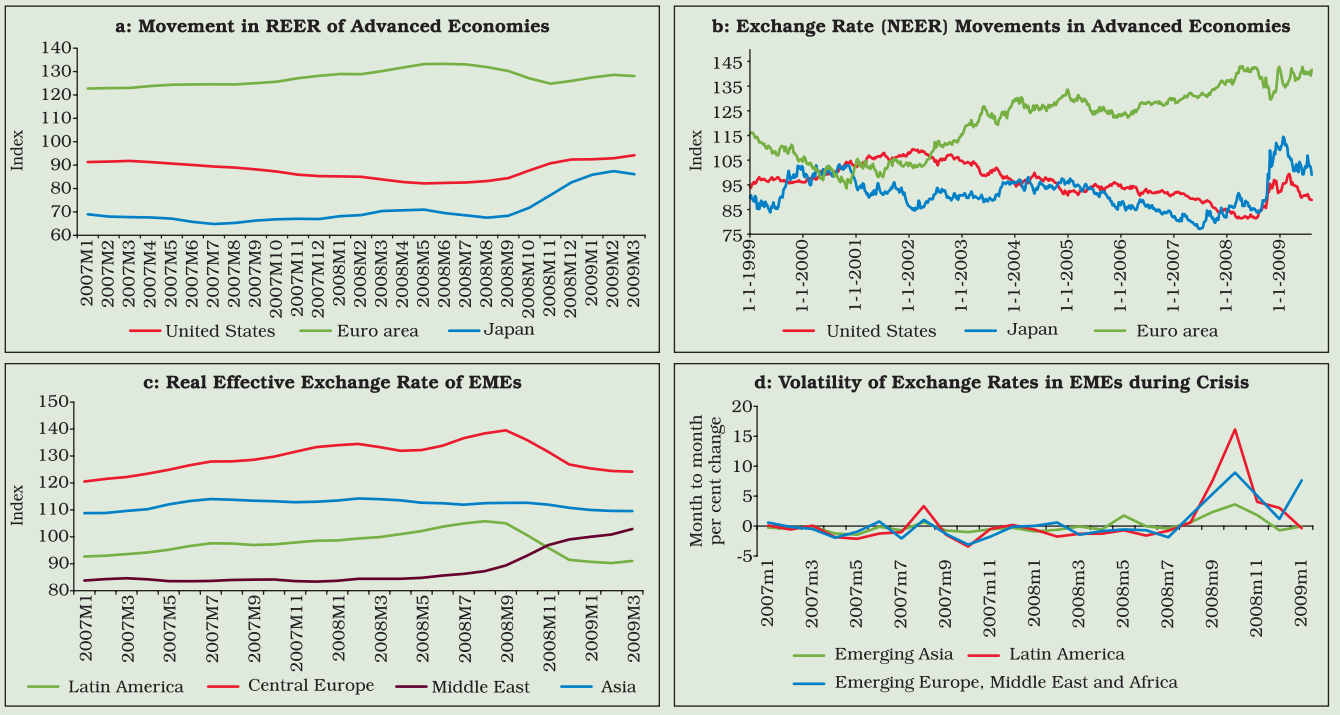
3.49 The increase in volatilities in the foreign exchange markets, in line with other markets, reduced the attractiveness of carry trade positions during the financial turmoil. Until early September 2008, the volatility of the currencies of the G-7 had been greater than that of EME currencies. Carry trades involve investors borrowing in a low-yielding currency and using the proceeds to invest in a high-yielding one. The strategy implicitly relies on expectations that exchange rate movements will not fully compensate for the interest differential. However, volatility in markets raises the risk and reduces the rewards of carry trades. Carry trade positions have been partially unwound since the onset of the financial turmoil, and may have been a factor in some share market movements or currency movements for the destination countries, which generally have relatively high nominal interest rates – for example, Brazil, Colombia, Hungary, Iceland, Indonesia, Turkey and South Africa. On the other side of the transactions, appreciation pressures have been seen at times in some funding currencies (which are primarily developed economy currencies), especially the Japanese yen (IMF, GFSR, April 2009).

3.50 Among the advanced economies, the Japanese yen in real effective terms exhibited an appreciating trend, while the euro and the pound sterling depreciated during the initial period of the crisis (Chart III.6). Sharp appreciation of the real effective value of the yen since late 2007 has depressed Japan's exports. In contrast, the tradable sector in the UK has benefited from a substantial reduction in the effective value of the sterling. A real depreciation of the euro also helped euro area exports in 2008, but the exchange rate appreciated during the first quarter of 2009. In the United States, however, the dollar's appreciation during the second half of 2008 and the first quarter of 2009 implied that the exchange rate, on balance, has become more neutral in the evolution of trade over the past year. In nominal terms, both the euro and the pound sterling depreciated strongly against the US dollar betweeen March 2008 and March 2009, while the Japanese Yen appreciated against the US dollar during the same period. All these currencies, however, experienced nominal appreciation against dollar between March 2009 and February 2010.

Emerging Market Economies

3.51 Developments in the foreign exchange markets of the EMEs broadly reflected the

Chart III.6: Movement in Exchange Rates



Source: International Monetary Fund.

developments in their equity markets. Capital outflows during 2008 and early part of 2009 significantly weakened currencies in some countries, notably India, Korea, New Zealand, and Vietnam. Several countries have responded by intervening to support their currencies, in contrast to the past several years when most Asian countries were concerned about the rapid appreciation of their currencies (Table 3.11).

Table 3.11: Exchange Rates: Appreciation (+)/Depreciation (-) of Currencies against the US dollar

(per cent)

Currency	end-March 2007 over end-March 2006	end-March 2008 over end-March 2007	end-August 08 over end-end-March 2008	end-March 2009 over end-August 2008	end-March 2009 over end-March 2008	end-Feb. 2010 over end-March 2009
1	2	3	4	5	6	7
Euro	10.7	19.0	-7.4	-9.3	-16.0	1.4
Pound Sterling	13.7	2.0	-9.1	-21.4	-28.6	6.1
Japanese Yen	-0.2	17.5	-8.2	11.2	2.0	9.9
Chinese Yuan	3.8	10.1	2.8	-0.1	2.6	0.1
Russian Ruble	6.7	10.6	-4.3	-27.7	-30.8	13.6
Turkish Lira	-2.9	5.3	11.0	-29.3	-21.6	8.4
Indian Rupee	2.3	9.0	-8.7	-14.1	-21.5	10.2
Indonesian Rupiah	-0.5	-1.1	0.7	-20.9	-20.4	24.0
Malaysian Ringgit	6.6	8.5	-5.9	-7.1	-12.6	7.0
South Korea Won	3.3	-5.0	-9.1	-21.3	-28.4	19.4
Thai Baht	11.0	11.2	-7.8	-3.8	-11.3	7.3
Argentine Peso	-0.6	-2.2	4.7	-18.6	-14.9	-4.4
Brazilian Real	5.9	17.1	7.4	-29.4	-24.2	-27.6
Mexican Peso	-1.2	3.6	5.5	-29.2	-25.3	11.5
South African Rand	-14.7	-10.1	5.1	-18.8	-14.7	23.1

3.52 The real effective exchange rates of Asian, Latin American and Central European currencies appreciated during the financial crisis till August 2008. Subsequently, real effective exchange rates (REER) have depreciated in line with the nominal depreciation in the exchange rate of these currencies against the US dollar (Table 3.12). The depreciations were in part the consequence of the strengthening of the US dollar with respect to the most important currencies of the world, a decline in the worldwide demand for Asian and Latin American exports, and strong negative pressures in the financial markets of the region. For the Middle East countries, however, the REER remained largely flat till October 2008 and their currencies have appreciated thereafter.

Later on

3.53 With the exception of Argentina and Brazil, the currencies of almost all the emerging market economies have reversed their decline and strengthened against the US dollar since the second quarter of 2009. In emerging Asia, the Indonesian rupiah, the Korean won, the Indian rupee and the Malaysian ringgit appreciated by 24.0 per cent, 19.4 per cent, 10.2 per cent, and 7.0 per cent, respectively, against the US dollar between end-March 2009 and end February 2010. Moreover, most Asian countries have strengthened their external positions – they are running current account surpluses, maintaining large foreign reserves, and diversifying exports to withstand the recession-induced unprecedented fall

Table 3.12: Movement of Real Effective Exchange Rates of Select Emerging Countries

(Base: 2005=100)

Period	India	China	Brazil	Russia	S.Korea	Thailand	Mexico	Indonesia	Singapore
1	2	3	4	5	6	7	8	9	10
2006-07	98	102	112	112	107	111	99	117	102
2007-08	106	106	125	118	103	115	98	113	103
2008-09	98	118	122	122	79	113	92	107	108
2009-10	97	117	134	118	79	112	87	114	108
2008									
August 2008	102	115	140	125	89	112	103	116	107
September 2008	99	119	128	126	82	112	100	117	107
October 2008	96	123	111	127	72	113	87	112	108
November 2008	97	124	111	132	70	112	87	99	110
December 2008	94	121	104	125	71	109	86	101	110
2009									
January 2009	95	121	110	113	72	110	83	103	109
February 2009	95	126	111	105	69	111	79	99	109
March 2009	91	125	112	114	69	112	80	100	108
April 2009	93	122	116	108	75	112	86	105	107
May 2009	94	120	122	117	78	112	86	109	108
June 2009	95	116	128	119	77	113	85	110	107
July 2009	95	116	129	115	77	112	85	111	108
August 2009	95	117	134	112	77	112	86	112	108
September 09	94	117	135	115	78	111	83	112	107
October 09	96	115	140	117	79	111	84	115	108
November 09	98	113	141	120	80	111	85	115	108
December 09	99	115	140	118	80	111	88	116	108
2010									
January 2010	102	114	140	121	83	113	89	120	109
February 2010	102	118	138	122	82	114	89	120	108
March 2010	105	116	142	131	84	116	92	121	109
April 2010	107	116	145	123	86	117	94	123	111
May 2010	108	120	144	131	83	119	90	123	112

Note : Data are on trade-based weights derived from manufacturing trade flows, and capture both direct bilateral trade and third-market competition by double-weighting.
Source : Bank for International Settlements and Reserve Bank of India.

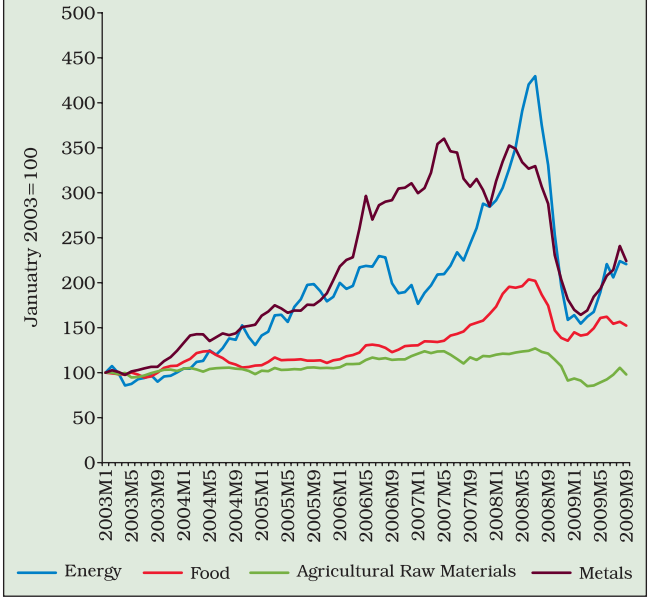
in their exports. There is clear evidence of recovery in capital flows to the EMEs, particularly, China and India. This has resulted in a appreciation of the currencies of most of the emerging market economies in the real effective terms since the beginning of 2010. With further reform in renminbi exchange rate regime announced on June 19, 2010, the exchange rate of many EMEs appreciated.

Impact on Commodity Market

Pre-Lehman: Rising Commodity Prices

3.54 The impact of the financial crisis on the commodity market has been indirect through changes in demand and supply of various commodities at various stages of the crisis. During the initial stages of the financial turmoil, commodity prices were pushed higher as investors sought to hedge against a depreciating US dollar and higher inflation. With the deepening of the financial crisis, as uncertainties and risk aversion in financial markets increased, investors switched to commodity markets. This reinforced a build-up of the commodity price bubble up to July-August 2008. The price of oil nearly tripled from US$ 50 in early 2007 to over US$ 140 in July 2008. Brent crude oil prices peaked on July 11, 2008 at US$ 147.5 per barrel. The case was similar with many other commodities which recorded multi-year peaks during the first half of 2008 (Chart III.7).

Chart III.7: Movement in Commodity Prices



Post-Lehman: Declining Commodity Prices

3.55 The deepening of the financial turmoil since the collapse of Lehman Brothers in September 2008 and deteriorating global economic prospects ended the commodity price boom. The magnitude and volatility of price changes rose to unprecedented levels in the case of certain commodities. By the end of 2008, the IMF primary commodity price index had declined by almost 55 per cent from its peak in July 2008. Brent crude prices declined to around US$ 40 per barrel on account of lower demand due to the economic slowdown. OPEC'S decision to cut supply by a sizable portion failed to prevent prices from falling, amid expectations of an expansion in OPEC production capacities in 2009 and 2010 when new fields are expected to come online (ECB Annual Report, 2008). For the year as a whole, however, the average price of Brent crude oil was US$ 98 per barrel during 2008, which was 35 per cent above the average of the previous year.

3.56 Like oil, the prices of non-energy commodities were volatile throughout 2008. During the second half of 2008, as energy prices started to decline, non-energy commodity prices followed. Metal prices, which started to decline in 2007, dropped more sharply in the second half of 2008 and in early 2009. Food prices have also fallen, although not as dramatically as oil prices because of their relatively weak link to global growth.

3.57 After bottoming out in February 2009, commodity prices recorded sharp recovery thereafter. By the end of 2009, the IMF commodity price index had risen more than 40 per cent from its trough, mainly due to large increase in the petroleum and metal prices (Table 3.13). Petroleum prices strengthened with improved global economic and financial conditions. The sharp price rebound in metal was mainly driven by stronger than expected recovery in the emerging economies (China in particular), as well as sustained cut in production.

Impact on Housing Market

Advanced Economies

3.58 The decline in US home prices was the most important trigger for the market turmoil which has

Table 3.13: Movement in Global Commodity Prices

(Real commodity price indices monthly average 1990-99=100)

	December 2009	Peak March 2008	Trough February 2009	Average 2000-09
1	2	3	4	5
Commodity Price Index	172.1	230.6	123.2	133.6
Nonfuel	106.2	131.4	85.2	89.0
Food	97.4	122.7	88.9	82.6
Beverages	120.1	110.7	99.6	77.6
Industrial Inputs	114.2	143.7	79.4	97.6
Agricultural Raw Materials	73.8	77.7	58.9	75.2
Metal	162.3	222.3	103.9	124.3
Fuel	271.9	380.9	180.7	201.1
Crude Oil	283.5	392.6	161.5	203.3

Source : IMF, WEO, April 2010.

persistently affected many mature economy financial systems since August 2007. In most euro area countries, the deceleration in property price inflation, which characterised 2007, continued in 2008 with prices (including commercial property prices) even falling in some countries. On the positive side, the deceleration in the growth of loans to the household sector and a decline in house price inflation contributed to a moderation of the risks. However, a less favourable outlook for the labour market and for households' disposable income points to a possible emergence of risk in the ability of households to service their debts (Box III.1).

Emerging Market Economies

3.59 Housing prices in emerging Asia have not experienced the sharp decline witnessed in the US or EU (Chart III.8). The declines in emerging Asian housing prices have been moderate and are nowhere near as pronounced as those seen in the region's equity markets. Intuitively, property prices are determined by local conditions and there is much less scope for contagious effects from industrialised countries, in particular the US.

3.60 To sum up, almost all segments of the global financial markets experienced tremors of the financial crisis, though to varying degrees. The interbank market was one of the first financial market segments to be affected by the crisis. The interbank markets of the mature economies suffered from a severe liquidity crisis as banks became reluctant to lend to one another for fear of counterparty risks. Later, the crisis spread to the money markets taking the form of abnormal level of spreads, shortening of maturities, and contraction, or even closure, of some market segments. The sharp slowdown in credit growth worked as a channel for transmitting the crisis from financial institutions to the real economy, particularly in the advanced economies where banks seek to reduce leverage and rebuild capital bases. Global stock markets, particularly the emerging stock markets, have borne much of the heat of the crisis as equity markets all over the world witnessed high volatility and sharp declines in prices, turnover volumes and market capitalisation. During the second half of 2009, however, there have been some signs of recovery in the health of global stock markets. Commodity markets have also witnessed significant corrections since the second half of 2008 following the adverse impact of the crisis. Government bond markets all over the world witnessed large swings in yields driven mainly by the direct and indirect consequences of the intensified financial crisis. Corporate bond markets of advanced economies exhibited relative resilience during the current financial crisis even though corporate bond issuance from the EMEs declined significantly amid heightening of spreads, since the second half of 2008.

3.61 Policy interventions on an unprecedented scale, encompassing quantitative and credit easing policies, extraordinary liquidity measures and government guaranteed funding programs have helped restore normalcy in the functioning of short-term money market, equity and corporate bond markets and the foreign exchange market. Credit growth on the other hand, continued to remain sluggish in most of the advanced economies and some of the emerging market economies reflecting both supply and demand side weaknesses. While commodity prices started gaining strength with the global economic recovery, sovereign bond markets have come under pressure in some of the mature market economies, with weak fiscal fundamentals.

Box III.1
Impact of Declining Asset Prices on Household Wealth

Over the past few years, a combination of factors, like the asset price boom, robust economic growth, rapid financial innovation and low interest rates generated speculative bubbles in the matured economies, which encouraged banks, other financial institutions, households and firms to leverage their balance sheets by increasing their borrowings. Therefore, during the financial crisis, once asset prices started to decline, high debt burdens turned out to be unsustainable, especially as subdued activity began to limit economic growth. This led to a sharp deterioration in household wealth, among others which, in turn, emerged as a key factor leading to the sharp downturn in economic growth.

In the aftermath of the sub-prime crisis, the wealth effect of asset prices and its relevance in conditioning consumer behaviour and decisions relating to consumption and saving have assumed major policy significance. Within asset prices, the decline in equity prices and nominal house prices had the most pronounced impact on household wealth. Declining house prices impact household wealth from both directions. While declining asset prices have a direct negative impact on household wealth, falling house prices imply a reduction in the implicit rental cost of housing, offsetting some of the negative wealth effects. Moreover, lower prices make houses more affordable for prospective homeowners, reducing their need to save for a given down payment. However, during the current financial crisis, in general, these positive effects could not offset the negative impact of declining asset prices on household wealth.

Overall, from the second quarter of 2007 to the fourth quarter of 2008, US households lost around 20 per cent (about US$ 13 trillion) of their net worth; as a percentage of disposable income; this loss was greater than the wealth accumulated over the previous five years. Wealth losses in the euro area have also become more widespread across assets and countries. Decline in household wealth, particularly in the matured market economies due to erosion of asset prices, had direct implication for consumption expenditure. The economic literature suggests that consumption expenditure of households depends on a number of factors, including real interest rate, income uncertainty, growth rate of non-property income, liquid assets, illiquid financial assets, and housing wealth (Muellbauer 2008). The impact of wealth contraction on consumer expenditure is likely to vary across countries depending on institutional arrangements. Although researchers disagree on the estimates of the wealth effect on consumption, the impact of housing wealth is generally assumed to be significant – ranging in several studies between 3 and 7 cents per dollar in Australia, Canada, the United States and the United Kingdom. It is assumed to be relatively small for the euro area. Equity extraction from housing wealth was significant in Australia, Canada, the United Kingdom and the United States during the upswing, so household spending is likely to be more affected in these countries than in others. Some estimates suggest that in the United States about 1.75 per cent of consumption annually was financed through home equity withdrawals during 2001–05, or 3 per cent if withdrawals used to repay non-mortgage debts are included. In the United Kingdom, home equity withdrawal has reversed, plummeting from over 7 per cent of post-tax income in 2003 to –1 per cent in 2008. By contrast, equity extraction played a relatively minor role in household spending in the euro area as a whole because of both a low home ownership ratio and, in some countries, a less developed mortgage market.

With consumption deteriorating faster than income, household saving rates increased in several advanced economies, particularly in those where they had been low. The United States recorded a sharp rise in savings of almost 4 percentage points of disposable income (to 4.2 per cent) between the last quarter of 2007 and the first quarter of 2009. Australia and the United Kingdom also saw a jump in household savings, from almost zero and a negative saving rate in the first quarter of 2008 to 8.5 per cent and 4.8 per cent, respectively, in the fourth quarter. The propensity to save of euro area households also increased markedly, with the saving rate rising by 1 percentage point (to 15.1 per cent) in the final quarter of 2008. In addition, the steep decline in the value of pension fund assets may force individuals nearing retirement, who have defined contribution pension schemes in which benefits are linked to the market value of assets, to increase saving or defer retirement. In the case of defined benefit plans, the large funding gaps could harm the financial position of the corporations sponsoring them and reduce their ability to provide guaranteed benefits or maintain existing employment.

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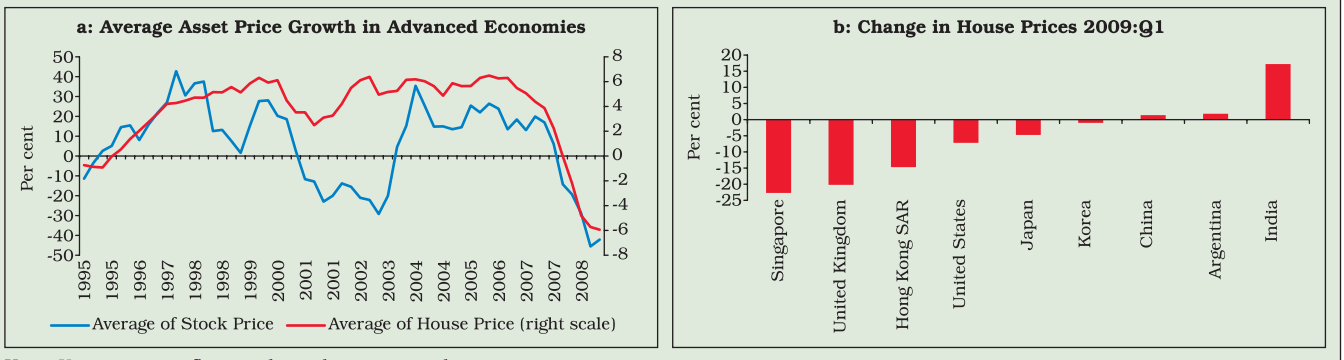
Chart III.8: Movement in House Prices



Note: Year-on-year inflation adjusted percentage change.
Source: International Monetary Fund.

II. IMPACT ON FINANCIAL SYSTEM

3.62 As discussed in the previous chapter, the flawed institutions and practices of the New Financial Architecture – characterised by a globally integrated system of giant bank conglomerates and the 'shadow banking system' comprising investment banks, hedge funds and bank-created Special Investment Vehicles – were possible factors behind the recent financial crisis. Naturally, therefore, the recent financial crisis had the most severe impact on financial institutions, particularly of the advanced economies. The crisis has brought to the forefront the major weaknesses inherent in the US financial system and the regulatory framework that did not recognise the systemic risks posed by the 'shadow banking system' and the build-up of housing and credit bubbles. Over time, the 'shadow banking' institutions became almost as important as commercial banks in providing credit to the US economy, but were not subject to the same regulatory controls. On the other hand, these entities were vulnerable because they borrowed short term in liquid markets to purchase long-term, illiquid and risky assets. Moreover, these institutions as well as certain regulated banks had also assumed significant debt burdens and did not have a financial cushion sufficient to absorb large loan defaults or MBS losses. All these factors together made the US financial system increasingly fragile and vulnerable to crisis.

3.63 At the onset of the crisis, as the US real estate bubble burst, rapid devaluation of mortgage-related assets led to massive write-downs on financial institution balance sheets, eroding their capital base. Disruption in the credit markets subjected them to rapid deleveraging and sell-off of their long-term assets at depressed prices. This gave rise to mounting losses on the balance sheet of the financial institutions. The collapse of two Bear Stearns funds in June 2007 marked the onset of the sub-prime crisis. The crisis, however, turned worse in September 2008 when, within a few days, Lehman Brothers filed for bankruptcy, Merrill Lynch was bought by Bank of America, and American International Group (AIG) received a rescue package from the US Federal Reserve (US Fed). This was accompanied by the failure of a number of significant financial institutions. These developments resulted in unprecedented policy interventions including large bailouts by the US government and central banks, which led to dramatic changes in the US financial landscape.

3.64 The pressure built up in the US financial system spread rapidly to Europe. In Europe, one of the first victims of the crisis was the British bank, Northern Rock, which had to request security from the Bank of England. This led to investor panic and a bank run in mid-September 2008. In Europe, apart from the UK, the crisis was also transmitted rapidly to the euro area, which had deep financial linkages with the US. Many banks as well as other financial institutions in the euro area, such as insurance companies and asset managers, had large exposures to US assets. Many of them were

over-leveraged and depended on benign conditions for liquidity to continue flowing. As a result, with the onset of the crisis in the second half of 2007, financial institutions including large and complex banking groups (LCBGs) in the euro area started getting affected. For LCBGs, financing became more expensive and difficult to access, thereby adding pressures on these institutions to reduce the size of their balance sheets (ECB Financial Stability Report, December 2008). As early as September 2007, companies and non-banking financial institutions accelerated their withdrawal even from the short-term financing of banks, and the banks were increasingly losing confidence in extending loans to one another, leading to a rapid rise in the costs of financing. As a result, credit to the real sector almost stopped and many of the institutions were only able to make overnight borrowings.

3.65 With limited direct exposures to riskier assets and derivatives, financial sectors in most EMEs were not impacted severely, although a decline in investor confidence led to fears of bank vulnerabilities in the case of some EMEs. This prompted authorities in those EMEs to take measures such as implementing deposit guarantees and making liquidity available to domestic banks to reassure depositors and counterparties. The banking system in emerging Europe was more vulnerable as it relied significantly on funding from external banks and from bond issuance. In these countries, lower-rated banks were exposed the most to drying up of external finance.

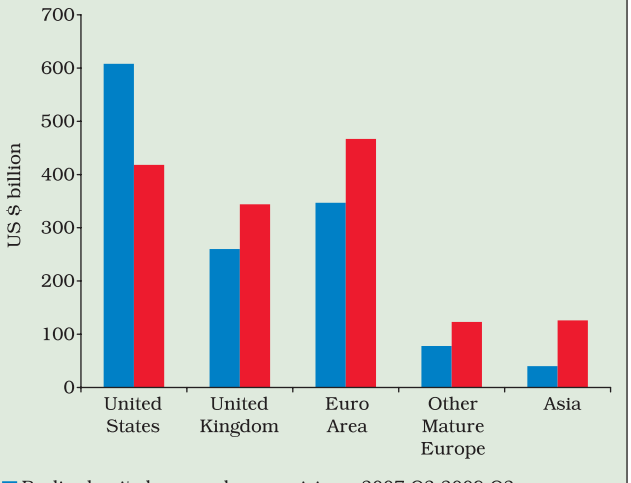
Impact on Banks

3.66 The report of the London Summit, 2009 identified three distinct phases through which the banking industry has been affected by the current financial crisis. In the first phase, market participants realised that they had underestimated the risks associated with a number of structured loans. Demand for these products fell sharply, driving down their prices. As no bank knew which other bank was more exposed to these assets, they became wary of lending to each other. In the second phase of the crisis, banks started announcing losses made on structured loans and other impaired assets. These losses, combined with deteriorating macroeconomic conditions in the advanced economies, turned uncertainty about the value of impaired assets into concerns about the solvency of a number of banks. In the third phase, the failure of the large US investment bank, Lehman Brothers, triggered a sharp intensification of the crisis. Banks stopped trusting each other and their customers stopped trusting their banks. There was loss of confidence in the international financial system. Starting with the UK's recapitalisation plan in October 2008, a large number of governments adopted policies that restored trust in the banking system. In this phase, however, bank losses were more closely connected to borrowers' defaults owing to deteriorating macroeconomic performance Bank losses in Asia were the least, reflecting limited direct exposures to impaired assets and relatively sound macroeconomic fundamentals (Chart III.9).

Commercial Banks

3.67 During the current crisis, the pro-cyclicality in banking, *i.e.*, lowering of lending standards in an upturn and tightening of lending standards in a downturn, was exposed. The profitability of banks plunged in 2008 owing to the realisation of losses on mark-to-market (securities) portfolios, the

Chart III.9: Realized and Expected Writedowns of Loss Provision for Banks



Source: International Monetary Fund.

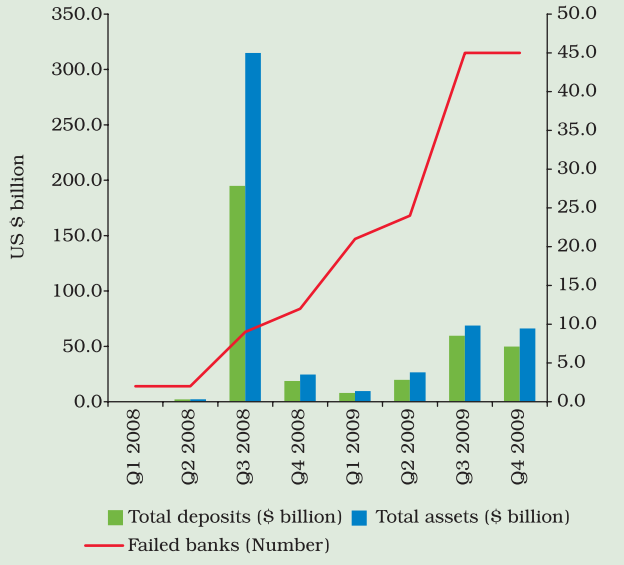
progressive deterioration of loan books as the economic slump deepened, and increases in operating costs. Although the decline in bank profits was a global phenomenon, the way banks have been affected by the crisis has differed somewhat according to the circumstances in their respective home markets (Table 3.14).

Advanced Economies

3.68 The pre-tax profits of US banks more than halved in 2008 compared with the previous year. There was a surge in US bank failures in 2008 during which a total of 25 deposit-taking institutions failed; their combined assets were US$ 372 billion, about 10 times higher than during the previous peak in bank failures in 1993 (Chart III.10). The failure of Washington Mutual alone accounted for US$ 307 billion of the total and was the largest US bank failure in history. The bank was eventually absorbed by JPMorgan Chase, another large bank, with the assistance of the supervisory authorities. Besides the failed banks, the number of institutions on the US deposit insurer's list of problem banks swelled to 252 with total assets of around US$ 159 billion. Further large bank failures were averted as weakened institutions were acquired by others with healthier balance sheets.

3.69 In Europe, profits plummeted across the board with banks in the UK, Switzerland and the Netherlands registering net losses from their exposure to structured finance investments. The slowdown in real estate markets posed large challenges to banks in Spain, Ireland and the UK. Certain German banks were also affected by real estate exposures, *albeit* mainly indirectly through securities positions and exposures to commercial property. In Germany, the crisis led to the restructuring of the domestic banking sector as it acted as a catalyst for a number of bank mergers (ECB Annual Report, 2008). French and Italian

Chart III.10: Bank Failures in the United States



Source: Federal Deposit Insurance Corporation

Table 3.14: Profitability of Major Banks as a Percentage of Total Average Assets

	Pre-tax profits			Loan loss provisions			Operating costs		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
1	2	3	4	5	6	7	8	9	10
Australia	1.5	1.4	1.0	0.1	0.1	0.3	1.6	1.4	1.5
Canada	1.2	1.1	0.5	0.1	0.1	0.2	2.4	2.3	2.0
France	0.7	0.4	0.1	0.1	0.1	0.2	1.2	1.2	1.2
Germany	0.4	0.3	-0.4	0.1	0.1	0.2	1.0	0.9	1.2
Italy	1.1	0.9	0.3	0.3	0.3	0.4	2.2	2.0	2.3
Japan	0.5	0.3	0.1	0.0	0.1	0.2	0.5	0.6	0.7
Netherlands	0.5	0.3	-0.8	0.1	0.1	0.3	1.1	1.0	1.3
Spain	1.4	1.4	1.1	0.3	0.4	0.5	1.8	1.8	1.9
Sweden	1.0	0.9	0.7	-0.0	0.0	0.1	1.0	1.0	1.00
Switzerland	0.8	0.4	-1.9	0	0.0	0.1	1.5	1.8	2.6
UK	0.9	0.7	-0.1	0.3	0.2	0.4	1.6	1.4	1.3
US	1.7	1.0	0.4	0.2	0.5	1.1	3.0	3.3	3.4

Source: Bank for International Settlement (2009), 79th Annual Report, 2008-09.

banks were less affected by losses on structured finance investments given their stronger focus on the domestic retail market. A number of European lenders averted outright bankruptcy through direct support from the public sector. As a manifestation of the global financial crisis, the market capitalisation of the euro area's large and complex bank groups (LCBGs) collectively dropped by almost Euro 200 billion between mid-September and late November 2008, bringing the cumulative decline since the turmoil erupted to around Euro 450 billion, which is more than half the aggregate market value of these banks immediately prior to August 2007.

3.70 Having put the loan problems of the previous decade behind them, Japanese banks were thought to be in a position to gain from the weaknesses of their international competitors. In the initial months of 2008, the Japanese banking industry showed relative resilience to the financial crisis mainly because of smaller exposures to sub-prime and structured products. However, with the progress of the crisis, the profitability of Japanese banks turned poor, partly because of their structurally narrow net interest margins. Consequently, their capital base weakened. Moreover, any plans for international expansion were put on hold in the second half of 2008 when the domestic economy fell into recession and losses intensified.

3.71 In sum, during the initial phase of the crisis, banks mostly faced funding pressures and mark-to-market losses. As the macroeconomic situation worsened from September 2008, financial institutions faced increasing pressure on earnings and mounting losses on their credit risk exposures (Table 3.15). Bank losses witnessed a shifting pattern in line with the evolution of the crisis. Initially bank losses/write-downs were closely linked to traded portfolios of structured finance products and securitised exposures to the sub-prime mortgage

Table 3.15 : Banking Indicators – Select Countries

Region	Banks' Provision to Non-Performing Loans (per cent)				Bank Return on Assets (per cent)			
	2007	2008	2009	Latest	2007	2008	2009	Latest
1	2	3	4	5	6	7	8	9
Latin America								
Argentina	129.6	131.4	123.0	November	1.5	1.6	2.4	November
Brazil	181.9	189.0	156.0	October	2.9	1.5	1.2	October
Chile	210.2	179.9	177.5	December	1.1	1.2	1.2	December
Mexico	168.9	161.2	163.8	September	2.7	1.5	1.2	September
Emerging Europe								
Hungary	64.8	58.9	51.2	September	1.2	0.8	1.1	September
Poland	-	61.3	50.2	September	1.7	1.6	1.2	September
Russia	144.0	118.4	94.8	December	3.0	1.8	0.7	December
Asia								
China	39.2	116.4	155.0	December	0.9	1.0	1.1	June
Hong Kong SAR	78.4	71.5	68.3	September	1.9	1.8	1.6	September
India	56.1	52.6	-	March	0.9	1.0	1.0	March
Indonesia	104.5	118.6	127.4	April	2.8	2.3	2.6	September
Korea	205.2	146.3	125.2	September	1.1	0.5	-	December
Malaysia	77.3	89.0	93.3	November	1.5	1.5	1.2	September
Philippines	81.5	86.0	91.4	September	1.3	0.8	1.1	September
Singapore	115.6	109.1	91.0	September	1.3	1.0	1.1	September
Thailand	86.5	97.9	-	December	0.1	1.0	-	December
Advanced Economies								
Australia	181.8	74.8	68.0	September	1.0	0.7	0.6	June
Canada	42.1	34.7	59.1	September	0.8	0.4	0.4	September
Japan	78.3	83.2	83.2	September	0.3	-0.2	0.2	September
United States	91.7	75.3	58.1	December	0.8	0.0	0.1	December

Source: IMF, GFSR, April 2010.

market. Losses were exacerbated by illiquidity in the markets for those instruments, which led to substantial reductions in their mark-to-market valuations. While there was considerable uncertainty about the magnitude of the losses and their distribution across the system, they were perceived as being contained within a certain class of assets. At a later stage, bank losses/write-downs became more directly linked to a surge in borrower defaults and to anticipated defaults, as evidenced by the increase in the amount and relative importance of provisioning expenses on account of slowdown in economic activity. Loan loss provisions as a fraction of bank assets were higher in 2008 than in previous years. Compared with 2007, the rate at least doubled for Australian, French, Swiss and US banks and jumped even higher in the case of German, Dutch and Swedish lenders.

Emerging Market Economies

3.72 Although the banking sector of most EMEs remained sound, a decline in investors' confidence led to fears of bank vulnerability in some of the EMEs. Moreover, the significant presence of foreign banks within many EMEs, particularly in Europe and Latin America, raised a further potential source of contagion during periods of financial stress. Banks in emerging Europe relied heavily on external financing, with the foreign banking sector being an important conduit for funds. Banks in Asia remained relatively resilient.

3.73 The relative resilience of emerging Asia's banking and financial systems during the current financial crisis reflects a number of factors: (i) the Asian financial system was bank-dominated and banks generally had not invested in the illiquid assets, which were at the heart of the current financial crisis; (ii) Asian financial institutions had limited exposure to US sub-prime mortgages and structured credit products mainly on account of the more cautious risk management and the strengthening of the regulatory structure that resulted both from Japan's banking crisis in the late 1990s and the 1997 financial crisis in emerging Asia (Table 3.16); (iii) relatively strong bank balance sheets with a return to profitability, as impaired loans from the 1997/98 Asian financial crisis have been worked off; (iv) improvements in risk and liquidity management; (v) strengthening of supervisory and regulatory systems; and (vi) moves by banks into new and profitable domestic business lines, such as consumer lending. The move into consumer lending implies an absence of the strong search for yield that led many banks and other financial institutions in industrialised countries to take on too much leverage and risk (Asian Development Bank, 2009).

Table 3.16: Select Asian Banks with Exposure to Lehman Brothers

Bank	Economy	Exposure (US $ million)
1	2	3
Citibank (Hong Kong, China branch)	Hong Kong, China	275
Mega Financial	Taipei, China	200
Industrial and Commercial Bank of China	China	152
Banco de Oro	Philippines	134
Bank of China	China	129
Bangkok Bank	Thailand	101
Bank of Nova Scotia (Singapore branch)	Singapore	93
Development Bank of the Philippines	Philippines	90
Shin Kong Fin	Taipei, China	80
Metropolitan Bank and Trust Company	Philippines	71

Source: ADB Outlook 2009.

3.74 Asian banks had limited exposures to US sub-prime mortgages and a very small percentage of the write-downs reported globally since the sub-prime debacle originated in Asia, the bulk of which were concentrated in Japan and to a lesser extent in China. Meanwhile, Asian banks have raised large amounts to boost their capital positions. The new capital not only replenished depleted amounts, but also cushioned against potential losses arising from future problematic loans.

3.75 Banks across the Asian region also held generally comfortable domestic currency liquidity cushions. During the current global crisis, a lower loan-to-deposit ratio (less than 1) in the case of many countries implied an absence of liquidity risk arising from foreign liabilities (Table 3.17). Loan-to-deposit ratios across the region, with the exception of Korea, have been rather conservative

Table 3.17: Bank Ratios

(as of Q2 of 2008)

	Ratio of Loans to Domestic Deposits	Ratio of Loans to Total Liabilities	Ratio of Foreign Liabilities to Domestic Deposits
1	2	3	4
China	0.72	0.71	0.01
India	0.95	0.94	-
Hong Kong	0.54	0.30	0.80
Korea	1.40	1.15	0.22
Singapore	0.85	0.51	0.68
Taipei, China	0.79	0.71	0.10
Indonesia	0.78	0.73	0.06
Malaysia	1.08	0.94	0.13
Philippines	0.57	0.50	0.14
Thailand	1.05	1.00	0.07
Vietnam	1.04	0.96	0.09

Source: ADB Economics Working Paper Series No.139.

and many banking systems report high ratios of short-term assets to liabilities. These cushions reflect the increased attention to liquidity management since the 1997-98 crisis along with relatively subdued levels of lending to the corporate sector in recent years. Various indicators suggest the overall soundness of the region's banking systems in terms of profitability and operational efficiency. Some pressures on domestic currency liquidity were, however, seen in a number of countries during the later stage of the crisis.

3.76 In view of the emphasis on strengthening capital requirements in recent years, the risk-weighted capital adequacy ratios (CRAR) were comfortable and continued to provide a strong capital cushion to the banks in emerging Asia and Latin America (Table 3.18). This was true even in Korea where the banking system was relatively more vulnerable given the greater reliance on external borrowing. During 2008, the ratio of non-performing loans to total loans generally decreased in the Asian economies, while it increased in advanced countries perhaps reflecting the impact of the crisis. Within

Table 3.18: Banking Indicators – Select Countries

Region	Risk-Weighted Capital Adequacy Ratio (per cent of risk-weighted assets)				Non-Performing Loans (per cent of Commercial Bank Loans)			
	2007	2008	2009	Latest	2007	2008	2009	Latest
1	2	3	4	5	6	7	8	9
Latin America								
Argentina	16.9	16.8	18.6	November	2.7	2.7	3.1	November
Brazil	18.7	18.3	18.2	October	3.0	3.1	4.5	October
Chile	12.2	12.5	14.3	December	0.8	1.0	1.4	December
Mexico	15.9	15.3	15.9	September	2.7	3.2	3.4	September
Emerging Europe								
Hungary	10.4	11.1	13.1	September	2.3	3.0	5.9	September
Poland	12.0	10.8	13.1	September	5.2	4.4	7.0	September
Russia	15.5	16.8	20.9	November	2.5	3.8	9.6	December
Asia								
China	8.4	12.0	10.0	November	6.2	2.4	1.6	December
Hong Kong SAR	13.4	14.8	16.6	September	0.8	1.2	1.5	September
India	12.3	13.0	13.2	March	2.5	2.4	2.4	March
Indonesia	19.3	16.8	17.5	October	4.1	3.2	3.8	September
Korea	12.3	12.3	14.2	September	0.7	1.1	1.5	September
Malaysia	13.2	12.7	14.6	November	6.5	4.8	3.8	November
Philippines	15.7	15.5	15.8	September	5.8	4.5	4.6	September
Singapore	13.5	14.7	16.5	September	1.5	1.7	2.3	September
Thailand	14.8	13.8	—-	December	7.9	5.7	—-	December
Advanced Economies								
Australia	10.2	11.4	11.7	September	0.2	0.8	1.1	September
Canada	12.1	12.2	14.5	September	0.7	1.1	1.2	September
Japan	12.3	12.4	14.3	September	1.4	1.6	1.8	September
United States	12.8	12.8	14.3	December	1.4	2.9	5.4	December

Source: IMF, GFSR, April 2010.

Asia, in countries like Hong Kong, Korea, Indonesia and the Philippines, the ratio of non-performing loans to total loans was comparatively higher in 2009; the same trend was seen in emerging Europe.

3.77 Like emerging Europe, some Latin American EMEs had a large presence of foreign banks. Mexico had a concentrated exposure with around 40 per cent of its banking assets held by just two foreign banks. However, in contrast to emerging Europe, many of these foreign banks were locally funded, highly profitable and contributed to overall group income. Moreover, commercial banks in Latin America did not invest to any significant degree in 'toxic' financial instruments, but they had been hit by the sharp contraction in external credit. The institutions in Latin America were not exposed significantly to external risks as they focused mainly on domestic markets, which resulted in not incurring risks similar to financial institutions in the advanced countries and in emerging Europe. Latin America had also been helped by the relatively small size of the national financial systems and strong supervision and prudential regulations (ADB, 2009).

Later on

3.78 Bank failures in the US continued in 2009 and 2010, even as the US economy showed tentative signs of recovery. As per the records of Federal Deposit Insurance Corporation (FDIC), there are reports of 83 bank failures in the US in the first half of 2010. Notwithstanding the bank failures, confidence in the US banking system has been bolstered by better-than-expected earnings, a successful stress testing exercise, the commitment by the US government to stand behind the largest banks, and a series of bank capital raising. However, the loss ratios continue to remain high. In Europe, universal banks have also benefited from better earnings and capital increases. Given largely domestically-focused business and relatively strong economic activities, the profitability of emerging Asia's banking systems generally remained high and Asian banking and financial systems weathered the financial turmoil relatively well. Despite generally good profits and low non-performing loan ratios, increased signs of stress in the financial sector emerged in a number of Asian economies, largely due to falling income from fees and commissions amid the economic deceleration. Overall, however, the emerging Asian banks continued to remain in good health till date.

3.79 In the recent months, some of the European banks having exposure to euro area countries facing market pressures (Greece, Ireland, Portugal and Spain) have come under renewed stress. French and German banks were particularly exposed to the residents of those four countries, with a combined exposure of US$ 958 billion at the end of 2009. Banks headquartered in the United Kingdom, on the other hand, had large exposures to Ireland (US$ 230 billion). Government debt, however, accounted for a smaller part of euro area banks' exposure to those countries than claims on the private sector.

Investment Banks

3.80 The crisis has impacted the banking industry as a whole, but investment banking seems to have taken a more severe blow than commercial banks. During the boom phase in 2004-07, the top five US investment banks (Lehman Brothers, Bear Stearns, Merrill Lynch, Goldman Sachs and Morgan Stanley) significantly increased their financial leverage, which increased their vulnerability to a financial shock. These five institutions incurred over US$ 4.1 trillion in debt for fiscal year 2007, which constituted about 30 per cent of US nominal GDP. The crisis left deep scars on these institutions. The magnitude of their losses reached very high levels as all lines of business were affected. Securities underwriting declined during 2008 as primary market issuance slowed and associated revenues fell. In comparison, the merger and acquisition advisory business held up better, although it also slowed in the first quarter of 2009. More generally, investment banking operations were reduced across the board.

3.81 During the crisis, large holdings of high-risk structured securities and unhedged exposures in the securitisation pipeline were marked down dramatically. The illiquidity of asset and funding markets proved particularly challenging for the

investment banks, which could no longer rely on an increasing volume of transactions to generate revenue growth or on cheap and readily available short-term financing to support high levels of leverage. As a result, firms' balance sheets shrank in size and employment in these institutions declined radically. Staff strength at Bear Stearns and Lehman Brothers were cut by more than half as their operations were taken over by other institutions. Decline in staff strength at other firms broadly mirrored the size of their realised losses. The net revenue for the largest investment banking operations was estimated to have fallen by more than 90 per cent in the third quarter of 2008 compared with the same period a year earlier, as market activity seized up.

3.82 As a result of the deep impact of the crisis, Lehman Brothers was liquidated, Bear Stearns and Merrill Lynch were sold at low prices, and Goldman Sachs and Morgan Stanley turned into commercial banks, subjecting themselves to more stringent regulation. With the exception of Lehman Brothers, all these institutions required or received government support. On the other hand, Fannie Mae and Freddie Mac, the two US government-sponsored enterprises, owned or guaranteed nearly US$ 5 trillion in mortgage obligations at the time they were placed into conservatorship by the US government in September 2008. These seven entities were highly leveraged and it is estimated that they together had US$ 9 trillion in debt or guarantee obligations reflecting an enormous concentration of risk, yet were not subject to the same regulation as depository banks.

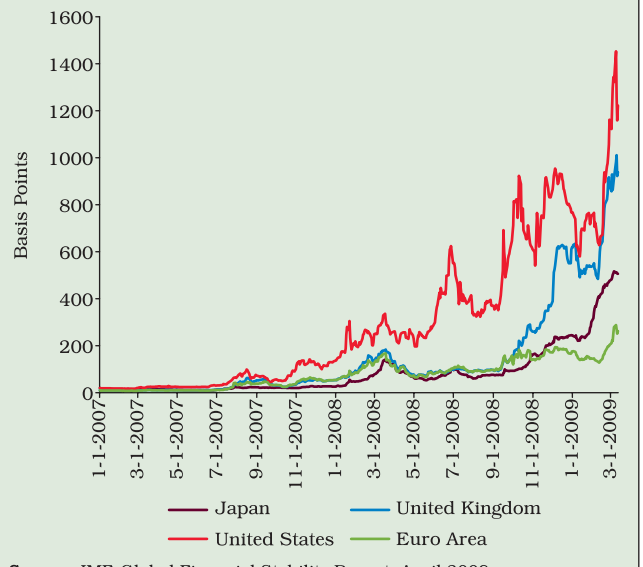
Insurance Funds

3.83 During the crisis, insurance companies faced adverse conditions on both sides of their balance sheet due to lower long-term interest rates and asset price declines. The impact of the asset market slump was reflected primarily in the performance of financial asset portfolios of the insurance companies. Insurance companies suffered losses as prices fell across a broad array of asset classes. For life insurance companies, the decline in the level of long-term yields also meant an increase in liabilities on long-maturity policies.

3.84 The market capitalisation of insurance companies came under similar pressures as banks due to exposure to risky assets (notably, mortgage-related securities and commercial real estate loans) and as a result of weakening macroeconomic conditions. For the majority of insurance companies, the main effect of the crisis has been on their financial performance rather than on premium income. The firms affected most by the crisis were those involved in the provision of credit risk insurance. Monoline insurers (more formally known as Finance Guaranty Insurers), which specialise in the provision of credit guarantees, have been a conduit for contagion across markets during the crisis. The protection that they offer is dependent on their maintaining a high credit rating (usually AAA). However, as losses mounted, credit ratings of most monolines were downgraded, which placed pressure on the ratings of all the debt that they had insured, reflecting the higher probability that investors will face losses. As the creditworthiness of borrowers declined, concerns about the ability of monoline insurers to honour their guarantees mounted and led to significant mark-to-market losses for banks that had purchased insurance.

3.85 Some global insurers continued to report large losses during the second half of 2008, in particular due to their insurance underwriting of credit and structured credit products. The US insurer, AIG, suffered heavy losses during the second and third quarters of 2008. These troubles led to rating downgrades in September 2008, which forced the insurer to post collateral payments on derivatives trades. AIG was unable to raise enough capital to satisfy demands for collateral quickly enough, which resulted in the Federal Reserve Bank of New York offering AIG a two-year loan of up to US$ 85 billion to give the ailing insurer the opportunity to sell some of its assets in an orderly fashion. In return, the US government received an equity interest of 79.9 per cent in AIG. The near-collapse of AIG was directly linked to the underwriting of credit risk. Its write-downs surged along with soaring CDS spreads (Chart III.11). The size of its liabilities and the central role its credit

Chart III.11: Insurance Sector Credit Default Swap Spread



Source: IMF, Global Financial Stability Report, April 2009.

derivatives operation played as counterparty in the over-the-counter market repeatedly necessitated extraordinary official intervention to provide substantial financial support.

Hedge Funds

3.86 Hedge funds, along with institutional investors, are considered to be a major channel of financial transmission from advanced to emerging market economies and they have been instrumental in the development of local markets. Hedge funds, in particular, have been important for providing liquidity to financial markets in EMEs and facilitating genuine hedging activities. Although hedge funds had not played a central role in shaping the dynamics of the crisis, they were also been severely affected by the financial crisis. Hedge funds performed very poorly during 2008 with almost all investment strategies showing negative results as returns in asset markets plummeted and the cost of funding soared. As counterparties pressed for increased transaction margins and investors withdrew funds on an unprecedented scale, the industry contracted sharply. Estimates of assets under management shrank by more than one-third in the course of the second half of 2008, with bad performance and customer withdrawals playing an equal role in the decline. A number of funds closed. Many fund managers attempted to preserve capital by restricting withdrawals, thereby lengthening investors' effective lock-in period.

3.87 Outflows of foreign capital from emerging equity markets and subsequent depreciation of their currencies were attributed to unwinding of positions by some global hedge funds (Table 3.19). Interestingly, Asia-focused hedge funds have been among the worst performers worldwide, with their returns consistently below those of other emerging market funds (Finance and Development, IMF, December 2008).

3.88 On the positive side, the crisis is likely to accelerate the trend towards greater institutionalisation and transparency within the hedge fund industry. It is already evident that to avoid the fate of smaller funds that were liquidated as a result of investor withdrawals, many larger funds have oriented their marketing towards institutional investors. Such a shift demands greater transparency about the investment strategy and greater scrutiny of risk management processes. Responding to the challenges of the investment environment, some of the larger funds introduced lower fee schedules and processes that pay closer attention to the needs of large institutional clients. Finally, a number of official recommendations for the reform of the prudential framework imply tighter oversight of the industry. Such reforms include the registration of all hedge funds, more demanding reporting requirements for the larger funds and

Table 3.19: Emerging Market Hedge Funds

(US $ billion)

Year	Net asset flows	Estimated assets
1	2	3
2002	-5.7	23.7
2003	3.4	34.2
2004	4.7	46.3
2005	5.3	55.1
2006	8.0	81.8
2007	9.1	116.7
2008 Q1	0.6	111.1
2008 Q2	1.0	122.7
2008 Q3	-2.6	90.4
2008 Q4	-6.7	67.0

Source: IMF estimates: GFSR April 2009.

direct supervision of those whose operations have implications for systemic stability.

3.89 To sum up, financial institutions were the worst sufferers of the financial crisis. With the onset of the crisis, commercial banks suffered from a decline in profitability and large mark-to-market losses, which later gave rise to bank failures in the US and other mature economies in Europe. The banking system of the emerging market economies, on the other hand, reflected relative resilience during the crisis on account of their limited exposure to the affected asset classes and the regulatory and supervisory measures taken to strengthen their balance sheets in the aftermath of the East Asian crisis. The crisis almost sidelined the investment banking industry, which was instrumental in triggering the crisis. The crisis also heavily impacted the financial performance of monocline insurers and hedge funds and, in the case of the latter, the crisis accelerated the trend towards greater institutionalisation and transparency.

III. IMPACT ON THE EXTERNAL SECTOR

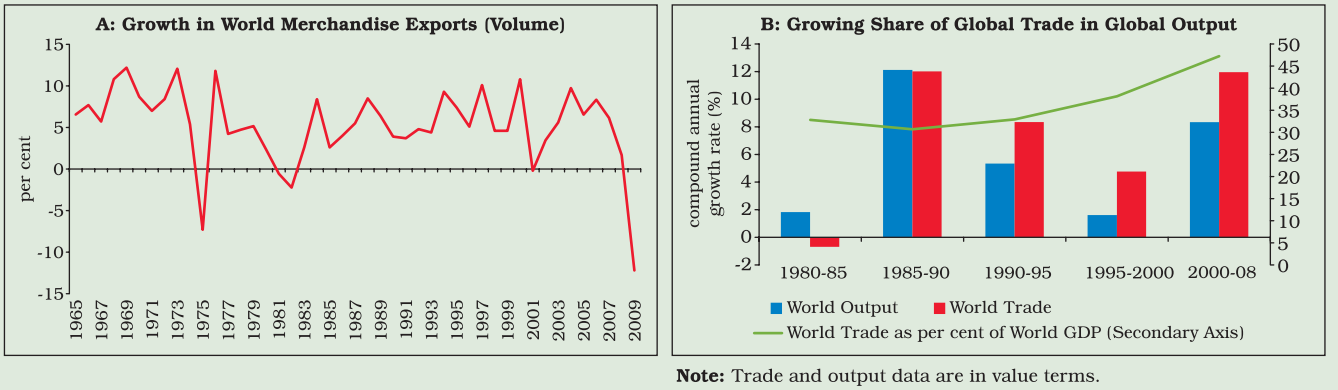
International Trade

Trade Openness

3.90 The volatilities in the financial markets along with the slowdown in economic activities in the advanced economies were transmitted to the EMEs through both trade and financial channels on account of the increased global integration witnessed in recent years. Over the past quarter-century, the growth in world trade at about 6 per cent was almost double the rate of world output. As a result, the share of world trade in world GDP increased and stood at over 53 per cent in 2008 (Chart III.12). Apart from trade liberalisation, this can also be attributed to rapid developments in financial markets which led to financialisation of global trade. But the same developments also widened the scope for economic turmoil when global conditions deteriorated. For instance, trade finance which is now being increasingly used for financing trade was severely affected during the crisis as the financial markets tumbled.

3.91 The rising importance of trade in the global economy masks the underlying regional variations. For example, Asian exports grew at an average rate of above 10 per cent and those of Latin America and the Caribbean by about 7 per cent, which are higher than the world average of 6 per cent during the past quarter-century. This led to increasing openness of these economies as reflected in the share of their trade in GDP (Table 3.20). The share of international trade in developing countries' output grew from 35 per cent in 1980 to 57 per cent in 2007. The sharp increase in trade not only created new markets for producers in the developing world but also lowered prices for consumers. The growing integration of developing economies with the global economy and the increasing importance of their firms and households in international finance over the past decade have brought enormous economic and financial benefits. But rising trade integration

Chart III.12: International Trade – Trends and Significance



Note: Trade and output data are in value terms.

Table 3.20: Trade Openness – Select Countries

(per cent of GDP)

Region	2001	2002	2003	2004	2005	2006	2007	2008
1	2	3	4	5	6	7	8	9
Latin America								
Argentina	17.0	34.9	33.7	36.8	37.3	37.2	37.8	38.5
Brazil	20.5	21.3	22.0	24.0	21.8	21.0	21.1	23.6
Chile	50.6	50.5	53.5	58.0	60.7	64.4	68.2	73.2
Mexico	48.6	47.0	47.9	50.7	51.4	53.1	54.0	55.1
Emerging Europe								
Czech Republic	113.0	105.2	109.4	123.2	123.2	131.5	137.6	131.7
Poland	47.8	50.8	58.9	66.9	64.3	70.8	72.4	71.8
Russia	50.8	50.9	49.1	47.4	48.3	47.3	44.7	45.5
Asia								
China	37.6	41.8	50.7	58.4	62.2	64.8	62.8	58.0
Hong Kong SAR	234.2	247.7	287.0	319.4	330.1	341.8	343.7	349.9
India	21.5	22.6	23.8	27.5	32.1	35.3	34.5	41.7
Indonesia	57.3	48.5	44.1	47.2	54.7	48.7	47.1	49.9
Korea	57.4	54.2	57.9	66.2	64.5	66.8	69.4	92.7
Malaysia	169.8	167.2	167.2	181.2	181.5	181.5	169.5	N.A
Philippines	96.7	96.8	96.1	95.8	89.4	84.9	74.6	65.3
Singapore	298.8	297.5	315.4	335.3	353.9	364.4	333.7	N.A
Thailand	101.8	97.0	101.7	111.1	122.1	116.9	111.6	121.7
Advanced Economies								
Australia	34.1	32.8	29.6	30.0	31.9	34.4	33.2	37.9
Canada	69.6	66.9	61.2	61.4	60.0	58.2	56.4	57.5
Japan	17.0	17.8	18.7	20.5	22.9	26.4	28.6	29.6
United States	18.2	17.5	17.8	19.3	20.4	21.5	22.1	23.5

Note: Trade openness is measured by the ratio of exports plus imports to GDP.
Source: 1. International Financial Statistics, IMF.
2. World Economic Outlook Database, IMF.

also widened channels through which a slowdown in economic activity in advanced economies could spread to the EMEs.

3.92 During the recent financial crisis, the evolution of international trade has mirrored that of economic activity. International trade flows, which had grown robustly in recent decades mainly on account of waves of liberalisation, suddenly abated by the end of 2008 and then strongly contracted in some areas, further propagating the effects of the crisis across countries. According to the IMF's estimates, world trade (goods and services) contracted by 10.7 per cent in 2009 after recording a subdued growth of 2.8 per cent in 2008 (Table 3.21). World trade volumes fell on three other occasions after 1965 (0.2 per cent in 2001, 2.0 per cent in 1982, and 7.0 per cent in 1975), but none of these episodes approached the magnitude of decline observed in 2009. The decline in world trade volume was much higher than the earlier plunge, showing the large impact of the recent financial crisis through the increased integration of

Table 3.21 : Developments in World Trade Volumes

(per cent)

Item	2007	2008	2009	2010P
1	2	3	4	5
World trade volume (goods and services)	**7.3**	**2.8**	**-10.7**	**7.0**
Imports				
Advanced economies	4.7	0.6	-12.0	5.4
Emerging and developing economies	13.8	8.5	-8.4	9.7
Exports				
Advanced economies	6.3	1.9	-11.7	6.6
Emerging and developing economies	9.8	4.0	-8.2	8.3
Commodity prices (US dollars)				
Oil	10.7	36.4	-36.3	29.5
Non-fuel (average based on world commodity export weights)	14.1	7.5	-18.7	13.9

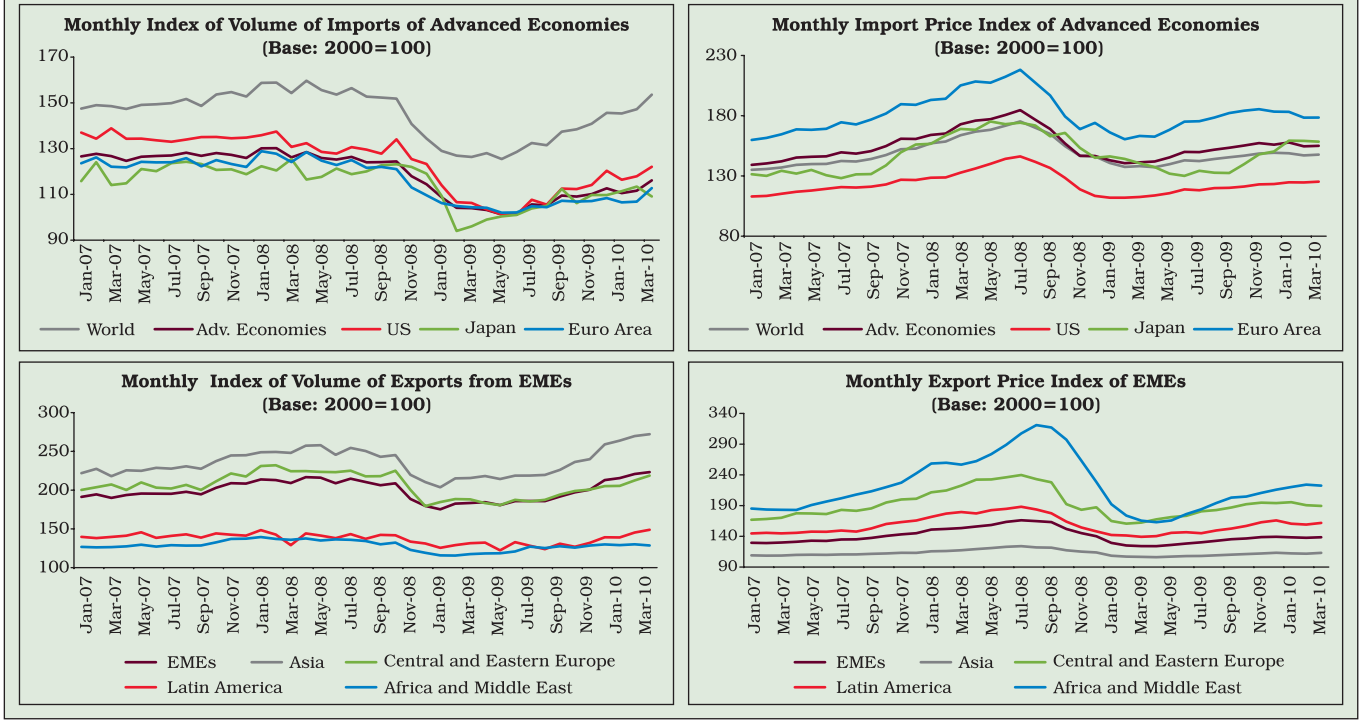
P : Projection.
Source: World Economic Outlook, April 2010, IMF.

global trade across countries. According to the World Trade Organisation (WTO), the year 2009 witnessed the sharpest decline of 12.2 per cent in world trade in more than 70 years. Currently, world trade is in a recovery phase and set to rebound in 2010 by growing at 9.5 per cent (WTO, 2010).

What Explains the Steep Fall in Trade?

3.93 The declines in trade flows since October 2008 were larger than in past slowdowns due to several factors. First, the impact of the US sub-prime crisis had its first-order impact on shortages of liquidity in the advanced economies through the loss of assets. With the loss of wealth, households in the US and in European countries responded by cutting their discretionary spending. This seems to have had a particularly pronounced effect on demand for manufactured goods. The contraction in consumption demand along with investment demand in the major economies led to a sharper fall in the imports of the advanced economies. These developments were reflected in the sudden fall in exports from EMEs, particularly those where a major portion of the exports were to crisis-hit advanced countries (Chart III.13). Second, the decline in trade growth from October 2008 was due not only to volume decline but also to sharp reductions in prices in line with the decline in demand. This decline in the EMEs' export prices was sharper than the fall in import prices of the advanced economies, which was reflected in the large decline in EME exports in value terms. Third, the sharp declines in trade flows can be attributed to the increasing presence of global supply chains in total trade; goods cross many frontiers during the production process and components in the final product are counted every time they cross a frontier (WTO, 2009). Fourth, there was a shortage of trade finance (discussed later). Fifth, the rising tendency for protective measures could contribute to trade contraction, although there is no clear evidence on this count. Sixth, the decline in spending on consumer durables in advanced countries over the second half of 2008 has sharply reduced EME exports of automobile and information technology (IT) products. In the recent downturn, the inventory-to-sales ratio of electronic goods had risen sharply in East Asia, and their exports and production had decreased.

Chart III.13: Monthly Trade Performances



Impact across Regions

3.94 The impact of declining trade was felt across all regions, although the extent varied depending on the importance of manufacturing exports in the economy (Chart III.14). Among developed countries, Germany and Japan, for instance, have been worse affected by their declining exports of manufactures than other countries. It is mainly the demand for investment and durable consumer goods that was severely affected. This is not only because the consumption of such goods can be more easily deferred than that of food and basic services, but also because their acquisition partly relies on credit, which was more difficult and costly to obtain. As a result, countries that have a high share of investment and durable consumer goods in their total output experienced a larger fall in industrial production and overall GDP growth than others. Australia and Canada were also affected by a fall in commodity prices. In Latin America, exports have fallen in all countries, but the impact of the crisis has been particularly strong in countries such as Mexico where GDP was contracting rapidly since the last quarter of 2008. Mexico relies heavily on exports of manufactures to the United States, and they had also been affected earlier and to a greater extent than other countries due to lower income from tourism and workers' remittances.

3.95 Against the backdrop of increased global integration and specialisation in manufacturing production chains, developing economies in Asia experienced a strong contraction in economic activity following the slowdown in advanced economies (Box III.2). The synchronised fall in exports intensified in the first quarter of 2009 with an average year-on-year decrease of around 25 per cent in most EMEs (Table 3.22). In other Asian countries, such as China, India and Indonesia, declining exports of manufactures have had a less dramatic effect on industrial output and GDP owing to their large and still expanding domestic markets.

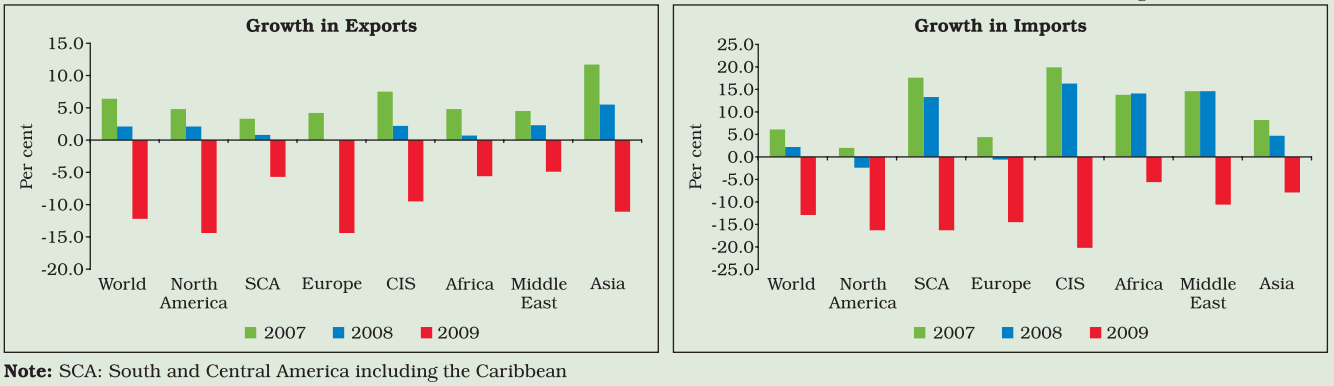
3.96 The global economy is now beginning to pull out of the recession. Emerging Asia is leading the global rebound and looks set to emerge from the global downturn both faster and stronger than any other region. This quick turnaround in Asia benefited greatly from policy stimulus, and public demand more than offset the drag from net exports. Going forward, Asia will not be able to count on strong external demand at least in the near term as global recovery is expected to be sluggish. It is essential to build the foundation of sustained growth through infrastructure and financial development and improvements in corporate incentives, rather than relying too much on export demand. Further, by developing or improving social safety nets and healthcare systems, many emerging and developing economies can boost domestic consumption.

Trade in Services

3.97 The global financial and economic crisis has also affected trade in services. The growth of world

Chart III.14: Region-wise Trade Performance

(Per cent Change at Constant Prices)



Note: SCA: South and Central America including the Caribbean

Box III.2
Why Asian Exports Were Worst Affected

East Asia has particularly benefited from trade liberalisation as reflected in the export-led industrialisation in these countries. This is perceived to have led to intra-regional spillover effects, mainly emanating from technological transfers through direct investment from Japan, and indirectly from "hollowing out" of the industrial economies. Each shift in the industrial focus of the Japanese economy, from light to heavy electronics and hi-tech industries, created market opportunities for other economies in the region such as Korea and Taiwan. Even within the electronics industries, mid-range goods gradually began to be supplied by Korea, Taiwan, Singapore, and Malaysia, and only the most sophisticated goods were produced in Japan. More recently, as Korea, Taiwan and Singapore started specialising in the heavy and hi-tech goods sectors, the light industries were picked up by Thailand, the Philippines and Indonesia.

This sequence of industrialisation, often called the "flying geese pattern", succeeded in the East Asian economies in passing on the comparative advantages in manufacturing from a leader to the followers, and then to the followers' followers. A sequential pattern of industrialisation was observed from the agricultural sector to the industrial sector with small capital requirements to heavy and petrochemical industries, and to precision and electronics industries, with latecomers repeating the changes in industrial composition. High exports growth in the Asian countries has been possible on the back of a strong domestic industrial sector which created a base for sustainable growth. The value added in the industrial sector during the high-growth phase exceeded 10 per cent (per annum) in these economies. Today, several developing economies in Asia are part of a manufacturing supply chain for exports to advanced economies. In some of these countries, like Malaysia, the Republic of Korea, Singapore, Taiwan and Thailand, exports of manufactures represent a substantial share of their GDP.

On the back of rising manufacturing exports as well as strong domestic fundamentals, the Asian region has become a strong economic driver for the world with a rising share in output, trade and reserves (Table). During the current crisis, however, the abrupt deceleration in growth in Asia was more rapid than in other regions, and in key countries even sharper than at the epicentre of the global crisis due to the greater integration of these economies. In many ways, this severe impact was unexpected. Asia is far from the epicentre of the crisis, not just geographically but also in the sense that it did not indulge in the financial practices that led to serious problems in advanced economies' banking systems. Moreover, before the crisis, the region was in sound macroeconomic shape, and thus in a strong position to resist the pressures emanating from advanced economies. Therefore, what explains the outcome contrary to expectations? The answer lies in Asia's exceptional integration with the global economy. Much of Asia relies heavily on technologically sophisticated manufacturing exports for which demand had collapsed. At the same time, Asia's financial ties with the rest of the world have deepened over the past decade, exposing the region to the forces of global deleveraging.

Table: Developing Asia: The Emerging Economic Driver of the World

Year	Share (%) in the World			
	GDP	Exports	Imports	Reserves
1	2	3	4	5
1980	7.2	4.2	4.6	8.6
1985	8.6	4.9	5.9	15.2
1990	10.1	5.3	5.8	6.9
1995	13.5	8.2	8.8	12.3
2000	15.2	9.6	8.5	15.7
2005	18.3	12.7	11.9	27.1
2010/Latest	22.9	14.5	13.3	33.8

Source: WEO database; IFS (IMF).

Countries with a larger share of advanced manufacturing in GDP experienced sharper output declines. The underlying reason is that advanced manufacturing is more cyclically sensitive than other items. Growth in Asian economies with a lower share of manufacturing, such as commodity exporters, initially held up better, although the collapse in commodity prices hit them as well. The collapse in demand has been transmitted through the integrated supply chain with dramatic effects on intra-regional trade. The current crisis vividly illustrates that Asia has not "decoupled" from the global economy. Synchronised recession in advanced economies has further complicated the matter during the current crisis as against the experience in 1998 when the decline in domestic demand was offset to some extent by demand emanating from industrial economies.

exports of transport, travel and other commercial services decelerated from 20 per cent in 2007 to 12 per cent in 2008 (Table 3.23). Based on available data, year-on-year global exports of commercial services in the fourth quarter of 2008 fell by 7–8 per cent (WTO, 2009). Exports of transport services rose 16 per cent in 2008, while travel services and other commercial services increased by 11 per cent and 12 per cent, respectively. Maritime transport services reacted rapidly to the slowdown of global demand. Data on the deployment of both dry and liquid bulk, as well as on container ships, confirm an increasing withdrawal of vessels from service. Accordingly, the crisis led to reduced port traffic. In addition, freight rates fell substantially during the final months of 2008. After reaching a peak in May 2008, the Baltic Dry Index plunged to its lowest level by the end of October 2008. The world export of commercial services

Table 3.22: Trade Performance of Select Asian Countries

(year on year per cent change)

	2007Q1	2007Q2	2007Q3	2007Q4	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2	2009Q3	2009Q4
1	2	3	4	5	6	7	8	9	10	11	12	13
Export Growth (in per cent)												
China	28.0	27.5	26.2	22.2	21.3	22.4	23.3	4.4	-19.8	-23.5	-20.6	0.1
Hong Kong	8.3	11.1	7.8	8.3	10.7	8.1	5.6	-1.8	-21.5	-12.4	-13.8	-2.0
India	15.5	23.1	17.3	37.3	37.4	57.0	39.6	-8.4	-20.2	-34.9	-24.2	6.0
Indonesia	14.5	14.6	8.7	18.4	29.2	27.9	26.9	-7.5	-29.7	-24.7	-17.9	21.6
Japan	10.4	7.2	9.3	14.5	20.5	17.6	12.9	-10.0	-40.6	-33.9	-24.5	-1.0
Korea	14.6	14.1	9.4	18.2	17.4	23.1	27.0	-9.9	-25.2	-21.1	-17.6	11.7
Malaysia	7.6	7.8	6.9	16.1	19.2	28.9	21.4	-12.9	-28.9	-33.3	-26.4	10.1
Pakistan	0.0	4.6	4.4	12.4	22.3	24.3	17.9	-7.3	-20.0	-23.9	-13.2	10.0
Philippines	9.4	4.6	2.3	9.9	2.8	5.5	4.1	-22.3	-36.8	-28.9	-21.5	5.1
Singapore	9.9	7.2	8.4	14.8	21.2	26.4	21.2	-13.9	-32.7	-30.8	-22.4	11.8
Sri Lanka	13.0	12.5	12.1	12.1	11.5	11.1	12.0	2.8	-9.3	-22.7	-13.7	-5.6
Thailand	17.3	17.8	13.3	25.8	23.1	28.2	26.1	-10.7	-20.7	-26.2	-17.7	11.9
Import Growth (in per cent)												
China	18.2	18.3	20.5	25.3	28.9	32.7	25.7	-9.1	-30.9	-20.2	-11.7	22.7
Hong Kong	8.3	12.1	8.9	10.6	11.8	9.4	6.9	-4.0	-22.4	-14.3	-9.9	3.4
India	18.9	40.3	25.3	29.2	45.9	49.0	61.2	7.4	-25.8	-30.9	-34.8	1.2
Indonesia	14.1	14.1	18.5	15.0	42.1	51.2	43.5	12.5	-35.7	-38.0	-29.5	-4.4
Japan	4.5	4.1	4.8	16.0	25.6	28.4	32.6	6.1	-29.3	-35.6	-30.6	-15.0
Korea	13.4	14.7	7.3	25.9	28.9	30.5	42.8	-9.0	-32.7	-35.6	-31.0	1.4
Malaysia	12.4	8.2	8.0	19.7	15.8	17.3	14.4	-17.3	-36.9	-31.0	-22.6	11.8
Pakistan	6.9	2.9	8.5	19.1	49.6	47.5	33.8	-6.5	-37.8	-27.3	-29.6	1.2
Philippines	7.8	-0.7	8.5	13.9	24.1	12.1	10.4	-23.9	-33.6	-26.9	-28.9	-0.8
Singapore	8.7	6.7	4.7	20.8	32.1	35.5	32.9	-9.1	-32.5	-33.6	-25.1	3.8
Sri Lanka	3.2	4.4	9.1	23.1	38.0	34.3	29.4	-0.1	-30.3	-42.2	-32.8	-10.1
Thailand	3.7	7.3	7.9	15.4	36.4	30.6	40.1	6.1	-36.9	-33.3	-28.0	0.3

Source: World Trade Organisation.

declined by 13 per cent in 2009 with transportation services contracting by 21 per cent.

3.98 Within services, tourism was severely impacted by the crisis. International tourist arrivals to EMEs declined by 2 per cent in the second half of 2008, compared with an increase of 6 per cent recorded in the first half of the year. Data for January and February 2009 indicate a roughly 8 per cent year-on-year fall. All regions have registered negative growth, with the exception of Africa, Central and South America. West Asia, South Asia and Europe have been among the worst affected regions, with declines of 28.2 per cent, 14.6 per cent and 8.4 per cent, respectively, during 2008. According to the world tourism organisation (UNWTO), international tourist arrivals, fell by an estimated 4 per cent in 2009.

Table 3.23: World Exports of Merchandise and Commercial Services

	Value (US$ billion)	Annual percentage change			
	2009	2005-09	2007	2008	2009
1	2	3	4	5	6
Merchandise	12,147	4	16	15	-23
Commercial services	3,312	7	20	12	-13
Transportation services	704	5	20	16	-21
Travel	854	6	15	11	-11
Other commercial services	1,754	10	23	12	-10

Source: WTO Secretariat.

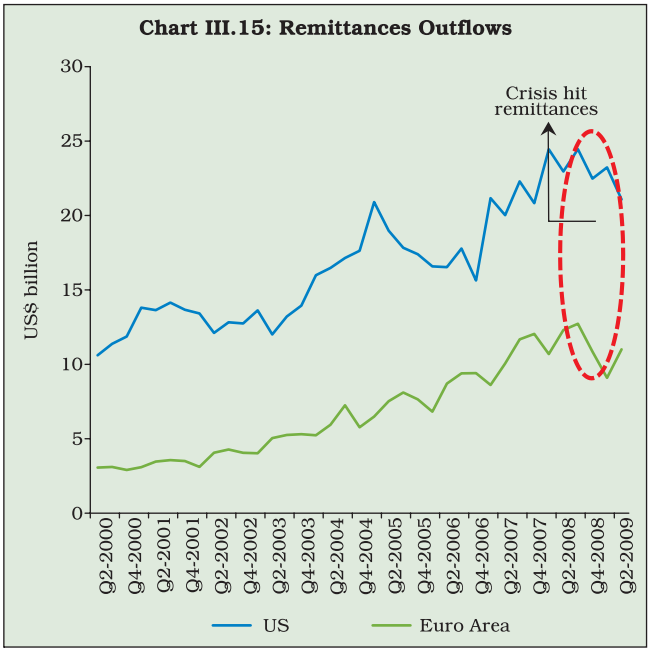
Remittances

3.99 Remittances represent one of the largest international flows of financial resources over the past decade. For many remittance-receiving developing economies, remittances exceeded

foreign direct investment, portfolio flows from financial markets and official development assistance. In some countries, total remittance receipts amount to a substantial portion of their imports and a significant share of GDP. Given the large size of aggregate remittance flows, remittances have significant macroeconomic effects on the recipient economies in terms of improving the welfare of individual households, facilitating domestic consumption, supporting investment and balance of payments.

3.100 Remittances have grown significantly over the past fifteen years particularly in Asia and Latin America, with India, Mexico and the Philippines being the largest recipients of workers' remittances. These flows have been very stable, and have acted as a counter-cyclical force in the receiving countries. However, they are highly sensitive to economic conditions in the host countries. The pace of remittances slowed sharply beginning in the third quarter of 2008 as the economic crisis gathered strength in the countries where migrants work. With many emigrants working in the US, Europe, and the Middle East, remittances started to fall in 2008, for the first time in a quarter century. Remittances outflows from the US and Europe declined during end 2008 and early 2009 (Chart III.15).

Chart III.15: Remittances Outflows



3.101 By region, East Asia and Pacific has been the largest recipient of remittances followed by South Asia and Latin America and the Caribbean (Table 3.24). There are indications that the flows of remittances to these countries slowed down in response to slower growth in the US and other advanced economies. Recorded flows to Latin America and the Caribbean have already stagnated since 2007, as the US recession, especially in the construction sector, reduced the employment and income of Latin American (especially Mexican) migrants. With further slowdown in the construction sector in the US, these countries may be particularly affected since many immigrants from these regions are employed in the construction sector. Remittances to Sub-Saharan Africa have decelerated sharply from a high growth rate of 48 per cent during 2007, partly due to significant slackening in flows to Nigeria. On the other hand, remittance flows increased to emerging Europe and central Asia (with significant migration to the Gulf region), at least earlier in the year 2008, benefiting from increases in incomes from higher oil prices. However, remittances to this region also have been severely hit during 2009.

3.102 Overall, the officially recorded remittance flows to developing countries reached US$ 317 billion in 2009, down 6 per cent from US$ 338 billion in 2008. For the first time since the 1980s, remittances to developing countries declined, *albeit* modestly, in 2009. The decline in remittance flows was the highest in Europe and Central Asia (15 per cent) and Latin America and Caribbean (10 per cent), while South Asia and East Asia and Pacific were among the least affected regions. These regional trends reveal that: (a) the more diverse the migration destinations, the more resilient are remittances; (b) the lower the barriers to labor mobility, the stronger the link between remittances and economic cycles in that corridor; and (c) exchange rate movements produce valuation effects, but they also influence the consumption-investment motive for remittances (Ratha, *et al,* World Bank, 2010). Despite a modest decline in remittance inflows, thse flows have remained more resilient compared to private debt

Table 3.24: Remittance Flows to Developing Countries, 2002-09

(US$ billions)

Country/Region	2002	2003	2004	2005	2006	2007	2008	2009e
1	2	3	4	5	6	7	8	9
All developing countries	112.6	140.4	164.4	198.9	235.4	289.4	337.8	317.2
(Per cent of GDP)	1.81	1.98	1.95	1.99	2.00	2.00	1.95	2.00
By region								
East Asia and Pacific	27.5	32.7	40.3	50.5	57.6	71.3	86.1	84.8
Europe and Central Asia	12.8	14.4	21.0	30.1	37.3	50.8	57.8	49.3
Latin America and the Caribbean	27.9	36.6	43.3	50.1	59.2	63.2	64.7	58.5
Middle East and North Africa	15.2	20.4	23.0	25.0	26.1	31.4	34.7	32.2
South Asia	24.1	30.4	28.7	33.9	42.5	54.0	73.3	72.0
Sub-Saharan Africa	5.0	6.0	8.0	9.4	12.6	18.6	21.1	20.5

e: estimate.

Source: World Bank staff estimates. Remittances are defined as the sum of worker's remittances, compensation of employees, and migrant transfers - see www.worldbank.org/prospects/migration and remittances for data definitions and the entire dataset.

and equity flows and have become even more important as a source of external financing in many developing countries.

3.103 Interestingly, migrants' remittances are concentrated in a relatively small number of recipient countries; 10 countries account for more than half of total remittances, and the three largest recipients (India, China and Mexico) for more than one-third of the total remittance inflows (Table 3.25). Remittances have a relatively large weight in many smaller and mainly low-income economies. These countries are particularly vulnerable to recession in the main immigration economies (*i.e.*, countries of the European Union, the Gulf Cooperation Council, the Russian Federation and the United States), which witnessed sharp contraction in the construction and services sectors that gave employment to the largest number of foreign workers.

3.104 The recent trend in remittances to developing countries suggests that the decline in remittances is far smaller than that for private flows to developing countries. According to the World Bank, the resilience of remittances arises from the fact that while new migration flows have declined, the stock of migrants has been relatively unaffected by the crisis. Although the aggregate decline in worldwide remittance flows as a result of the crisis was small, the situation proved more serious for some small, poor countries where remittances make up a relatively large share of GDP such as Tajikistan (50 per cent), Moldova (31 per cent), Kyrgyz Republic (28 per cent) and Lesotho (27 per cent) in 2009.

Table 3.25: Major Remittance-receiving Developing and Transition Economies in 2009

	Inflows of migrants' remittances (US$ billion)	Annual change (per cent)	Share of remittances in GDP (per cent)
1	2	3	4
Ranked by Volume			
India	47.0	-8.9	4.2
China	47.0	-3.2	1.1
Mexico	22.9	-13.1	2.4
Philippines	19.4	4.1	11.2
Bangladesh	10.4	16.0	11.4
Nigeria	9.6	-4.0	4.7
Pakistan	8.6	22.4	4.2
Poland	8.5	-20.8	2.0
Romania	8.0	-14.7	4.7
Egypt	7.8	-10.3	5.3
Ranked by Share in GDP			
Tajikistan	1.8	-28.7	49.6
Tonga	0.1	-3.7	37.7
Moldova	1.5	-21.4	31.4
Kyrgyz Republic	1.0	-17.9	27.9
Lesotho	0.5	12.0	27.3
Samoa	0.1	-2.7	25.8
Lebanon	7.0	-2.5	25.1
Guyana	0.3	-4.6	24.0
Nepal	3.0	10.4	21.6
Honduras	2.5	-10.6	20.1

Source: Authors' computations based on World Bank data.

Current Account Deficit

3.105 During 2008, the impact of the crisis on the current account of developing economies was seen in terms of reduction in current account surplus (Argentina, China, Indonesia, Philippines, Singapore and Israel) or surplus turning into deficit for countries running current account surpluses (Brazil, Chile and Korea), while the deficit of countries that had a current account deficit increased (Mexico, Hungary, Poland and India) (Table 3.26). On the other hand, for some countries the impact of the crisis was not visible in their current account as their current account surplus increased (Russia, Hong Kong and Saudi Arabia). In the course of 2009, global imbalances contracted to some extent with reduction in current account deficits/surpluses of several countries notably the US and China.This trend was supported by substantial decline in oil prices, fall in asset prices forcing increased household savings in deficit countries and steep fall in the export demand of investment goods affecting the surplus countries.

Table 3.26: Cross-country Movement of Trade Balance and Current Account Balance

(as % of GDP)

Country	Trade Balance					Current Account Balance				
	1990	2000	2007	2008	2009	1990	2000	2007	2008	2009
1	2	3	4	5	6	7	8	9	10	11
Latin America										
Argentina	6.1	0.9	5.1	4.7	6.0	3.3	-3.1	2.3	1.5	2.8
Brazil	2.1	-0.1	2.9	1.5	1.6	-0.7	-3.8	0.1	-1.7	-1.5
Chile	4.1	2.8	14.6	5.2	8.6	-1.5	-1.2	4.4	-1.5	2.2
Mexico	-0.3	-1.3	-1.0	-1.6	–	-2.8	-3.0	-0.8	-1.5	-0.6
Emerging Europe										
Czech Republic	–	-5.5	3.4	2.9	–	–	-4.7	-3.1	-3.1	-1.0
Hungary	1.6	-6.2	0.2	0.0	–	1.1	-8.5	-6.8	-7.2	0.4
Poland	5.8	-7.2	-4.0	-4.9	-1.0	1.9	-5.8	-4.8	-5.1	-1.6
Russia	–	23.2	10.1	10.8	9.1	–	18.0	6.0	6.2	3.9
Turkey	-4.7	-8.3	-7.2	-7.2	–	-1.3	-3.7	-5.8	-5.7	-2.3
Emerging Asia										
China	2.3	2.9	9.3	8.0	–	3.1	1.7	11.0	9.4	5.8
India	-1.6	-2.3	-5.3	-7.9	–	-2.5	-1.0	-1.0	-2.2	-2.1
Indonesia	4.3	15.1	7.6	4.5	6.5	-2.5	4.8	2.4	0.0	2.0
Korea	-0.9	3.2	2.7	0.6	6.7	-0.7	2.3	0.6	-0.6	5.1
Malaysia	5.7	22.2	20.0	23.1	–	-2.1	9.0	15.7	17.5	16.7
Philippines	-9.1	-7.9	-5.8	-7.7	–	-6.1	-2.9	4.9	2.2	5.3
Thailand	-7.9	9.5	10.8	6.6	–	-8.3	7.6	6.3	0.6	7.7
Other EMEs/NIEs										
Singapore	-4.4	15.1	27.4	16.4	–	8.5	11.6	27.6	19.2	19.1
Hong Kong SAR	–	-4.8	-9.5	-10.7	–	6.2	4.1	12.3	13.6	11.1
Israel	-4.7	-3.1	-3.4	-3.6	-0.1	0.3	-1.8	2.9	0.7	3.7
Saudi Arabia	19.6	26.4	39.1	44.6	–	-3.6	7.6	24.3	27.9	5.5
South Africa	5.8	3.5	-2.0	-1.6	0.2	1.4	-0.1	-7.2	-7.1	-4.0
Advanced Economies										
Australia	0.1	-1.2	-1.9	-0.5	–	-4.8	-3.8	-6.1	-4.4	-4.1
Austria	-4.2	-2.1	0.5	-0.1	-0.8	0.7	-0.7	3.1	3.5	1.4
Canada	1.6	6.2	4.2	4.2	0.9	-3.4	2.7	1.0	0.5	-2.7
France	-1.1	-0.2	-2.2	-3.0	–	-0.8	1.6	-1.0	-2.3	-1.5
Germany	4.4	2.9	8.1	7.2	–	2.9	-1.7	7.6	6.7	4.8
Japan	2.3	2.5	2.4	0.8	–	1.5	2.6	4.8	3.2	2.8
United Kingdom	-3.2	-3.4	-6.4	-6.5	-5.8	-3.8	-2.6	-2.7	-1.5	-1.3
United States	-1.9	-4.5	-5.9	-5.8	-3.6	-1.4	-4.2	-5.2	-4.9	-2.9

–: Not Available.

Source : World Economic Outlook, April 2009; International Financial Statistics, IMF.

3.106 Although the crisis originated in the financial sector of advanced economies, it had implications for the current account position of many developing countries through the trade channel. In this context, the much debated issue of the sustainable size of current account deficit has again attracted attention from a country-specific perspective. The issue becomes more pertinent in the light of severe reversal of capital flows in EMEs, which necessitated a re-look at the conventional rules derived on the basis of historical experiences. It was historically argued that CAD/GDP ratio above 5 per cent was a cause for alarm (Summers, 1996), especially if the deficit is financed by short-term debt (Milesi-Ferreti and Razin, 1996). The Chilean crisis in the early 1980s was associated with CAD/GDP ratio exceeding 14 per cent. The external crisis in Mexico in the early 1990s also witnessed a high CAD/GDP ratio averaging 7 per cent. Indonesia, Malaysia, the Philippines and Thailand also witnessed persistently large current account deficits during the East Asian crisis of the mid-1990s. Similarly, the payments crisis in Brazil in 2001 reinforced the view that the size of the current account deficit does matter. The levels of current account deficits from the viewpoint of sustainability drew more focused attention in the policy debates during the East Asian crisis. In fact, large current account deficits were considered an important factor in the East Asian crisis (Corsetti, Pesenti and Roubini, 1998; Radelet and Sachs, 2000).

Impact on Global Capital Flows

3.107 Apart from trade, the sub-prime crisis spread through the financial channel, especially through capital flows. Trade flows and capital flows generally interact with each other during normal times, while during a crisis the one that is impacted first by the crisis influences its counterpart, magnifying the overall impact. The flow of capital between nations, in principle, brings benefits to both capital-importing and capital-exporting countries. But historical evidence, reinforced by the recent global financial crisis, clearly shows that it can also create new exposures and bring new risks.

3.108 Capital flows to developing and emerging market economies were very large before the crisis, especially during 2002-2007 (Table 3.27). According to the IMF's World Economic Outlook, 2009, net private capital flows to 143 emerging markets and five small open economies rose from US$ 90 billion in 2002 to around US$ 600 billion in 2007. Although the structure of flows has become more stable, capital flows continue to be very volatile and this has major macroeconomic implications for recipient countries. Almost one-quarter of the total domestic capital formation of the developing countries was funded by foreign capital in the years immediately preceding the crisis.

3.109 It is noteworthy that the expansion of capital flows has been much greater than that of international trade flows (Goldstein, Mathieson and Lane, 1991; Montiel, 1993). This reflects the combined effect of several factors such as greater financial liberalisation, rise of institutional investors such as mutual funds and pension funds, growing financial innovations and financial market developments, intermediation in derivative products and improvement in information technology. The process has been reinforced by the ongoing abolition of impediments and capital controls and the widespread liberalisation of financial markets in developing countries since the 1990s. In the process, capital flows to developing countries witnessed compositional shifts with the dominance of private (bond and equity) flows in recent periods, as opposed to official flows in the past. While specialised investors such as hedge funds and

Table 3.27: Capital Flows in EMEs: Various Episodes Compared*

(US$ billion)

	Inflows	Outflows	Forex reserves change	Current account balance
1	2	3	4	5
1993-1996	280	110	90	-85
1997-2001	269	193	89	21
2002-2007	951	818	584	429

* All EMEs as defined in the IMF World Economic Outlook plus Hong Kong SAR, Korea, Israel, Singapore and Taiwan (China); annual average.

Sources: IMF, Balance of Payments Statistics; Central Bank of China (Taiwan).

mutual funds accounted for the bulk of portfolio inflows up to the mid-1990s, subsequently it was the pension funds, insurance companies and other institutional investors who increased their presence in emerging markets. International bank lending to developing countries also increased sharply during the 1990s, and was most pronounced in Asia (prior to the Asian Crisis), followed by Eastern Europe and Latin America.

3.110 The pace, magnitude, direction and composition of international capital flows have crucial implications for the recipient countries. The surge in private capital inflows to developing economies in the 1990s (*i.e.*, up to the Asian financial crisis in 1997-98) and in the 2000s has coincided with a period of low international interest rates in the advanced economies and domestic policy reforms in the developing world. This led to a debate in the literature on whether the surge was driven primarily by domestic or external factors. The literature usually distinguishes between two sets of factors affecting capital movements. The first are country-specific 'pull' factors relating to improved policies that increase the long-run expected return or reduce the perceived risk on real domestic investment, while the second ones are global or 'push' factors such as easy liquidity and the search for yields in the US and other advanced economies.

3.111 Historically, most emerging market crises of the 1980s and 1990s were associated with reversals in gross private capital inflows that reflected a loss of confidence in emerging market policies. Developments in capital flows during the current crisis are, however, somewhat different. With the notable exception of some Central and Eastern European countries, many emerging market economies adopted sound policies before the crisis and thus were more resilient to reversals in capital flows, at least initially. But as the crisis deepened, some developments in capital flows followed a pattern similar to that of past crises, because the nature of capital flows to the developing economies has undergone dramatic changes over time. While in the past official flows dominated capital flows to the developing economies, at present the bulk of capital flows come from private (bond and equity) sources. Thus, even though most developing countries maintain better policies and have stronger institutions than they did during previous crises, many of them are nevertheless vulnerable to external disruptions. Emerging market equities and investments have always been sensitive to the global economic cycle, but the recent crisis has severely impacted the developing countries. Net private capital flows to emerging and developing economies went through a sharp reversal during 2008 with many of the EMEs facing much tighter limits on external financing, as global deleveraging and increasing risk aversion have curtailed investor interest in these markets. On average, the levels of net private inflows to EMEs during crisis years, *i.e.,* 2008 and 2009, were around 55 per cent lower than those during 2007 (Table 3.28 and Chart III.16). Although every region was impacted by the crisis, in aggregate terms, emerging Europe and Asia were the hardest hit, while Latin America was relatively less affected. Countries with larger current account and fiscal deficits, and sectors with significant foreign exchange exposures on their balance sheets were more affected by the tightening of external financing conditions and withdrawals of capital.

3.112 Total capital flows to developing countries declined from around US$ 1.2 trillion during 2007

Table 3.28: Net Capital Inflows to EMEs by Region

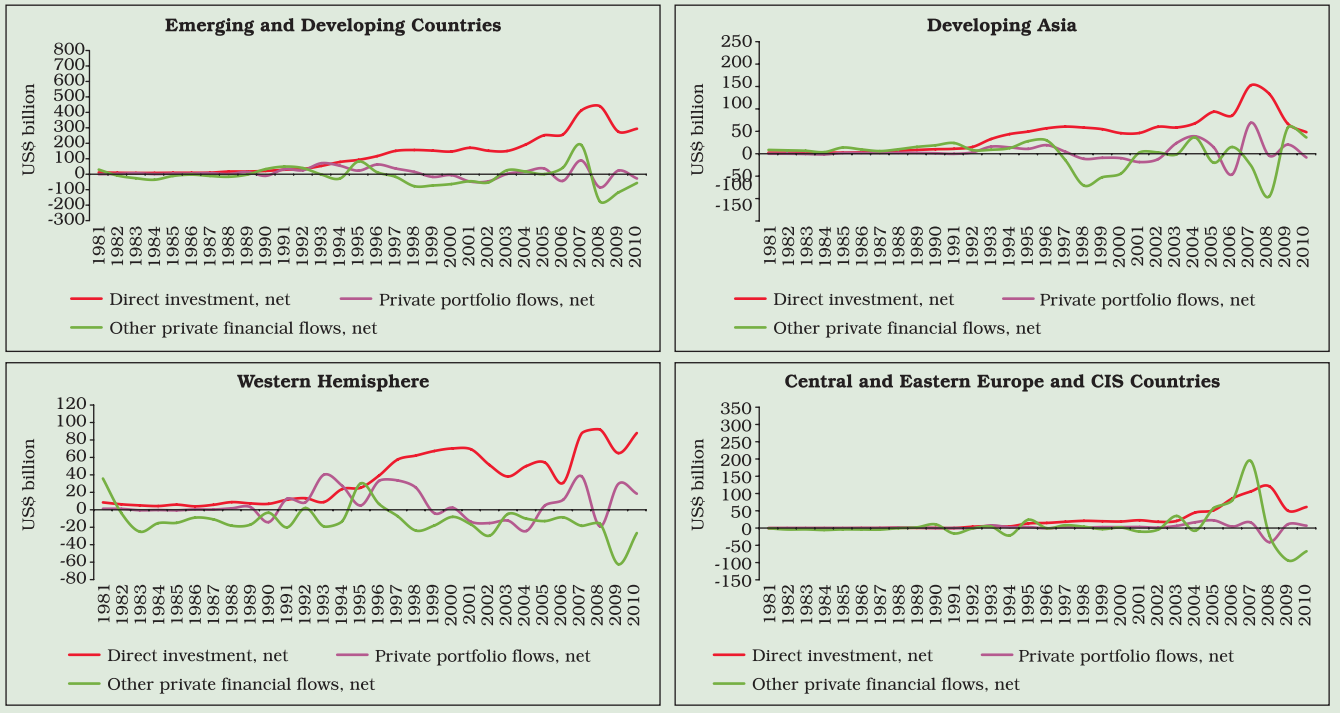
(US$ billion)

	2007	2008	2009e	2010f	2011f
1	2	3	4	5	6
A. Private Flows	**1252**	**588**	**531**	**709**	**746**
Latin America	229	130	157	190	183
Emerging Europe	446	263	44	179	212
Africa/Middle East	155	88	48	66	81
Emerging Asia	422	107	283	272	270
B. Official Flows	**43**	**61.4**	**62.4**	**55.2**	**35.3**
Latin America	6	14	23	15	17
Emerging Europe	4	21	26	20	0
Africa/Middle East	4	4	3	5	4
Emerging Asia	29	23	10	15	14
C. Total Flows (A+B)	**1295**	**650**	**593**	**764**	**782**

e: estimate. f: forecast.

Source: Capital Flows to Emerging Market Economies (Various Issues), Institute of International Finance.

Chart III.16: Net Capital Flows to Emerging and Developing Countries



to US$ 780 billion during 2008 mainly on account of sharp declines in portfolio equity and debt flows (Table 3.29). On the other hand, FDI flows continued to grow, *albeit* at a decelerated pace. In Europe and Central Asia, the trend of rapid increase in debt flows during recent years reversed significantly during 2008, making it one of most vulnerable regions during the current crisis.

3.113 Capital inflows to EMEs slowed down, while capital outflows increased during the crisis, partly on account of growing financial integration. Driven by ample liquidity and a desire to diversify their assets, investors and multinational companies in developing countries have acquired assets and invested in debt markets abroad, in both developed and developing countries. Net equity outflows reached US$ 244 billion (1.5 per cent of GDP) in 2008, up from US$ 190 billion (1.4 per cent of GDP) in 2007. As part of deleveraging and also to meet domestic redemption pressures, advanced countries sharply cut their investments in emerging markets. While FDI investment remained relatively stable, porfolio and other investments (including througn banking channel) witnessed sharp reversals (Table 3.30).

3.114 The private capital flows to emerging economies have resumed with the post-crisis recovery in the world economy. The major factors include brighter growth prospects for emerging economies relative to mature economies; short-term interest rates remaining close to zero for an extended period in most mature markets; and near-term financial risks remaining most evident in mature markets. However, the uncertainty about the evolving global economic scenario, as demonstrated during the recent bout of instability in the Euro zone, holds the key to the direction and quantum of financial flows to EMEs.

Foreign Direct Investment

3.115 Within private capital flows to EMEs, foreign direct investment (FDI) witnessed an almost seven-fold jump between 1990 and 2000, while portfolio debt flows declined and equity flows were subdued during this period. In contrast, since the beginning of the current decade, it is portfolio flows, especially debt flows, that have witnessed a sharp jump. During the recent crisis, net FDI flows to EMEs remained steady compared to other kinds of capital flows,

Table 3.29: Net External Capital Flows to Developing Countries

(US$ billion)

Region	1970	1980	1990	2000	2005	2006	2007	2008
1	2	3	4	5	6	7	8	9
Total Capital Flows	**9.3**	**102.7**	**87.8**	**167.3**	**501.5**	**659.0**	**1221.6**	**780.3**
All developing countries								
FDI	2.9	10.1	23.5	158.9	281.1	363.2	528.4	593.6
Portfolio equity	0.0	0.1	3.4	14.4	68.9	105.8	135.3	-57.1
Debt	6.4	92.5	60.9	-6.0	151.5	190.0	557.8	243.8
East Asia & Pacific								
FDI	0.4	1.5	10.5	45.2	104.4	105.7	177.0	187.1
Portfolio equity	–	0.1	0.4	6.6	25.7	56.2	35.1	-8.1
Debt	1.0	11.9	18.6	-17.3	54.0	32.1	79.6	-0.4
Europe & Central Asia								
FDI	0.1	0.7	2.6	18.7	61.6	113.8	156.8	173.6
Portfolio equity	–	0.0	0.1	1.4	8.0	10.2	26.5	-14.6
Debt	0.5	12.6	3.7	20.4	85.8	156.0	302.5	153.8
Latin America & Caribbean								
FDI	1.3	6.2	8.1	79.5	71.9	72.0	109.4	125.0
Portfolio equity	0.0	0.0	2.5	-0.6	12.2	11.3	29.6	-9.7
Debt	2.8	45.6	19.9	-8.5	0.2	-14.1	92.2	58.0
Middle East & North Africa								
FDI	0.2	1.4	0.5	4.5	13.8	24.9	25.0	26.1
Portfolio equity	–	0.0	0.0	0.3	2.4	1.0	-2.1	0.4
Debt	0.4	6.8	3.4	-2.3	0.1	-13.8	3.3	-7.9
South Asia								
FDI	0.1	0.2	0.5	4.4	10.9	26.0	32.3	48.7
Portfolio equity	–	0.0	0.0	2.5	12.4	10.4	36.1	-15.8
Debt	0.8	5.7	8.3	3.5	4.7	24.9	65.9	29.8
Sub-Saharan Africa								
FDI	0.8	0.2	1.2	6.7	18.5	20.7	27.9	33.1
Portfolio equity	0.0	0.0	0.4	4.2	8.1	16.8	10.2	-9.3
Debt	0.9	10.0	7.0	-1.8	6.7	5.0	14.5	10.5
Memo:								
Middle income								
FDI	2.3	10.1	22.4	154.5	273.6	351.5	507.5	567.2
Portfolio equity	0.0	0.1	3.4	14.4	68.7	104.4	129.0	-56.5
Debt	5.1	81.2	55.7	-7.9	146.0	183.0	546.8	234.5

–: Not Available.

Source: Global Development Finance, World Bank (2009).

reflecting the longer-term view of FDI investors on EME growth potentials and the soundness of the financial system unlike most portfolio investors and lenders. Although there has been deceleration in growth rates, many EMEs have performed better than the advanced economies, which were officially into recession during the second half of 2008.

3.116 FDI inflows to China and India, in fact, increased during 2008 despite the deepening of the global financial crisis (Table 3.31). There was also an increase in FDI outflows from these economies possibly to take advantage of the attractive investment opportunities thrown up by the equity market corrections in the advanced economies during the crisis. On the other hand, in the case of many advanced economies, such as the UK, Canada, France and Germany, FDI inflows decelerated while they increased in the US and Japan, reflecting unwinding of overseas positions by investors due to risk aversion and repatriation of the proceeds back home. At the same time, FDI outflows from countries such as Japan and Canada increased while it decreased in the case of the US and the UK. This contrasting pattern in inflows and outflows from advanced economies during the

Table 3.30: Outflows from Major Advanced Economies

(US$ billion)

	2000	2005	2006	2007	2008	2009	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2	2009Q3	2009Q4
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Direct Investment														
Euro Area	413	454	543	658	481	433	216	48	158	60	133	119	89	93
Japan	32	45	50	73	131	75	29	18	21	63	19	17	24	15
UK	246	81	86	276	163	17	44	54	31	33	17	3	-8	5
US	159	36	245	399	332	221	97	107	61	67	47	51	75	48
Portfolio Investment														
Euro Area	385	515	650	600	24	113	145	203	-106	-218	-92	83	65	56
Japan	83	196	71	123	190	160	96	23	5	66	90	46	24	-1
UK	97	273	257	180	-200	241	-37	3	5	-171	58	58	88	37
US	128	258	499	396	-117	549	62	31	-101	-109	88	153	174	134
Other Investment														
Euro Area	166	738	999	1,301	168	-689	440	-123	146	-295	-301	-200	-130	-58
Japan*	-103	-124	-57	72	-411	-537	-22	-96	-16	-277	-187	-100	-125	-125
UK	374	926	708	1,484	-1,000	-500	519	-764	40	-796	-247	-86	-108	-58
US	273	267	544	677	-219	-585	100	-243	18	-94	-224	-242	-23	-97
Total														
Euro Area	965	1,668	2,136	2,485	583	-144	801	127	198	-454	-260	1	24	91
Japan	12	118	64	269	-91	-302	103	-56	10	-148	-78	-37	-76	-111
UK	718	1,280	1,051	1,939	-1,004	-242	526	-706	77	-933	-172	-26	-28	-16
US	560	561	1,288	1,472	-5	185	259	-105	-23	-135	-89	-38	227	85

*: includes investment in financial derivatives abroad.

Source: International Financial Statistics, June 2010, IMF.

current financial crisis implies the differing risk perceptions of investors and the nature of global deleveraging.

3.117 According to the World Bank's Global Development Finance (2009), investors repatriated larger shares of their earnings from direct investments in many large developing countries during the first three quarters of 2008. Further, some large troubled financial institutions had disinvested their assets in developed and developing countries to raise capital for their core business management. The value of such sales doubled to US$ 11 billion in 2008 from US$ 5 billion in 2007 and this trend continued in 2009.

3.118 Recent reports indicate that FDI inflows were lower in a number of countries in 2009. An important factor behind the decline in FDI inflows is the slowdown in cross-border mergers and acquisitions (M&As) in developing countries. M&A flows have been one of the main drivers of FDI inflows in developing countries in recent years, accounting for around 30 per cent of FDI. In the first quarter of 2009, M&A activity declined to US$ 16 billion in inflows, compared with more than US$ 30 billion in the previous two years. Lower acquisitions by developed country multinationals, reflecting lower earnings and less financing available for investment, accounted for much of this decline.

Foreign Portfolio Investment

3.119 In contrast to FDI flows, portfolio flows to the developing and emerging market economies witnessed a massive reversal during the second half of 2008, reflecting the process of global deleveraging and risk aversion on the part of global investors. Disruptions in emerging market portfolio flows became more widespread following the collapse of Lehman Brothers in mid-September 2008. The reversal in portfolio equity inflows, notably in Asia, led to weakening of emerging market currencies, widening of spreads on international sovereign bonds and a sharp rise in domestic bond yields in many EMEs. On the other hand, portfolio outflows from many developed economies fell significantly and turned negative, implying liquidation of positions held abroad and repatriation of money back to home

Table 3.31: Cross-country Movement of FDI Flows

(US$ billion)

Country	FDI Inflows							FDI Outflows						
	1990	2000	2005	2006	2007	2008	2009	1990	2000	2005	2006	2007	2008	2009
1	2	3	4	5	6	7	8	9	10	11	12	13	11	12
Latin America														
Argentina	1.8	10.4	5.3	5.5	6.5	9.7	4.9	0.0	0.9	1.3	2.4	1.5	1.4	0.7
Brazil	1.0	32.8	15.1	18.8	34.6	45.1	25.9	0.7	2.3	2.5	28.2	7.1	20.5	-10.1
Chile	0.7	4.9	7.0	7.3	12.5	15.2	12.7	0.0	4.0	2.2	2.7	2.6	8.0	8.0
Mexico	2.5	18.0	22.3	19.8	27.3	23.2	11.4	0.0	0.0	6.5	5.8	8.3	1.2	7.6
Emerging Europe														
Czech Republic	–	5.0	11.6	5.5	10.6	10.9	–	–	0.0	0.0	1.5	1.6	1.9	–
Hungary	0.0	2.8	7.6	19.7	72.3	63.4	-5.7	0.0	0.6	2.2	18.6	67.7	61.4	-7.3
Poland	0.1	9.3	10.3	19.9	23.7	14.8	11.5	0.0	0.0	3.4	9.1	5.7	3.1	2.9
Russia	–	2.7	12.9	29.7	55.1	75.5	38.7	n.a.	3.2	12.8	23.2	45.9	56.1	46.1
Emerging Asia														
China	3.5	38.4	79.1	78.1	138.4	147.8	–	0.8	0.9	11.3	21.2	17.0	53.5	–
India	0.0	3.6	7.6	20.3	25.1	41.2	–	0.0	0.5	3.0	14.3	17.3	18.4	–
Indonesia	1.1	-4.6	8.3	4.9	6.9	9.3	5.3	0.0	0.0	3.1	2.7	4.7	5.9	3.0
Korea	0.8	9.3	6.3	3.6	1.6	2.2	–	1.1	5.0	4.3	8.1	15.3	12.8	–
Malaysia	2.3	3.8	4.0	6.1	8.5	7.4	–	0.0	2.0	3.0	6.0	11.1	15.2	–
Philippines	0.5	2.2	1.9	2.9	2.9	1.4	–	0.0	0.1	0.2	0.1	3.5	0.3	–
Thailand	2.4	3.4	8.1	9.5	11.3	8.6	6.0	0.1	0.0	0.5	1.0	2.9	2.6	3.8
Other EMEs/NIEs														
Singapore	5.6	16.5	14.4	27.7	31.6	22.7	–	2.0	5.9	11.2	13.3	24.5	8.9	–
Hong Kong	–	61.9	33.6	45.1	54.4	59.6	48.4	–	59.4	27.2	45.0	61.1	50.5	52.3
Israel	0.2	5.9	4.8	15.3	8.8	10.9	3.8	0.2	3.3	2.9	15.5	8.6	7.2	1.2
South Africa	-0.1	1.0	6.5	-0.2	5.7	9.6	5.6	0.0	0.3	0.9	5.9	3.0	-2.1	1.8
Advanced Economies														
Australia	8.1	13.6	-35.6	26.4	41.1	47.3	–	1.0	3.3	-33.9	23.9	20.0	38.1	–
Canada	7.6	66.1	25.9	59.8	111.4	45.4	20.6	5.2	44.5	27.6	44.5	59.6	79.0	42.2
France	13.2	42.4	85.0	71.8	105.9	100.4	61.6	34.8	174.3	113.8	111.4	172.0	204.8	162.4
Germany	3.0	210.1	46.5	56.6	77.3	25.0	35.8	24.5	59.7	77.0	119.2	163.7	137.2	61.6
Japan	1.8	8.2	3.2	-6.8	22.2	24.6	11.8	50.5	31.5	45.4	50.2	73.5	130.8	74.6
UK	33.5	122.2	177.4	154.1	197.8	93.5	47.0	20.1	246.3	80.8	85.6	275.5	163.1	16.7
US	48.5	321.3	112.6	243.2	275.8	319.7	152.1	37.2	159.2	36.2	244.9	398.6	332.0	221.0

– : Not Available.
Source: International Financial Statistics, June 2010; IMF.

countries (Table 3.32). However, since the second quarter of 2009, there are indications of a revival in portfolio flows to EMEs in line with the recovery in major EME stock exchanges and prospects about growth in EMEs recovering faster than that of advanced economies.

Debt Flows

3.120 In international debt markets, primary issuance froze and secondary trading of emerging market bonds was greatly reduced in September and October 2008, even for highly rated corporations and sovereigns with relatively sound fiscal positions (*e.g.* Brazil, Malaysia and South Africa). External bond issuance and bank borrowing by corporations in developing countries had risen from US$ 81 billion in 2002 to US$ 423 billion in 2007, mainly driven by Europe and Central Asia where corporate borrowings increased sharply from US$ 19 billion to US$ 197 billion over the same period. However, such borrowings fell to US$ 271 billion in 2008 with the deepening of the global financial turmoil. As against net borrowings of US$ 28 billion during the first three quarters of 2008, the last quarter saw net repayments by EMEs of $27 billion, as many emerging market corporate borrowers lost their access to international capital markets. Overall, emerging market bond issuance declined sharply from US$ 186 billion in 2007 to US$ 106 billion in 2008.

Table 3.32: Cross-country Movement of Portfolio Flows

(US$ billion)

Country	Portfolio Investment Inflows							Portfolio Investment Outflows						
	1990	2000	2005	2006	2007	2008	2009	1990	2000	2005	2006	2007	2008	2009
1	2	3	4	5	6	7	8	9	10	11	12	13		
Latin America														
Argentina	-1.1	-1.3	-1.7	7.9	7.1	-7.1	-3.0	0.2	1.3	-1.4	0.0	0.0	0.0	0.0
Brazil	0.6	8.7	6.7	9.1	48.1	-0.8	46.2	0.1	1.7	1.8	-0.5	-0.3	-1.9	-3.0
Chile	0.4	-0.1	1.4	0.8	-0.5	2.8	2.0	0.0	-0.8	4.2	10.1	16.0	11.6	13.9
Mexico	3.4	-1.2	7.8	0.1	13.4	4.8	15.3	7.4	-1.3	0.0	0.0	0.0	0.0	0.0
Emerging Europe														
Czech Republic	–	0.5	0.1	1.9	2.2	0.5	–	–	2.2	3.5	3.0	4.8	0.5	–
Hungary	0.0	-0.1	5.8	8.8	0.5	0.9	-3.7	0.0	0.3	1.3	2.4	2.9	3.9	0.9
Poland	0.0	3.4	15.1	1.5	0.9	-4.4	16.2	0.0	0.1	2.5	4.6	6.3	-2.4	0.4
Russia	–	-12.8	-0.7	9.5	16.0	-27.4	8.2	–	0.4	10.7	-6.2	10.0	7.8	10.9
Emerging Asia														
China	0.0	7.3	21.2	42.9	21.0	9.9	–	0.2	11.3	26.2	110.4	2.3	-32.7	–
India	0.0	2.5	12.2	9.5	35.0	-15.0	–	0.0	0.1	0.0	0.0	-0.2	0.0	–
Indonesia	-0.1	-1.9	5.3	6.1	10.0	3.0	10.3	0.0	0.0	1.1	1.8	4.4	1.3	0.2
Korea	0.7	12.7	14.1	8.1	30.0	-38.5	–	0.5	0.5	14.1	26.9	54.6	-23.1	–
Malaysia	-0.3	-2.1	-3.0	5.6	9.3	-21.1	–	0.0	0.4	0.7	2.1	3.9	2.9	–
Philippines	-0.1	0.3	3.4	6.1	3.9	-4.4	–	0.0	0.8	0.1	1.6	-0.8	-0.6	–
Thailand	0.0	-0.6	7.1	5.7	2.9	-2.6	3.0	0.0	0.2	1.5	1.4	9.6	-0.4	12.2
Other EMEs/NIEs														
Singapore	0.6	-1.2	6.3	12.0	18.6	-4.6	–	1.6	13.4	5.3	17.3	28.1	18.6	–
Hong Kong	–	46.5	9.3	15.0	75.2	-12.8	4.9	–	22.0	40.7	41.8	77.9	25.4	49.1
Israel	0.0	3.9	2.3	4.0	3.6	2.2	3.1	0.4	3.3	8.0	8.0	3.7	2.0	7.6
South Africa	0.3	1.8	5.7	21.9	13.7	-7.6	13.4	0.3	3.7	0.9	2.2	3.4	6.7	1.9
Advanced Economies														
Australia	7.0	14.9	59.0	97.2	60.2	30.4	–	-0.4	10.9	21.3	43.9	77.3	-3.0	–
Canada	16.0	10.3	10.9	27.6	-32.5	29.6	95.9	2.2	43.0	44.2	69.4	42.8	-10.0	6.2
France	43.2	132.3	225.2	191.3	114.5	242.6	417.2	8.4	97.4	243.6	350.3	282.1	126.8	92.4
Germany	11.8	40.9	221.7	181.0	401.2	25.0	-26.0	14.0	191.5	257.3	203.4	199.9	-23.1	101.6
Japan	46.7	47.4	183.1	198.6	196.6	-103.0	-56.3	37.8	83.4	196.4	71.0	123.5	189.6	160.2
UK	23.8	268.1	237.0	285.5	406.7	363.9	284.0	30.0	97.2	273.4	257.0	179.6	-199.6	241.1
US	22.0	436.6	832.0	1126.7	1154.7	527.7	376.6	28.8	127.9	257.5	498.9	396.0	-117.4	549.4

– : Not Available.

Source: International Financial Statistics, June 2010; IMF.

3.121 As exchange rates depreciated sharply against the major international currencies in view of the deepening of the crisis, corporations that had borrowed heavily in international debt and credit markets to finance investment (*e.g.*, Russian energy companies) encountered difficulties rolling over that debt. When local exchange rates fell against the dollar or the euro, the corporations suffered heavy losses. There are, however, indications of revival of emerging market bond issuance during the first and second quarter of 2009.

Trade Credit

3.122 As discussed earlier, the collapse in trade during the crisis was partly attributed to the shortages of credit to exporters and importers. These short-term credits, which have a typical tenor of 120–180 days, are used to facilitate deals between distant partners with limited knowledge or business experience of one another. Although they cover only between 10 and 20 per cent of all trade (most trade is conducted on an "open account" basis between regular business partners), short-term credits tend to be most important for small and medium-sized exporters. Thus, trade credits, which facilitated growth in trade in the earlier years, turned out to be one important reason for the decline in trade across regions during the current crisis (Table 3.33).

3.123 With the deepening of the global financial crisis, especially after the collapse of Lehman

Table 3.33: Cross-country Comparison of Short-term Trade Credit

(US$ billion)

Country	2005	2006	2007	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2
1	2	3	4	5	6	7	8	9	10
Advanced Economies									
Australia	26.4	28.7	58.7	59.0	71.7	71.3	64.4	66.8	79.4
Canada	5.7	6.1	6.9	6.9	6.9	6.6	5.5	5.2	5.7
France	87.8	96.6	107.4	116.9	117.5	105.3	100.9	123.0	129.6
Germany	918.7	1,109.1	1,354.4	1,596.9	1,550.4	1,469.7	1,211.9	1,146.6	1,198.9
Japan	433.3	382.1	359.1	410.3	365.0	369.3	409.8	400.4	483.5
UK	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.6	1.6
US	492.3	557.3	726.0	734.0	737.9	778.9	907.8	802.0	796.5
Hong Kong	9.0	7.4	9.5	10.7	10.1	9.9	9.3	7.2	8.6
Emerging Market Economies									
Argentina	0.3	4.6	5.1	5.7	7.6	7.4	7.7	7.6	–
Brazil	16.5	16.7	31.0	31.1	33.5	38.2	31.2	28.5	32.4
Chile	6.2	8.3	9.2	9.9	13.2	14.1	10.3	8.8	9.9
Czech Republic	3.8	4.5	6.6	6.4	8.0	7.6	6.9	5.8	6.2
Hungary	6.4	7.6	13.0	4.7	5.6	5.7	4.4	4.4	5.5
India	NA	25.1	36.7	43.2	45.6	46.8	42.6	40.2	37.1
Indonesia	0.7	0.8	0.7	1.0	1.3	1.7	1.6	1.2	1.2
Israel	7.7	9.0	11.6	11.3	11.6	11.4	9.3	7.0	7.1
Korea	51.7	95.1	130.2	143.5	143.3	155.6	111.7	102.8	104.4
Malaysia	10.2	8.1	12.6	23.4	26.4	27.0	20.6	21.6	21.5
Mexico	8.4	9.2	9.7	9.9	10.2	10.1	9.2	9.1	8.1
Poland	9.7	12.6	17.0	21.4	22.7	20.7	18.1	15.7	17.0
Russia	8.2	17.6	23.9	26.3	29.8	34.6	21.3	16.1	12.9
South Africa	5.5	7.5	10.7	9.6	10.3	11.6	10.6	9.8	9.2
Thailand	9.4	9.6	11.1	13.0	13.9	13.6	12.1	10.3	10.7
Turkey	26.8	25.6	28.6	30.0	34.1	36.1	31.5	28.4	26.6

– : Not Available.

Source: Joint BIS-IMF-OECD-World Bank Statistics on External Debt.

Brothers in September 2008, many international banks either did not allow rollover of the credit or cancelled funded overdraft facilities without warning. When banks become risk-averse, they tend to shift their portfolios to more creditworthy borrowers, which are in a better position to serve longer-maturity loans. Banks have moved away from funded open-account facilities, which had become most common in recent years, to more traditional forms of trade finance as counterparty risk rose rapidly. According to the World Bank's Global Development Finance 2009, these changes reflected the higher capital requirements that banks faced as the creditworthiness of recipients of trade credit was downgraded. Indeed, capital requirements for trade finance tripled under the Basel II Accords over Basel I. Spreads had reportedly increased from 100 to 150 basis points (bps) to around 400 bps over LIBOR as country risk and counterparty concerns intensified, with much higher spreads reported in some cases. According to the IMF, the combination of higher cost of funds, liquidity premiums and higher risk resulted in a sharp increase in the price of short-term trade finance. Many exporters also restricted the credit they were willing to provide their customers as a result of reduced access to capital and heightened concerns about customer creditworthiness. Realising that the higher cost along with declining availability of finance had the potential to undermine the efforts undertaken to stimulate domestic economies, co-ordinated global initiatives were announced to support trade finance. For instance, the G-20 agreed to ensure availability of at least US$ 250 billion over a two-year period to support trade finance.

3.124 Although the increase in costs of trade finance turned out to be a global phenomenon, the decline in availability of trade credit has been felt more by the EMEs. According to a survey by the IMF-Bankers' Association for Finance and Trade (BAFT) on bank-intermediated forms of international

trade finance, the price of trade finance increased sharply due to the increased cost of funds to the banks, which outweighed the dampening price effect of less restrictive monetary policies in many advanced economies. The BAFT survey results also suggest that the downturn in trade largely reflected falling demand rather than a lack of trade finance. Trade generally fell by much more than trade finance during 2008 and the first half of 2009, including in the areas hit hardest by the crisis (industrial economies, emerging Europe, Latin America and, in the first half of 2009, emerging Asia). The trade finance problem is also sector-specific, apart from being country- and region-specific. India has been relatively less affected by the liquidity squeeze in international credit markets. Despite tightness in the overseas markets since September 2008, the disbursement of short-term credit to India has hovered around its monthly trend of over US$ 3 billion in the subsequent months, reflecting the positive impact of various policy initiatives by the authorities.

Short-term Debt

3.125 Flows of short-term debt (debt with an original maturity of one year or less) to developing countries were strong during the first half of 2008. However, such flows became negative in the third quarter of 2008 and later registered a sharper drop in the fourth quarter of 2008 following the deterioration of global financial market conditions. Many countries borrowed short term to finance their growing trade and firms contracted short-term loans to finance imports and pre-pay for exports. In China, for example, trade finance in 2007 amounted to US$ 69 billion, accounting for more than half of the country's short-term debt. Similarly, all of India's US$ 45 billion in short-term debt is trade-related. As a result, the sharp drop in short-term debt has also strained trade finance. Reflecting the decline in short-term debt, short-term international liabilities of many EMEs in Asia and Europe declined. Interestingly, many advanced economies including the US and UK also recorded sharp declines in their short-term international liabilities, possibly reflecting a decline in foreign private holdings of non-treasury securities on account of risk aversion by investors (Table 3.34).

Bank Financing

3.126 The participation of foreign banks in developing countries' financial systems has increased rapidly in recent years. At the end of 2007, the 910 foreign banks with a presence in developing countries controlled combined assets in excess of US$ 1.2 trillion and accounted for more than 39 per cent of total domestic banking assets. Foreign-owned lenders account for a particularly high proportion of local banking assets in three regions—70 per cent in several Eastern European countries, and approximately 40 per cent in some Latin American and Sub-Saharan countries.

3.127 International banks started to withdraw funding from some emerging markets in the third quarter of 2008. At first, countries with sound and relatively liquid banking systems were affected. For instance, cross-border loans to banks and the non-bank sector in China, Chinese Taipei, the Czech Republic, Malaysia and Poland decreased by US$ 30 billion in the third quarter of 2008. Central banks and market commentary at the time suggested that some international banks may have reduced loans to these EMEs in order to overcome severe liquidity shortages in their home markets.

3.128 The reversal in cross-border banking flows became more severe in the fourth quarter of 2008. According to the BIS international banking statistics, banks from advanced economies reduced cross-border loans to developing countries by US$ 205 billion during the fourth quarter (1 per cent of the combined GDP of EMEs), reversing more than 60 per cent of the inflows recorded during the previous three quarters of 2008. Brazil, China, Korea, Turkey and oil-exporting countries, including Russia, were particularly affected. Loans to banks declined more sharply than loans to the non-bank sector. At the same time, residents of many EMEs (especially in central Europe and oil-exporting countries, including Russia) withdrew part of their deposits and other foreign assets held in BIS-reporting banks. This provided an important cushion to the emerging markets that had been unavailable in the past. However, some deposit withdrawals may have reflected official foreign exchange intervention rather than the autonomous

Table 3.34: International Short-term Liabilities up to One Year Remaining Maturity

(US$ billion)

Country	1990	2000	2005	2007	Mar-08	Jun-08	Sep-08	Dec-08	Mar-09	Jun-09
1	2	3	4	5	6	7	8	9	10	11
Advanced Economies										
Australia	25	35	54	119	118	125	110	81	95	107
Austria	–	49	87	98	116	111	97	67	64	59
Canada	–	76	129	201	219	190	186	191	199	197
France	–	250	610	1,148	1,288	1,313	1,155	979	923	921
Germany	–	356	685	938	1,086	1,000	920	739	750	736
Japan	–	193	410	405	444	400	365	352	368	480
UK	–	731	1,530	2,409	2,704	2,404	2,175	1,789	1,713	1,796
US	–	531	864	1,302	1,374	1,230	1,219	1,075	1,011	982
Latin America										
Argentina	7	39	7	11	12	12	11	11	11	12
Brazil	22	34	27	52	55	68	62	48	53	56
Chile	4	10	11	18	20	21	23	19	17	18
Mexico	18	22	22	25	28	28	30	31	34	33
Emerging Europe										
Czech Republic	–	6	11	17	21	19	19	15	13	11
Hungary	3	5	15	27	31	28	29	30	27	28
Poland	3	8	16	26	31	31	32	32	26	29
Russia	–	11	46	93	97	100	97	78	74	81
Emerging Asia										
China	9	19	61	121	138	160	148	102	121	118
India	4	9	31	78	80	83	83	69	66	69
Indonesia	13	20	18	29	31	31	32	28	26	27
Korea	2	7	16	21	28	32	23	17	15	15
Malaysia	20	33	53	127	157	152	145	100	110	114
Philippines	3	7	10	11	12	11	10	7	7	8
Thailand	9	10	11	9	10	10	10	10	9	10
Other EMEs/NIEs										
Singapore	134	65	78	123	142	144	138	106	108	109
Hong Kong	131	70	70	93	110	110	99	82	86	89
Israel	2	3	5	5	6	6	7	6	7	7

– : Not Available.

Source: Bank for International Settlements.

response of emerging market banks to the reduced availability of cross-border finance.

3.129 With the global credit squeeze, some emerging East Asian economies experienced severe foreign currency liquidity shortages. Despite the large build-up of foreign exchange reserves since the 1997-98 Asian financial crisis, dollar illiquidity tested the resilience of Asian banks as access to international interbank markets became difficult. As the global financial crisis intensified, major international banks sharply reduced interbank credit to Asian banks. Although this reduction reflected more the liquidity needs of major global banks than any change in Asian banks' creditworthiness, it nonetheless led to tighter credit conditions and foreign currency liquidity shortages. Especially in the Republic of Korea and Indonesia, withdrawals of foreign currency liquidity were on a scale large enough that, from time to time, there were significant challenges to financial stability. In view of the sharp rise in foreign currency liquidity and counterparty risks, cross-currency basis swap spreads (the cost that Asian banks have to shoulder in borrowing dollars by using local currency as collateral) widened sharply. This foreign currency liquidity issue also had important ramifications for the region's investment and trade flows. The countries that had built up their international reserves from capital flows in the past years experienced a decline in their reserve levels during the recent crisis (Table 3.35). Nevertheless,

Table 3.35: International Reserve Movement

(US$ billion)

Country	2006	2007	2008Q1	2008Q2	2008Q3	2008Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4
1	2	3	4	5	6	7	8	9	10	11
Argentina	31	45	49	46	46	45	45	44	46	46
Brazil	85	179	194	200	206	193	189	200	221	237
Chile	19	17	18	20	24	23	23	23	26	25
China	1,066	1,528	1684	1811	1908	1949	1957	2135	2288	–
Hong Kong	133	153	161	158	160	182	186	207	227	256
France	43	46	50	46	41	34	25	29	45	47
Germany	42	44	47	48	45	43	43	45	61	60
India	171	267	300	303	278	247	242	255	271	265
Indonesia	41	55	57	57	55	50	53	55	60	64
Japan	880	953	993	979	974	1009	996	996	1028	1022
Mexico	76	87	91	94	99	95	85	81	88	100
Philippines	20	30	33	33	33	33	34	35	38	39
Poland	46	63	74	79	71	59	58	64	75	76
Russia	296	467	499	555	543	413	368	396	395	417
South Africa	23	30	31	31	31	31	30	32	35	35
Switzerland	38	45	47	47	45	45	50	77	86	98
Thailand	65	85	107	103	100	109	114	118	129	135
Turkey	61	73	77	76	77	70	67	66	71	71
UAE	28	77	83	61	45	32	34	36	39	–
UK	41	49	51	49	42	44	40	45	58	56
US	55	60	65	65	61	67	64	70	123	120

– : Not Available.

Source: International Financial Statistics, June 2010; IMF.

during the recent crisis, reserves acted as buffer against volatile capital flows and provided confidence to the market in the inherent strength of the macroeconomic fundamentals of several economies including India.

3.130 To sum up, the transmission of the global financial crisis to the real economy was routed mainly through the decline in world trade especially in the second half of 2008 and early 2009. The decline in trade flows was further accentuated by the sharp reduction in commodity prices in line with the decline in demand. The trade channel of the transmission of global crisis played a particularly important role in economies that had greater integration in global trade, such as the East Asian economies. Along with shrinking trade flows, net private capital flows to emerging and developing economies went through a sharp reversal during 2008 with many of the EMEs facing much tighter limits on external financing, as global deleveraging and increasing risk aversion curtailed investor interest in these markets. Countries with larger current account and fiscal deficits, and sectors with significant foreign exchange exposures on their balance sheets, were more affected by the tightening of external financing conditions and withdrawals of capital. Despite in modest decline in remittance inflows in 2009, these flows have remained more resilent compared to private debt and equity flows, though the adverse developments turned out to be more serious for some small, poor countries where it makes up a relatively large share of GDP. Finally, in the course of 2009, global imbalances contracted to some extent with reduction in current account deficits/surpluses of several countries notably the US and China.

IV. IMPACT ON REAL ECONOMY

3.131 The period since the second half of the 1990s is generally characterised as benign inflation, lower interest rates, higher risk appetite and booming stock market-inflicted exuberance among households and corporates. This strong growth of the financial sector buttressed the growth of real

Table 3.36: Growth in Real GDP

(Annual per cent change)

	Average 1992-2001	2006	2007	2008	2009	2010P
1	2	3	4	5	6	7
World	**3.2**	**5.1**	**5.2**	**3.0**	**-0.6**	**4.2**
Advanced Economies	**2.8**	**3.0**	**2.8**	**0.5**	**-3.2**	**2.3**
USA	3.5	2.7	2.1	0.4	-2.4	3.1
Euro area	2.1	3.0	2.8	0.6	-4.1	1.0
Japan	0.9	2.0	2.4	-1.2	-5.2	1.9
Other advanced economies	3.7	3.9	3.9	1.2	-2.3	3.0
Emerging and Developing Economies	**3.8**	**7.9**	**8.3**	**6.1**	**2.4**	**6.3**
Regional Groups						
Central and Eastern Europe	2.6	6.5	5.5	3.0	-3.7	2.8
Commonwealth of Independent States	—-	8.5	8.6	5.5	-6.6	4.0
Developing Asia	7.3	9.8	10.6	7.9	6.6	8.7
Middle East & North Africa	3.4	5.7	5.6	5.1	2.4	4.5
Western Hemisphere	3.0	5.6	5.8	4.3	-1.8	4.0

P: Projections.
Source: World Economic Outlook, April 2010.

economic activity during the period just before the onset of the recent financial crisis. In the first half of the 2000s, the world economy grew at a record 5.1 per cent – well above the average growth of 3.2 per cent achieved during 1992-2001. World output growth was mainly driven by emerging and developing economies led by China and India. This was the period when the world economy was increasingly looking decoupled and the growth potential was shifted from the US to developing Asia (Table 3.36).

3.132 The impact of the global financial crisis spilled over to the real sector in the advanced economies. Even as policymakers acted to bring the banks back from the brink of collapse, consumer & business confidence declined substantially. Reflecting the decline in asset prices were the end of a housing construction boom in several countries, tight credit market conditions, fall in consumer and business sentiment, and contraction in household expenditure (including on houses) in the advanced economies. The impact on consumption was severe because the recent recession involved housing busts as well as systemic banking crises in some of the major advanced economies. This was in line with the findings in the literature that the impact of banking crises on consumption has increased in the post-1990s period, despite the benefits of financial liberalisation in easing liquidity constraints (Barrell et al., 2004). The study also found that the impact becomes greater in countries with high personal debt. Signs of weakening also emerged in the corporate sector, particularly those exposed to consumption or housing construction or those with significant exposure to energy prices. These developments were reflected in falling income, shrinking demand and deceleration in trade in leading major advanced economies such as the US, Euro area, the UK and Japan into recession by the fourth quarter of 2008 (Table 3.37). The recession deepened, specially as the recent crisis affected all the major components of aggregate demand in advanced economies (Box III.3)

Table 3.37: Quarterly GDP Growth

(Per cent)

Country	Q1-2008	Q2-2008	Q3-2008	Q4-2008	Q1-2009	Q2-2009	Q3-2009	Q4-2009	Q1-2010
1	2	3	4	5	6	7	8	9	10
Australia	0.8	0.6	0.4	-0.8	0.6	0.8	0.3	1.1	0.5
Canada	-0.2	0.0	0.1	-0.8	-1.8	-0.7	0.2	1.2	1.5
Germany	1.6	-0.6	-0.3	-2.4	-3.5	0.4	0.7	0.2	0.2
Japan	0.3	-1.0	-1.1	-2.5	-4.2	1.7	0.1	1.1	1.2
Korea	1.2	0.3	-0.1	-4.5	0.2	2.4	0.1	0.2	2.1
Mexico	1.3	-0.3	-0.2	-2.0	-6.8	0.3	2.4	1.9	-0.3
New Zealand	-0.3	-0.6	-0.6	-1.0	-0.8	0.1	0.3	0.8	..
UK	0.7	-0.1	-0.9	-1.8	-2.6	-0.7	-0.3	0.4	0.3
USA	-0.2	0.4	-0.7	-1.4	-1.6	-0.2	0.6	1.4	0.8
Euro area	0.8	-0.4	-0.5	-1.9	-2.5	-0.1	0.4	0.1	0.2
G-7	0.2	-0.1	-0.7	-1.7	-2.4	0.1	0.4	1.0	0.7
NAFTA	0.0	0.3	-0.6	-1.4	-2.1	-0.2	0.7	1.4	0.7

Source: OECD database.

Box III.3
Impact on Aggregate Demand

An analysis of aggregate demand revealed that during the current financial crisis, the downturn in output growth in the advanced economies has been unusually deep, involving most components of spending. The weakening in demand during 2008 was broad-based across all GDP components, *viz.*, consumption, investment and net exports.

Private consumption contracted in all major economies in the final quarter of 2008. Rising commodity prices strongly affected households' real income in the first half of the year. Faced with subdued real income growth, falling financial wealth, tightening credit conditions and worsening labour market prospects, household spending moderated considerably in the course of the year, with private consumption in the advanced economies growing by around 0.3 per cent in 2008 as a whole. Consumer confidence indicators, which had peaked in mid-2007, fell to their long-term average levels in the early months of 2008, sharply deteriorating further to reach very low levels by the end of the year. Decline in private consumption was sharp in the United States, where it plunged by an annualised 0.2 per cent, accounting for almost half of the decline in output. The hardest hit category was spending on consumer durables, which slumped during the second half of 2008. In contrast, consumption accounted for only a small part of the drop in output in the Euro area and Japan. The downturn in these economies was led instead by a major collapse of international trade, accounting for about 75 per cent and 50 per cent of the decline in output in Japan in the fourth quarter of 2008 and the first quarter of 2009, respectively, and for about 60 per cent of the decline in the Euro area in the final quarter of 2008.

Although private consumption contracted, public consumption remained robust in most of the advanced economies in 2008 and 2009, reflecting the fiscal stimulus measures undertaken by the sovereign government to boost domestic demand (Table).

In the advanced economies, total investment growth contracted by 1.9 per cent in 2008 following two years of elevated growth. The decline in growth was more pronounced for residential investment than for other private investment. Indeed, housing investment contracted in 2008, following the end of the expansionary phase of the residential construction cycle in 2007 in the context of slowing house price growth. The deceleration was generally more pronounced in countries that had experienced very fast growth in previous years. Waning capacity pressures, renewed uncertainty and tighter financing conditions led to cuts in corporate investment.

The external environment deteriorated significantly in 2008, aggravated by the financial crisis, with growth slowing in advanced economies and emerging markets becoming increasingly affected. External demand slowed as activity in advanced economies decelerated and emerging markets became increasingly affected by the financial turmoil. Growth in euro area exports slowed markedly in 2008, to an annual rate of around 1.8 per cent, compared with 6.0 per cent in 2007, and turned negative over the last three quarters of the year. During the last few months of the year, various survey indices on industrial export orders or order books fell to historically low levels. However, there are indications of recovery in retail sales since the second quarter of 2009.

Table: Components of Aggregate Demand in Advanced Economies

(annual per cent change)

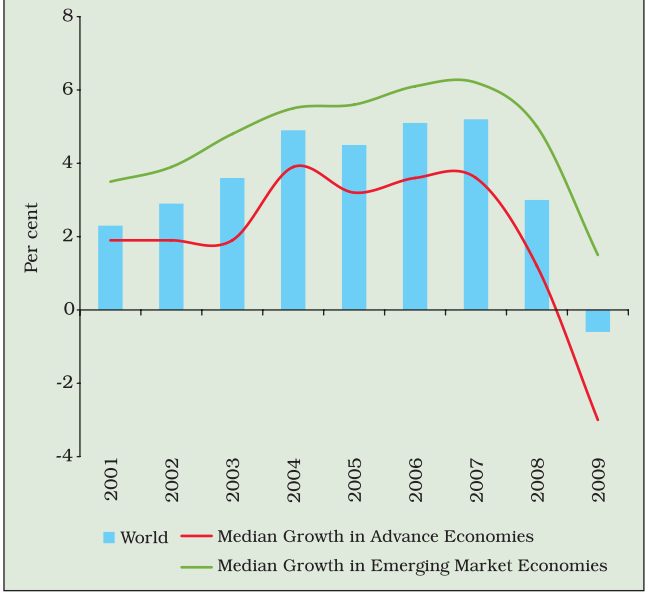
	Private Consumer Expenditure			Public Consumption			Gross Fixed Capital Formation		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Advanced Economies	**2.5**	**0.3**	**-0.8**	**2.0**	**2.5**	**2.3**	**2.2**	**-1.9**	**-12.0**
United States	2.7	-0.2	-0.6	1.4	3.0	1.8	-1.2	-3.6	-14.5
United Kingdom	2.1	0.9	-3.2	1.2	2.6	2.2	7.8	-3.5	-14.9
Euro Area	1.6	0.4	-1.1	2.3	2.1	2.2	4.8	-0.4	-11.1
Japan	1.6	-0.7	-1.0	1.5	0.3	1.6	-1.2	-2.6	-14.3

Source: World Economic Outlook April 2010.

3.133 Emerging market economies looked relatively resilient during the initial months of the crisis, benefiting from large capital inflows and benign macroeconomic conditions. However, with the slowdown in economic activities in advanced economies becoming more entrenched, global trade shrinking and turbulence in global financial markets intensifying, the contagion spread to the EMEs. As a result, the crisis quickly spread around the world, pushing the global economy into a severe and synchronised recession (Chart III.17). Overall, world GDP growth contracted by 0.6 per cent in 2009, after recording a healthy growth in earlier years.

3.134 The cross-country comparison of fifteen advanced and emerging economies suggested that

Chart III.17: Impact of Crisis on Economic Growth



the recent crisis was more negatively biased in terms of real GDP growth and growth rates were more clustered compared to the slowdown in economic activity after the dot-com bubble burst in 2001 (Chart III.18). This reflects the growing inter-linkages between countries in terms of trade and financial flows which facilitated swift transmission of contagion across countries.

3.135 The severity of the impact of the financial crisis on economic growth can be ascertained from the significant downward revisions in growth forecasts of major economies for 2009 by the IMF before and after the collapse of Lehman Brothers in September 2008 (Table 3.38). From a pre-Lehman

Table 3.38: Comparison of GDP Growth Estimates for 2009

(per cent)

Country	April 2008 Pre-Lehman	April 2010 A Year Later
1	2	3
US	+0.6	-2.4
Japan	1.5	-5.2
China	+9.5	+8.7
UK	+1.6	-4.9
Canada	+1.9	-2.6
France	+1.2	-2.2
Germany	+1.0	-5.0
Russia	+6.3	-7.9
India	+8.0	+5.7
Brazil	3.7	-0.2

Source: WEO, IMF 2008 and 2010.

scenario where every country was expected to register positive growth in 2009, a year after the event there were only a handful of countries, *viz.*, China and India that were projected to see positive economic growth during the year. All other countries were expected to contract during the year, though at varying degrees.

3.136 Against the backdrop of falling household income, weakening corporate performance and heightened uncertainties following the financial crisis, the trend of savings and investment across the region decelerated in 2009 (Table 3.39). This, in turn, appears to have contributed to the deepening of recessionary conditions in major advanced economies and expected slowdown in growth in many EMEs during 2009. Even countries

Chart III.18: Synchronised Fall in GDP Growth

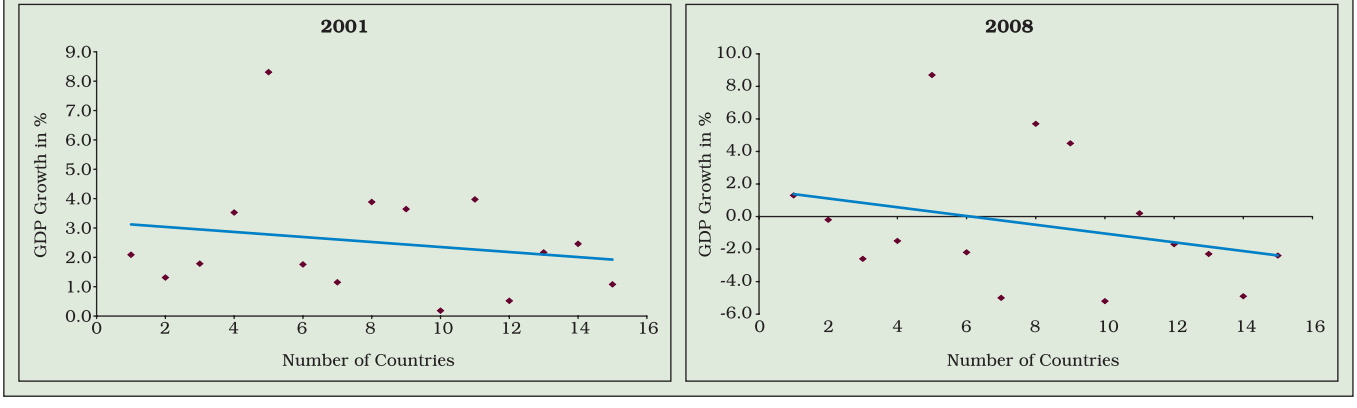


Table 3.39 : Gross Saving and Investment

(as a percentage of GDP)

	Saving					Investment				
	1996-2003	2007	2008	2009	2010 (P)	1996-2003	2007	2008	2009	2010 (P)
1	2	3	4	5	6	7	8	9	10	11
Advanced economies	21.1	20.7	19.5	17.1	17.8	21.3	21.5	21.0	18.0	18.4
United States	17.0	14.5	12.6	10.8	12.2	19.6	19.5	18.2	15.0	15.7
Japan	28.1	28.4	26.8	23.0	22.7	25.6	23.7	26.6	20.3	19.8
Germany	20.1	26.0	25.9	21.8	21.6	20.2	18.3	19.2	17.0	16.1
United Kingdom	16.0	15.6	15.3	12.5	12.3	17.4	18.3	16.9	13.8	14.0
Emerging economies	25.0	33.6	33.7	31.1	32.6	24.9	29.4	29.9	29.2	30.4
Developing Asia	33.1	45.0	43.9	43.6	45.4	31.7	37.9	38.2	39.5	41.3
Middle East & North Africa	27.3	41.6	42.4	29.6	32.7	23.4	26.0	26.8	27.8	27.3

Source: World Economic Outlook, April 2010, IMF. P: Projection.

that had high savings and investment rates like China experienced significant slowdown in real GDP growth.

3.137 The impact, however, varied across countries/regions. For instance, the household saving ratio in the Euro area increased during 2008 partly due to the rise in economic and financial uncertainties. The increase in the savings rate has been fairly widespread, in particular in countries that witnessed strong deteriorations in the labour market situation and sharp declines in house prices, and households were highly indebted.

3.138 Two major features of the impact of the recent crisis on the world economy came out distinctly: (i) a synchronised decline or deceleration in economic activity in all economies which are associated with a collapse in world trade; and, (ii) growing signs of an adverse feedback loop between the real economy and the financial sector. The weakening of economic activity has impaired the quality of bank loans, adversely affecting their capital positions and their willingness to extend credit to the private sector. This, in turn, constrained the pace of economic activity and the ability of the private sector to service its debts, entailing the risk of a vicious circle. By significantly eroding the level of economic activity, the financial crisis has also led to a loss of potential output in major economies. This is also supported by various studies covering both advanced and developing economies. A panel study of output behaviour in 190 countries shows large and persistent actual output losses associated with financial crises, with output falling by 7.5 per cent relative to trend over a period of 10 years in the event of a banking crisis (Cerra and Saxena, 2008). Another study for 30 OECD economies also estimated that, on average, a financial crisis could lower potential output by 1.5 –2.1 per cent within five years (Furceri and Mourougane, 2009).

3.139 The sharp fall in global economic activities along with the decline in international commodity prices from mid-2008 had significant downward pressures on inflation, even sparking fears of deflation in many countries (Table 3.40 and Chart III.19). According to the IMF, inflation is expected to decline from 3.4 per cent in 2008 to 0.1 per cent in 2009 in advanced economies, while in EMEs inflation is expected to fall from 9.2 per cent to 5.2 per cent over the same period. In China, the loss of foreign export markets has created overcapacity that has added to the downward pressure on prices. On the other hand, inflation showed more persistence until early 2009 in Latin America and Russia. In some countries (e.g., Mexico and Russia), inflation concerns have been accentuated by depreciation pressures, a combination that poses a dilemma for monetary policy. On balance, in early 2010.The inflation pressures are generally subdued but diversed.

Advanced Economies

3.140 The impact of the crisis on the real economies of the advanced and emerging market economies are analysed in the following sections.

Table 3.40: Trends in Consumer Price Inflation

(Per cent)

	Average 1992-2001	2006	2007	2008	2009	2010P
1	2	3	4	5	6	7
1. Advanced Economies	**2.4**	**2.4**	**2.2**	**3.4**	**0.1**	**1.5**
United States	2.7	3.2	2.9	3.8	-0.3	2.1
Euro area	2.3	2.2	2.1	3.3	0.3	1.1
Japan	0.4	0.3	0.0	1.4	-1.4	-1.4
2. Emerging and developing economies	**39.0**	**5.6**	**6.5**	**9.2**	**5.2**	**6.2**
3. Regional groups						
Commonwealth of Independent States	—-	9.5	9.7	15.6	11.2	7.2
Central and Eastern Europe	52.9	5.9	6.0	8.1	4.7	5.2
Developing Asia	7.4	4.2	5.4	7.4	3.1	5.9
Middle East & North Africa	10.1	7.5	10.0	13.5	6.6	6.5
Western Hemisphere	51.9	5.3	5.4	7.9	6.0	6.2

P: Projections.
Source: World Economic Outlook Report, April 2010.

The US

3.141 In the US, economic activity had shown signs of deceleration even before the upsurge in financial market tensions. The housing market was a primary source of weakness in the US real economy as well as in the financial markets. As per the National Accounts data, residential investment in the US started declining from the second quarter of 2008 (Table 3.41). However, during the crisis, the slowdown in economic activity spread outside the housing sector. While there was positive growth in the second quarter of the year partly due to temporary fiscal stimulus measures and support from foreign trade, intensifying financial market strains, restrictive credit conditions and weaker foreign demand contributed to an outright contraction in output throughout the second half of 2008. The US economy was officially declared to have entered into recession from December 2008. Overall, US economic activity decelerated markedly in 2008 – the growth in real GDP was 0.4 per cent in 2008 compared with 2.1 per cent in 2007. According to the US Bureau of Economic Analysis, downturns in manufacturing, retail trade, and finance and insurance industries were the leading contributors to the slowdown in US economic growth in 2008. The value-added of finance and insurance industries dropped 3.2 per cent in 2008 and further to 2.7 per cent in 2009, which was its first decline since 1992.

Chart III.19: Consumer Price Inflation – Select Countries

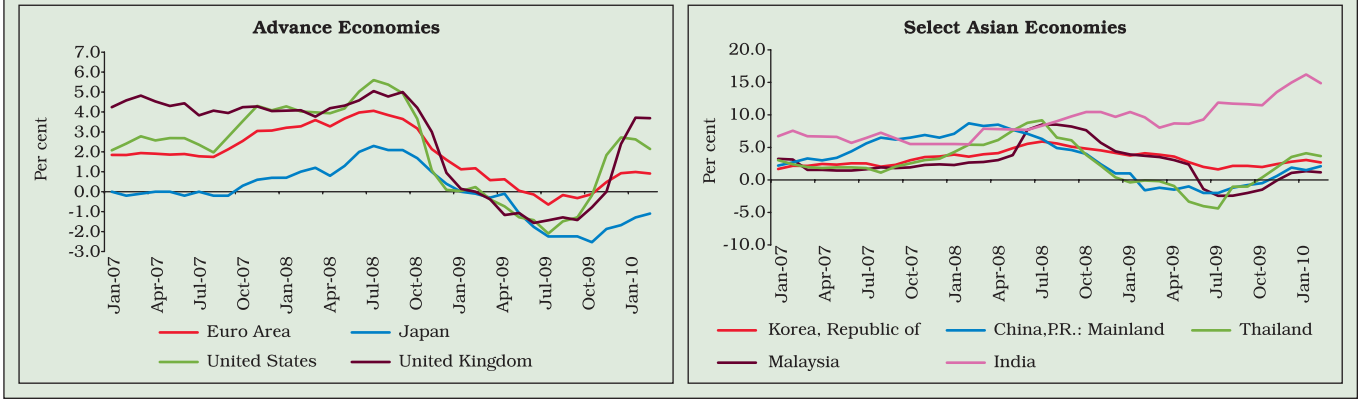


Table 3.41: Composition of Real Domestic Demand (seasonally adjusted)

(Growth in per cent)

Item	2006	2007	2008	2009	2008				2009				2010
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
1	2	3	4	5	6	7	8	9	10	11	12	13	14
GDP	**2.7**	**2.1**	**0.4**	**-2.4**	**-0.7**	**1.5**	**-2.7**	**-5.4**	**-6.4**	**-0.7**	**2.2**	**5.6**	**3.0**
PCE	2.9	2.6	-0.2	-0.6	-0.6	0.1	-3.5	-3.1	0.6	-0.9	2.8	1.6	3.5
Goods	3.3	3.1	-2.1	-1.9	-5.1	-0.5	-7.7	-10.0	2.5	-3.1	7.2	2.8	6.5
Services	2.7	2.4	0.7	0.1	1.8	0.4	-1.3	0.5	-0.3	0.2	0.8	1.0	2.0
GPDI	2.7	-3.8	-7.3	-23.2	-7.4	-10.4	-6.9	-24.2	-50.5	-23.7	5.0	46.1	14.7
Non-residential	7.9	6.2	1.6	-17.8	1.9	1.4	-6.1	-19.5	-39.2	-9.6	-5.9	5.3	3.1
Residential	-7.3	-18.5	-22.9	-20.5	-28.2	-15.8	-15.9	-23.2	-38.2	-23.3	18.9	3.8	-10.7
Exports	9.0	8.7	5.4	-9.6	-0.1	12.1	-3.6	-19.5	-29.9	-4.1	17.8	22.8	7.2
Goods	9.4	7.4	5.9	-12.2	4.2	14.1	-1.8	-25.5	-36.9	-6.3	24.6	34.1	8.9
Services	7.9	11.8	4.2	-4.1	-9.0	7.8	-7.7	-4.3	-13.6	0.1	5.6	2.6	3.8
Imports	6.1	2.0	-3.2	-13.9	-2.5	-5.0	-2.2	-16.7	-36.4	-14.7	21.3	15.8	10.4
Goods	5.9	1.7	-3.9	-16.0	-3.5	-4.6	-3.7	-19.6	-41.0	-16.5	25.1	20.3	10.7
Services	7.1	3.5	0.7	-3.6	3.0	-7.1	6.1	-0.9	-11.5	-7.5	7.0	-1.9	9.0
GCE&I	1.4	1.7	3.1	1.8	2.6	3.6	4.8	1.2	-2.6	6.7	2.6	-1.3	-1.9
Memo:													
Corporate Profitability	10.5	-4.1	-11.8	-3.8	-2.6	-3.8	3.6	-22.8	5.3	3.7	10.8	8.0	5.5

PCE: Personal Consumption Expenditure; GPDI: Gross Private Domestic Investment
GCE&I: Government Consumption Expenditures and Gross Investments
Source: Bureau of Economic Analysis, US.

3.142 The impact of the sub-prime crisis was also reflected in the deceleration in growth of private consumption expenditure (PCE), which has turned negative since the beginning of 2008 with deteriorating consumer sentiment and labour market conditions, in addition to a decline in household wealth owing to falling house prices and equity valuations. Contraction in private payrolls, declines in employment and earlier increases in food and energy prices have together eroded the purchasing power of households. In the US, the unemployment rate rose to 7 per cent in December 2008 which was highest level in last one and half decade. Since then the pressure on unemployment continued and the rate of unemployment remained in the range of 8-10 per cent during 2009 and 2010. With mounting job losses and resultant steep falls in wealth, by the third quarter of 2008, US household net worth had fallen by US$ 5.6 trillion over the year. The sluggishness of real incomes, coupled with tighter credit and declining household wealth had put strong downward pressure on consumer spending.

3.143 After recording sharp growth in 2005 and 2006, corporate sector profitability declined from 2007 in line with the decline in personal consumption expenditure and increased costs of production driven by energy and other commodity prices up to mid-2008. The decline in corporate profits along with looming uncertainty about future growth prospects with the deepening of the global financial crisis led to delayed investment plans. Business investment, in fact, weakened amid declining corporate profits, tighter lending standards, and the broadly weakening outlook for demand. The ongoing housing market correction – intensified by the financial turmoil – continued to be a major drag on the economy, with residential investment contributing significant drag on GDP growth during 2007 and 2008.

3.144 Foreign trade, however, was a major contributor to growth in the US throughout most of 2008, reflecting buoyant external demand earlier in the year and the lagged effects of past US dollar depreciation. However, the positive trade effect faded during the second half of 2008 as a sharp economic slowdown in a number of US trading partners weighed on foreign demand and exports. Nonetheless, the current account deficit narrowed from 5.2 per cent of GDP in 2007 to 4.9 per cent of

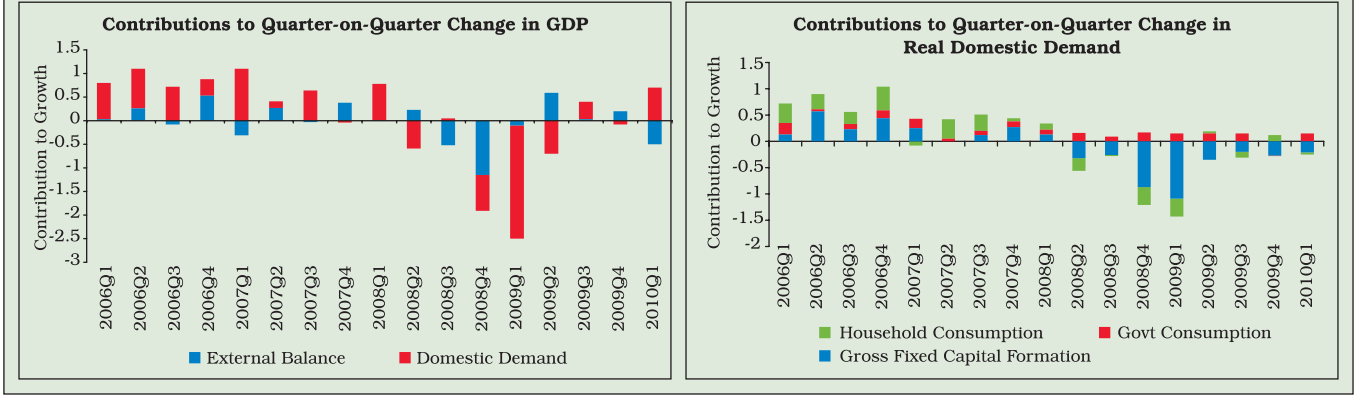
GDP in 2008 and further 2.9 per cent in 2009. Accordingly, the contribution of net exports to growth in real GDP worsened in 2008 from its level in 2007. According to the estimates of the Congressional Budget Office (CBO) in March 2009, the US federal budget deficit increased to 3.2 per cent of GDP in 2008 from 1.2 per cent in 2007. The rising deficit reflects an expected drop in tax revenues and increased federal spending, in large part related to the government's actions to address the crisis in the financial and housing markets.

The Euro area

3.145 While the year 2008 started on a relatively resilient note, there was rapid deterioration in economic activity from the middle of the year in the face of weakening domestic demand and a pronounced slowdown in the world economy. With the onset of the crisis, consumer and business confidence began to decline in the euro area and the UK. Domestic demand has softened in the euro area since the second quarter of 2008, with investment registering a significant decline and consumption moderating. Both domestic demand and net trade made significant negative contributions to growth during 2008 (Chart III.20). While half of the quarter-on-quarter growth in the first part of 2009 in the Euro area arose from internal demand, amid particularly subdued consumption and weakening residential investment, the other half resulted from net exports. During the second half of 2008, firms started to react forcefully to the rapid depletion of order books, postponing expansion plans and cutting inventories in the face of weak demand and costlier access to financing. With the significant deterioration in the external environment – on account of renewed weaknesses in the US economy and activity in emerging markets, which had previously been perceived to be shielded from the effects of the global slowdown – the year-on-year growth in euro area exports fell to its lowest level since 2003 by the third quarter of 2008. As the recession continued, the contribution of external demand continued to be negative till first quarter of 2009. As the global economic environment improved, the negative contribution improved in the fourth quarter of 2009. There are a number of factors behind this decline, including the fact that the global drop in investment in equipment and machines particularly affects euro area countries that are more specialised in capital goods.

3.146 Tight credit conditions, commodity price-related inflationary pressures and deteriorating confidence brought an end to the rapid growth in housing prices witnessed up to the third quarter of 2007. Faced with subdued real income growth, falling financial wealth, tightening credit conditions and worsening labour market prospects, household spending moderated significantly during 2008 and also during the first quarter of 2009. Household spending decisions were also severely affected by expectations regarding lifetime income, which, in addition to expected future income, also includes returns on financial and real estate wealth. Since

Chart III.20 : Real GDP in the Euro Area



the financial market turmoil began in mid-2007, developments in euro area financial assets have, for most consumers, had an adverse wealth impact which has been heightened by subdued developments in house prices. As a result, the year-on-year growth in private consumption fell to its slowest rate since 1993 in the euro area.

3.147 The falling house prices were reflected in a slowdown in construction investment, which includes both residential and commercial buildings, that partly contributed to the moderation in investment growth during 2008. Apart from falling house prices in several countries, tighter financing conditions and declining profitability also drove the moderation in investment. Residential house prices in the euro area decelerated from an annual growth rate of 6.6 per cent in 2006 to 1.5 per cent in 2008 and decelerated to -3.1 per cent in 2009 (Table 3.42). Falling residential house prices, by making residential investment less profitable, depressed construction investment. Fluctuations in the value of commercial properties were more pronounced than those observed for residential properties. Business investment has also declined sharply over the past year. Business investment slowed in the euro area on account of the weakening of demand, historically low capacity utilisation, lowering of profitability, low business confidence, and tighter lending standards which raised financing costs coupled with reduced funding availability. In view of these developments, the euro area entered into recession in the second quarter of 2008, with the three largest economies – Germany, France and Italy – all contracting.

Table 3.42: Residential Property Prices in the Euro Area

(annual % change)

	Weight %	1999-2005 average annual change	2006	2007	2008	2009	2009		2009				2010
							H1	H2	Q1	Q2	Q3	Q4	Q1
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Belgium [1]	3.7	7.5	11.8	9.3	4.8	-0.3	-0.6	-0.1	0.9	-2.1	-1.4	1.2	–
Germany [2]	27.0	-0.9	0.2	0.7	1.0	-0.2	–	–	–	–	–	–	–
Ireland [2]	2.1	12.0	13.6	-0.5	-9.1	-13.7	-11.3	-16.1	-11.0	-11.6	-13.8	-18.5	-18.9
Greece [2]	2.5	9.5	13.0	6.2	1.5	-4.7	-4.1	-5.2	-4.2	-4.1	-5.2	-5.3	–
Spain[2])	11.7	13.8	10.4	5.8	0.7	-7.4	-7.6	-7.1	-6.8	-8.3	-8.0	-6.3	-4.7
France[1]	21.1	11.2	12.1	6.6	1.2	-7.1	-8.1	-6.2	-6.9	-9.3	-7.9	-4.4	
Italy[2]	17.1	6.9	5.8	5.0	2.6	-0.5	-0.3	-0.7	–	–	–	–	–
Cyrus[2),3)]	0.2	–	10.0	15.0	13.0	-6.0	–	–	–	–	–	–	–
Luxembourg[2]	0.4	11.1	10.8	10.1	–	–	–	–	–	–	–	–	–
Malta[2]	0.1	10.8	3.5	1.1	-2.7	-5.0	-7.9	-2.0	-9.9	-6.0	-2.5	-1.4	–
Neitherlands[1]	6.3	7.8	4.6	4.2	2.9	-3.3	-1.5	-5.1	-0.3	-2.8	-5.1	-5.0	-4.3
Austria[2,4]	3.0	0.7	4.0	4.1	1.3		4.6		4.3	4.9	3.4		
Portugal[2]	1.8	2.9	2.1	1.3	3.9	0.4	1.5	-0.7	2.7	0.3	-0.8	-0.6	–
Slovania	0.4	–	17.6	22.6	3.1	-8.2	-8.4	-8.0	-7.1	-9.8	-10.9	-5.1	–
Slovaka[1]	0.6	–	16.8	23.9	22.1	-11.1	-8.9	-13.3	-4.3	-13.4	-14.3	-12.3	–
Finland[1]	2.0	–		5.5	0.6	-0.3	-4.5	4.1	-5.5	-3.6	0.4	7.9	11.3
Euro Area	100.0	6.4	6.6	4.5	1.5	-3.1	-3.1	-3.1	–	–	–	–	–

Note: Weights are based on 2007 nominal GDP.

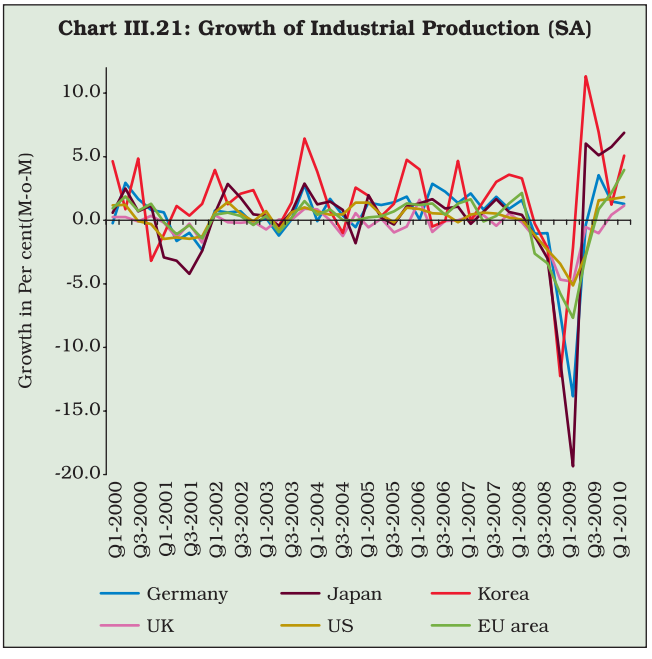
1. Existing dwellings (houses and flats); whole country.
2. All dwellings (new and existing houses and flats); whole country.
3. Th property price index is estimated by the Central Bank of Cyprus.
4. Up to 2000; data for Vienna only.

Source: ECB Bulletin, May 2010.

3.148 From a sectoral perspective, the slowdown in activity was broad-based, although more marked in the industrial sector, which tends to display greater sensitivity to economic cycles (Chart III.21). Manufacturing activity fell abruptly in the second half of 2008, in particular with regard to capital goods, which suffered from weaker external demand, rapid depletion of order backlogs and sharp cuts in activity in the car industry. Construction continued to be very weak, despite a temporary boost in the first quarter of 2009 owing to good weather conditions, with a steady deterioration in the residential sector, which was particularly severe in some countries. Although more resilient, services grew at their slowest pace since 2004, against the background of weak private consumption and slackening business activity.

3.149 A weak and uneven recovery is underway in Europe. Macroeconomic policies still support the upswing and extraordinary measures are underway to address the sovereign crisis. Now policymakers face the difficult balancing act between continuing their support for the economy and establishing a credible path to policy normalization. The spike in government bond spreads in Greece in January 2010, and the spillovers to Portugal, Spain, and other advanced economies with important fiscal challenges, have underscored continuing fragilities. After more than a year, the trend of growth in Euro area continued to be skewed and volatile particularly in the Central and Eastern EU countries. The Greek debt crisis deepened in mid-April 2010 increased significant risks to the euro recovery. Euro area real GDP rose, on a quarterly basis, by 0.2 per cent in the first quarter of 2010, following an increase of 0.1 per cent in the final quarter of 2009. Although, GDP growth improved, however, the rate of unemployment continued to be at higher level. In comparison with US, the unemployment rate began to increase in Euro area latter but it stood at 10 per cent level in March 2010. Private consumption declined by 0.1 per cent, on a quarterly basis, in the first quarter of 2010, after increasing by 0.2 per cent in the fourth quarter of 2009. The continued weakness in household real disposable income, which has mainly reflected a decline in employment. On the supply side, in the first quarter of 2010, industrial production expanded in February, by 0.9 per cent month on month, following a 1.6 per cent increase in January. As a consequence of these increases, industrial production in the first two months of 2010 was on average substantially above its level in the final quarter of 2009. Value added in the industrial sector (excluding construction) grew by 2.2 per cent in the first quarter of 2010, following increases of 0.3 per cent in the fourth quarter of 2009 and 2.1 per cent in the third quarter.

Chart III.21: Growth of Industrial Production (SA)



Japan

3.150 As regards Japan, its recovery from a decade of stagnation in economic growth received a setback during the financial crisis through the collapse of external demand with serious knock-on effects on domestic economic activity. Economic expansion in Japan ended abruptly in 2008, with slightly positive growth in the first quarter followed by a marked decrease in overall production thereafter. Strong external demand and domestic investment supported real GDP growth in the first quarter. However, substantial declines in net exports and business investment – which had been the driving force of the Japanese

recovery in previous years – along with restrained consumption owing to increasing labour market uncertainty and declining real incomes offset the positive growth of the first quarter and resulted in negative GDP growth rates for the rest of the year. In the first quarter of 2010, real GDP expanded by 1.2 per cent quarter on quarter according to the first preliminary data release of Japan's Cabinet Office. Economic activity was mainly driven by net exports of goods and services, which accounted for 0.7 percentage point of the quarterly real GDP growth, and by private demand (0.5 percentage point). For the first time in two years, personal consumption and residential and business investment showed positive quarterly growth rates.

3.151 While the Japanese banking sector remained relatively resilient to the global financial market turmoil, substantial stock market losses and the intensification of the financial turmoil had a negative impact on firms' investment and consumption in the second half of 2008. A strong appreciation in effective terms of the Japanese yen put additional downward pressure on profitability and investment in export-oriented industries. In view of the rapid deterioration in economic conditions, the Bank of Japan lowered its target for the uncollateralised overnight call rate cumulatively by 40 basis points to 0.1 per cent by December 2008; it had earlier left the target unchanged since February 2007 (ECB Annual Report, 2008).

3.152 The fiscal policy measures undertaken to combat the adverse impact of the financial crisis on the real economy, particularly the contraction in demand, led to sharp deterioration in the fiscal position of sovereign governments, with fiscal deficit rising to double-digit levels in many of the advanced economies in 2009 (Table 3.43). Japan's high fiscal deficit and net public debt may raise concerns about fiscal sustainability, and the anticipation of a sizeable fiscal adjustment in coming years could weigh on the recovery. After the financial crisis, Japan's potential growth rate is projected to fall from about 1½ percent in 2007 to around 1 percent over the medium term, led by a shrinking labor force and slower capital accumulation dampening the cyclical rebound.

Table 3.43: Government Fiscal Balance

(Per cent of GDP)

	Average 1994-2003	2006	2007	2008	2009	2010P
1	2	3	4	5	6	7
Major advanced economies	-3.6	-2.3	-2.1	-4.7	-10.0	-9.5
United States	..	-2.0	-2.7	-6.6	-12.5	-11.0
Euro area	-2.7	-1.3	-0.6	-2.0	-6.3	-6.8
Japan	-6.0	-4.0	-2.4	-4.2	-10.3	-9.8
United Kingdom	-2.1	-2.6	-2.7	-4.8	-10.9	-11.4

P: Projected.
Source: World Economic Outlook Report, April 2010.

Emerging Market Economies

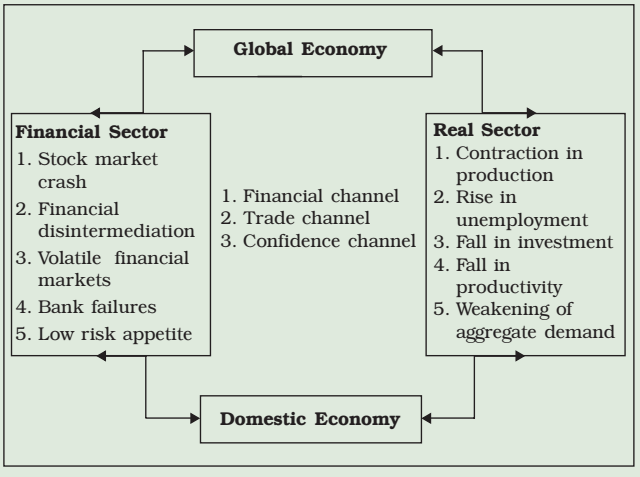
3.153 While advanced economies were slowdown rapidly, the emerging market economies appeared relatively insulated from the crisis in the initial phases. However, with the deepening of the crisis from September 2008, as global growth slowed substantially with advanced economies falling into recession, the growth in EMEs also came down sharply. The IMF estimated the GDP growth of emerging market and developing economies to decelerate to 2.4 per cent in 2009, down from 6.1 per cent in 2008. This downturn is clear evidence that the forces of globalisation are too strong for the decoupling hypothesis to work.

3.154 International trade and finance were the two major channels through which the crisis affected the real economies of the EMEs (Box III.4). The drying-up of external funds, particularly trade credits, made international trade more difficult and put great strain on smaller firms in emerging economies that have few internal sources of working capital. This, coupled with the decline in external demand for products from countries in recession, resulted in a synchronised global collapse in trade and industrial production. The IMF estimated world trade to have contracted by 10.7 per cent in volume terms during 2009 (see Table 3.22).

Box III.4
Transmission Channels of Financial Crisis: Financial and Real Linkages

The current financial crisis has been transmitted to the emerging market economies in three phases. The period between February 2007 and May 2008 appears to have been a brief golden age of decoupling of emerging economies when they largely remained insulated from the financial crisis. However, in the second and third phases the world economy moved closely in tandem, largely negating the 'decoupling' argument.

In terms of geographical expansion, three factors led to the transmission of the financial crisis from advanced economies to EMEs. The shocks from the financial market were relatively less persistent, although there was a dramatic increase in uncertainty in financial markets and cross-country capital flows reversed towards safer destinations. In this period of a credit crunch, the stock markets crashed and financial market became volatile. The EMEs were relatively insulated from developments in the US financial market primarily due to the limited exposure of their financial system to the toxic innovative products. The persistent shock to the real economic activity emanated from the trade channel, which emerged as the single most important factor that contributed to sharp declines in economic activity in the expectation of weakening external demand. The confidence channel emerged due to the collapse of big financial institutions that raised uncertainty in the global economic environment and spread a negative investment outlook.



1. Financial Channel

The financial markets in EMEs were relatively immune largely due to their limited exposure to sub-prime and related products, the so-called toxic assets, unlike European countries. As of May 2008, the total reported write-downs and credit losses of the world's 100 biggest banks and securities amounted to US$ 379 billion. Of these, Asia (excluding Japan) accounted for US$ 10.8 billion, which was less than 3 per cent of global losses (William E. James, 2008). However, real economic impacts through the financial channel could not be ignored. In particular, the availability of loanable funds was a key factor that influenced investment behaviour independent of the cost of capital. Available bank credit to the private sector may be quantitatively the most important variable in determining the amount of actual investment in developing countries (Gertler, 1988; Hubbard, 1998; Jongwanich and Kohpaiboon, 2008).

2. Trade channel

Initially, global trade did not collapse due to the slowdown of economic activity in the advanced countries, since over the period there was significant expansion of trade relations amongst the EMEs. The economic recession in the G-3 economies had ultimately led to a contraction in their import demand, thereby discouraging exports from developing EMEs. The effects of the slowdown in G-3 demand varied across industries and countries. The electronics sector was severely affected since the extent of intra-Asian trade in parts and components in this industry is perhaps larger than in any other industry. In addition, this industry is probably more dependent on the G-3 markets than others and the products of this industry display high world income elasticity.

3. Confidence channel

The confidence channel broadly operated through the stock market. Major events such as the collapse of Lehman Brothers, with implications for financial stability, had negative spillover effects on EMEs' stocks. The loss of investor confidence in EMEs' equity markets closely mirrored that of the US, and the two markets have moved in tandem since August 2007. Falling stock markets further dampened business and consumer confidence, resulting in the slowdown of economic activity and banking business. Stock market slumps may also have had a significant negative effect on the balance sheets of banks, especially for banks with substantial exposure to equities.

To sum up, the financial crisis spread through three major channels, of which the financial channel played the dominant role in the slowdown in the real sector due to increasing financial deepening and global financial integration. As regard the trade channel, the impact were somewhat reduced by the rebalancing of economic activity by all the countries that were affected by the trade channel. However, the confidence channel was critical in exacerbating the impact of the finance and trade channels on the overall financial crisis.

3.155 Economic growth in emerging Asia held up well despite the financial market turbulence and weakness in exports, mainly supported by strong domestic investment rates supported by high savings (Table 3.44). This could also be attributed to macroeconomic fundamentals which were much healthier than they were 10 years ago—as reflected in the improved sovereign credit ratings of the countries. Asian countries have cut back domestic spending, reduced fiscal deficits, and reformed their economies. Moreover, corporate balance sheets in Asia have improved as debt-to-equity ratios reduced sharply and foreign currency borrowing was no longer a large component of corporate sources of funding in most countries.

3.156 Amid the broadening of the economic slowdown and tight global financial conditions, export growth declined sharply in the second half of 2008, especially in small open economies, such as Singapore, Taiwan and Hong Kong. The overall slowdown in economic activity was also driven by a weakening of domestic demand owing to deteriorating consumer and business confidence, and the downturn in real estate investment (ECB Annual Report, 2008). Within emerging Asia, the adverse impact of the contraction in trade on economic growth varied depending on the contribution of final external demand to total value added in these economies. Malaysia and Thailand suffered most from a double-digit fall in exports. The global downturn also affected growth in Indonesia and the Philippines. However, with both countries less reliant on exports than many of their emerging East Asian neighbours, their respective slowdowns were not as dramatic. The four middle-income ASEAN economies (Indonesia, Malaysia, the Philippines, and Thailand) contracted by 1.0 per cent in the first quarter of 2009. In line with the slowdown in economic activity, industrial production declined for all ASEAN-4 economies except Indonesia. To date, ASEAN-4 economies have been affected much less by the current crisis than during 1997-98.

3.157 Within Asia, economic contraction in the NIEs was the worst since the 1997-98 Asian financial crisis due to the precipitous drop in exports and weak domestic demand. The fall in export growth resulted in substantial reduction in GDP growth due to the heavy reliance of these countries on an export-led growth model. Consumption has fallen substantially in line with the fall in income and weakening of consumer confidence due to heightened uncertain economic environment. In terms of share, the fall in exports and imports has been somewhat offset by the rise in the share of government consumption expenditure in GDP mainly due to the rebalancing of the economy towards domestic sectors. The collapse in global demand led to a dramatic slowdown in NIEs' exports during the first five months of 2009. Along with the

Table 3.44 : Real GDP Growth, Investment and Export – Select Asian Economies

(as a percentage of GDP)

	Real GDP Growth			Investment Rate (Percentage to GDP)			Merchandise Exports Growth		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
1	2	3	4	5	6	7	8	9	10
China	13.0	9.6	8.7	41.7	42.5	45.8	25.8	17.6	-16.1
Hong Kong	6.4	2.1	-2.7	20.9	20.5	22.5	8.9	5.6	-11.9
India	9.2	6.7	7.2	37.6	35.6	34.5	28.9	13.7	-15.0
Indonesia	6.3	6.0	4.5	24.9	27.8	31.0	14.0	18.3	-14.4
Korea	5.1	2.3	0.2	29.4	31.2	25.9	14.2	14.2	-13.7
Malaysia	6.2	4.6	-1.7	21.7	19.1	14.0	9.6	13.1	-21.1
Philippines	7.1	3.8	0.9	15.4	15.2	14.0	6.4	-2.5	-22.3
Singapore	8.2	1.4	-2.0	20.7	30.1	27.6	10.1	13.0	-20.3
Thailand	4.9	2.5	-2.3	26.4	28.9	21.9	18.2	15.9	-13.9

Source: Asian Development Outlook 2010, ADB.

precipitous drop in domestic demand, industrial production fell sharply. However, the pace of the decline has begun to moderate. The worst-hit economies were Taiwan and Singapore, where GDP in the first quarter fell by 10.2 per cent and 9.6 per cent, respectively. Double-digit declines in fixed investments and exports contributed to the steep fall in Taiwan's GDP. Hong Kong's economy also continued to shrink in the first quarter of 2009, declining by 7.8 per cent, with both external and domestic demand contracting. Meanwhile, the Republic of Korea's economy contracted 4.2 per cent in the first quarter of 2009; however, the decline may have stopped as the economy grew by 0.5 per cent (seasonally adjusted annualised rate) compared with the last quarter of 2008. Collectively, economic growth in the NIEs has declined more than during the 1997-98 Asian financial crisis, although the pace of decline has been less steep. The growth continued to decline till the first half of 2009-10 and turned positive in the fourth quarter of 2009. In the fourth quarter of 2009, Korea witnessed significant increase in growth to 6.0 as against 2.6 per cent in Hong Kong and 4.0 per cent in Singapore.

3.158 Amid the slowdown across most of emerging East Asia, China remains a major bright spot as it continued to grow at a healthy rate during the first half of 2009. Its 6.1 per cent GDP growth in the first quarter of 2009 was the lowest since the introduction of quarterly GDP figures in the fourth quarter of 1999. But growth performance improved in the second quarter, increasing by 7.9 per cent and reached 11.9 per cent in first quarter of 2010. Like other emerging East Asian economies, however, Chinese exports were badly affected by the plunge in external demand, falling 22.2 per cent in May 2009. However, continued strong growth in fixed-asset investment, which was given added impetus by the government's massive stimulus package, managed to offset the effects of declining exports (Box III.5). Fixed-asset investment growth accelerated to 38.7 per cent in May 2009, compared with 25.4 per cent in May 2008 and moderated to 26.1 per cent in April 2010. However, consumer demand, as reflected by retail sales growth, weakened to 13.7 per cent in April before rising again to 14.9 per cent in May 2009 and increased to 18.5 per cent in April 2010.

Latin America

3.159 Economic growth in Latin America was robust in the first half of 2008. Inflationary pressures were elevated and rose throughout the year, with inflation rates for the region increasing to 8.7 per cent in 2008 from 6.1 per cent in 2007. Countries with fixed or quasi-fixed exchange rates recorded higher inflation than those with an inflation-targeting regime. Improved macroeconomic fundamentals, high commodity prices and strong domestic demand continued to support the economic outlook in the first half of 2008, although they also resulted in increased inflationary pressures. However, from mid-September 2008 external financial conditions deteriorated as the global financial crisis unfolded. In particular, spreads on credit default swaps on Latin American sovereign debt widened considerably, especially in Argentina and Venezuela (by around 4,000 and 3,000 basis points respectively at the end of the year). In addition, currencies fell vis-à-vis the US dollar, equity markets dropped significantly by around 50 per cent over the year and liquidity shortages emerged. Brazil and Mexico were particularly hit by liquidity shortages, as large outflows affected the financial landscape of the region. For 2010, regional GDP is expected to grow by 4 percent—good performance by historical standards. Real linkages with the Latin American region are limited to Greek crisis, but the region could be affected if tail risks materialize. Exports to Greek, Italy, *etc.* account for less than 5 percent of total exports of the LAC region, limiting contagion through real channels. However, in an extreme scenario, a sovereign debt crisis in Southern Europe could have spillovers through market confidence effects. The recovery in global capital markets has been faster than anticipated, contributing to a positive short-term growth in advanced economies, and easing external financing conditions for emerging markets have significantly buoyant the overall economic environment in Latin America in 2010. However,

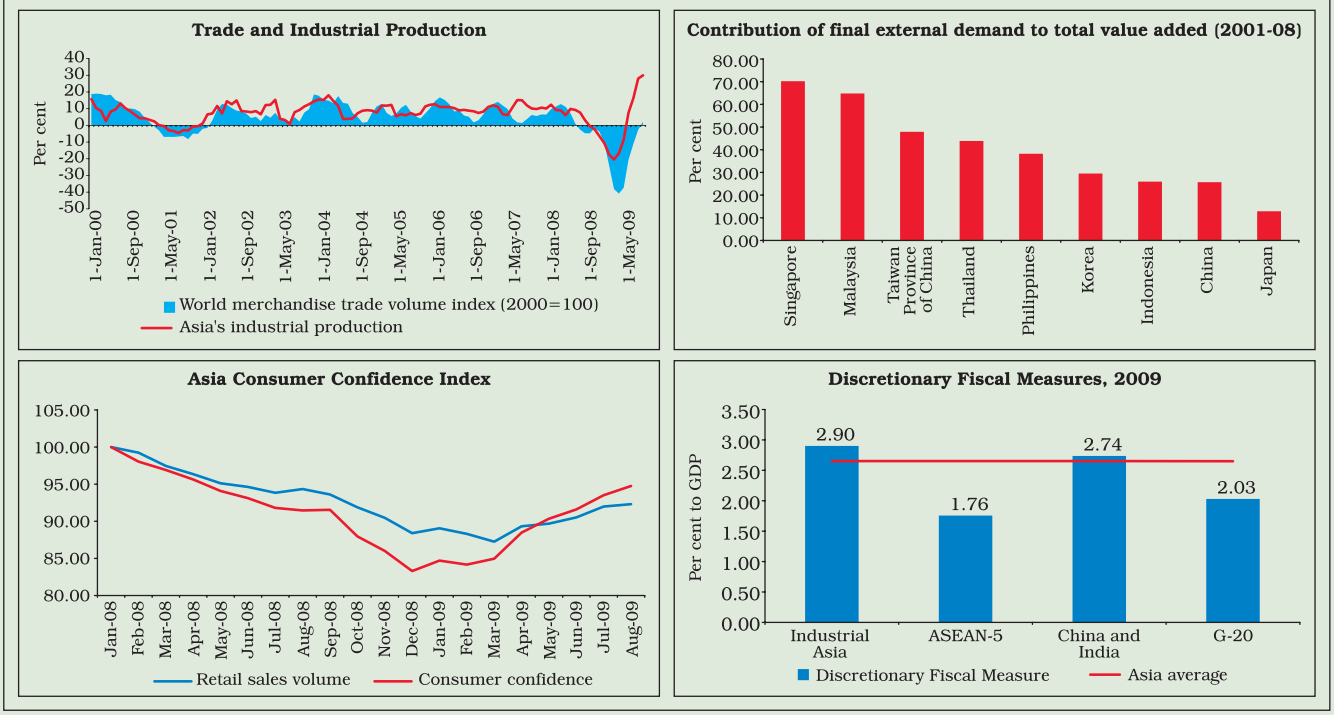
Box III.5
Impact of the Global Crisis on Asia

The current global economic slowdown has had a significant impact on the Asian economy through its external sector linkages. The Asian economies were witnessing high growth led by an export-driven growth model. During the 1990s, world trade rose by around 7 per cent on average, providing impetus to Asian economies' growth performance. The Asian region is highly dependent on exports particularly on US consumption, which is responsible for about one-fourth of Asia's export value added. In the midst of the global financial crisis, the demand for Asian exports dropped significantly, resulting in overall contraction in trade. In the last quarter of 2008, real exports fell by 6.5 per cent in the United States, 6.7 per cent in the euro area, 13.8 per cent in Japan and an estimated 10 per cent in China. Industrial production in the Asian economies decelerated significantly in line with the sharp deceleration in demand from the advanced economies (Chart). The Asian economies rely heavily on the export sectors, the contribution of final external demand to total value added.

As the crisis struck the world economy, trade and financial flows, which used to act as powerful drivers of globalisation, abated at the end of 2008, further transmitting the effect of the crisis across borders. The crisis has resulted in significant weakening of consumer and investor confidence. Despite efforts of rebalancing growth through domestic sectors, the poor consumer and investor confidence prolonged the recovery from the crisis. The most interesting fact which emerged from the crisis is that there was a synchronised fall in confidence which heightened the uncertainty. The weakening of economic activity and wealth effects due to corrections in asset prices resulted in a huge fall in consumption and investment activity.

In the period of weakening of demand both domestically and externally, discretionary fiscal measures were undertaken in Asian economies. As a result, the strong fiscal response played an important role in stabilising Asian economies during the first half of 2009. As per the IMF, simulations using the IMF's Global Integrated Monetary and Fiscal (GIMF) model estimated that fiscal stimulus accounted for, on average, about 1¾ percentage points of GDP growth in the first half of 2009 in Asia.

Chart : Impact of Crisis on Trade in Asian Economies



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fiscal prudence and weak growth continue to be a key challenge in the region.

Impact on Labour Market

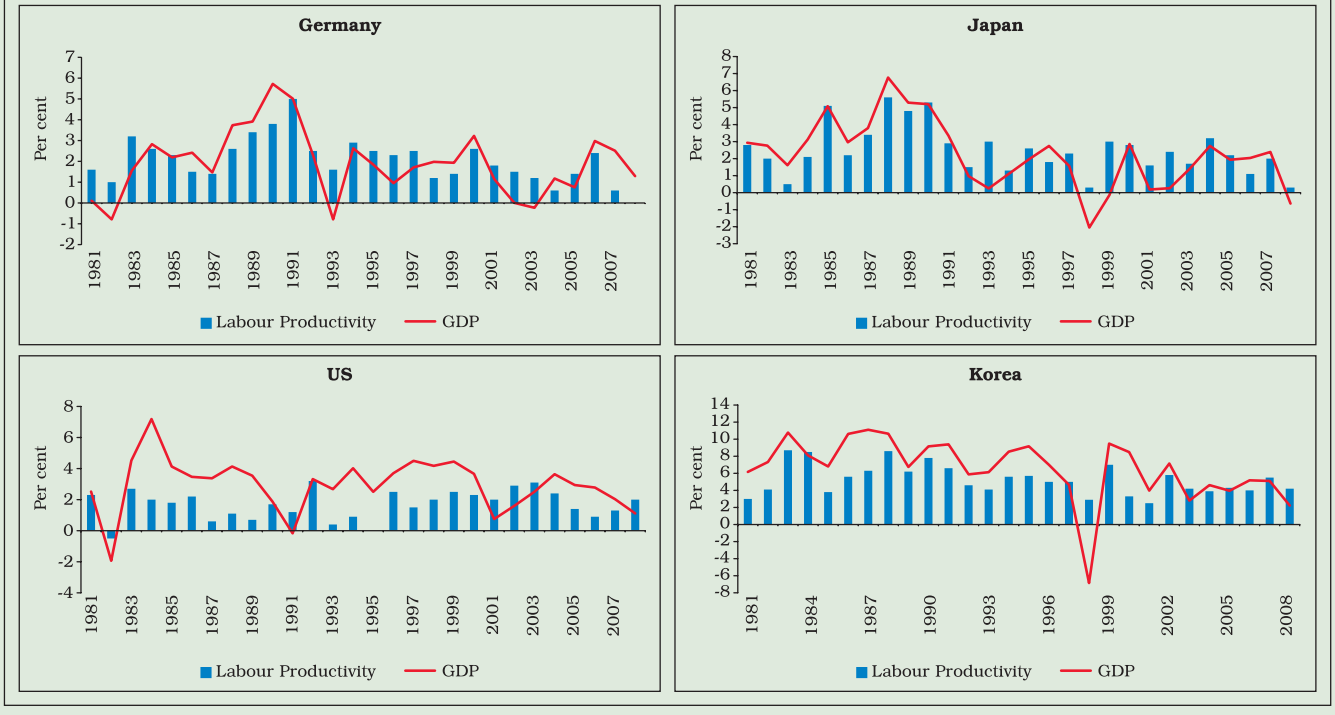
3.160 The financial crisis had an adverse impact on the level of employment. The erosion of economic activity and depressed economic environment led to rapid lay-offs, both in private corporate businesses and factories. The fall in employment was prominent in the manufacturing sector, which has a higher sensitivity to financial crises due to its dependence on international trade. Labour market conditions deteriorated further due to the reversal of labour migration. The inefficient allocation factors of production such as capital and labour led to sharp falls in productivity during the current financial crisis (Box III.6).

Box III.6
Labour Productivity Analysis during Boom and Bust Period

The economic literature provides strong evidence that financial crises are periods of turbulence, that often result in lay-offs, a strained labour market and, at times, high losses of skills from the displacement of workers from crisis sectors to non-crisis sectors (Ljungqvist and Sargent, 1998). In the period of crisis, the fall in output is largely attributed to a fall in factor productivity as a result of higher prices of factors of production, protectionist tendencies and significant fall in research & development. In a cross-country analysis, empirical estimates of the impact of the productivity shock on output shows that output falls by nearly 4.5 per cent, which is close to half (46 per cent) of the overall impact of the crisis on GDP (Chart). TFP (measured as y/k) falls by about 4 per cent, which is roughly 43 per cent of the corresponding fall.

During the period of financial crisis, due to rapid and large relative price changes, many workers have to move to occupations and sectors that are very different from their prior employment experience. Thus, one can expect more displaced workers to find themselves in jobs for which their accumulated skills are ill-suited, and where new skills must be acquired, causing at least transitory losses in productivity. In normal times, this effect disappears and the differences in the change of wages are small or imprecisely measured. Earnings losses for movers are over 14 per cent higher than for stayers during the crisis. Outside the crisis, these relative losses do not show any clear pattern and are rarely statistically significant. A sudden drop in the quality of labour causes the capital-output ratio to fall and, hence, should cause utilisation of capital as

Chart : Trends in Labour Productivity Growth and GDP Growth



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well. The endogenous response of utilisation should therefore magnify the effect of labour turbulence on TFP.

The current financial crisis originated in the fall in the housing sector which has direct linkages with the construction sector. The construction sector emerged as an important driver in the fall in labour productivity in the US. The construction sector is around 5 per cent of total GDP, but due to poor productivity performance it has been a significant drag on aggregate productivity. In 2007, an abysmal negative 12 per cent labour productivity growth in construction accounted for negative 0.6 percentage points of aggregate productivity growth (OECD 2009).

The construction of new dwellings in the US remained high up to early 2006; afterwards, it started to decline steadily. In parallel, the negative labour productivity growth in the construction sector, after a short improvement in 2005, started again to decelerate strongly during 2006 and 2007. This suggested a serious excess supply problem. In contrast, the housing price bubble was still inflating in 2005; it levelled during 2006 but started to decline at the beginning of 2007. It is significant to note that the boom years of the mortgage and sub-prime business (2005-2006) coincide precisely with the periods where productivity performance was deteriorating rapidly, as if a substantial boost in demand through extended credit conditions could have compensated for the supply-side problems. There was clear evidence that pressure on the housing sector mainly emanated from a fall in productivity before the actual cooling of the housing market. On the other hand, disproportionate growth of financial activity in the housing market away from the real activity in the housing sector resulted in a mismatch of optimism about housing prices and the collapse of the financial system.

The ordinary least square estimates suggest that the financial crisis had a higher negative impact on output in the US and Korea than in Japan, which is possibly due to long phase of recession in Japan. This negative impact of the financial crisis is captured by a dummy variable; for the period when the crisis struck the economy it is 1, while for normal years it was defined as 0.[1]

Historically, it may be observed that labour productivity has a significant relationship with a financial crisis. In select countries, the average relationship of labour productivity growth tends to increase further during a financial crisis. This suggests that output growth expands/contracts in response to the shock in the labour market.

To sum up, the above analysis suggests that the period of financial crisis does impact the productivity growth due to strained impact on the labour market segment. The labour market shocks lead to a fall in total factor productivity which coupled with low investment activity in depressed business sentiments, cascades the impact of the financial crisis on the output in the economy.

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[1] The ordinary least squares (OLS) method specification with the coefficient significant at 5% to 10% is as follows for select countries: Pd=Labour Productivity, Dfin= Financial Crisis.

US Y= 2.17+Pd 0.49-Dfin3.18 Adj R-Sq 0.60 Dw stat 1.6

Japan Y= 0.03+Pd0.98-dfin1.19 Adj R-Sq 0.67 Dw stat 1.8

Korea Y= 1.13+Pd1.1-Dfin2.4 Adj R-Sq 0.43 Dw stat 1.5

3.161 Among the advanced economies, in the United States the total hours worked were cut at an annualised pace of 9 per cent in the first quarter of 2009 following an equally large cut in the preceding quarter, lifting the unemployment rate to 9.4 per cent by May 2009. Over the past few years, euro area labour markets had performed very positively, with strong increases in employment, rising participation levels and low unemployment rates. However, during crisis Euro area unemployment rate reached a 25-year high of 7.2 per cent in March 2008. With the onset of the financial turmoil and the associated sharp economic downturn, unemployment began to increase markedly (Table 3.45). In August 2009 the euro area unemployment rate was at 9.6 per cent – the highest rate recorded in a decade. Since then it increased further to 10.1 per cent in April 2010.

Table 3.45: Unemployment Rates

(Per cent)

	Euro Area 16	Bulgaria	Czech Republic	Denmark	Estonia	United Kingdom	Hungary	Lithuania	Latvia	Poland	Romania	Sweden
1	2	3	4	5	6	7	8	9	10	11	12	13
2005Q1	9.4	10.8	8.1	5.2	9.0	4.7	6.8	9.6	9.4	18.2	7.7	7.4
2005Q2	8.9	10.2	8.0	5.1	8.2	4.7	7.3	8.7	9.4	18.3	7.4	7.9
2005Q3	8.7	9.6	7.8	4.7	7.2	4.7	7.3	7.7	8.8	17.7	6.7	7.8
2005Q4	8.9	9.8	7.9	4.2	7.1	5.1	7.4	7.1	8.0	16.9	6.9	7.6
2006Q1	9.2	9.2	7.7	4.2	6.1	5.2	7.4	5.8	7.4	15.6	7.0	7.5
2006Q2	8.2	9.2	7.2	4.1	6.3	5.4	7.4	5.7	7.3	14.4	7.2	7.3
2006Q3	8.0	9.2	7.0	3.7	5.6	5.5	7.5	6.1	6.4	13.3	7.6	6.9
2006Q4	8.1	8.4	6.6	3.7	5.6	5.5	7.6	4.9	6.2	12.3	7.3	6.6
2007Q1	8.0	7.6	5.8	4.1	5.0	5.5	7.2	4.5	6.4	10.8	6.4	6.4
2007Q2	7.3	7.0	5.5	3.7	5.1	5.3	7.2	4.2	5.9	9.8	6.7	6.1
2007Q3	7.3	6.9	5.1	3.9	4.3	5.3	7.3	4.3	6.1	9.3	6.4	6.0
2007Q4	7.3	6.2	5.0	3.4	4.1	5.1	7.8	4.4	5.5	8.6	6.2	6.1
2008Q1	7.6	6.1	4.5	3.2	4.0	5.2	7.6	4.3	6.1	7.5	5.7	5.9
2008Q2	7.3	5.9	4.4	3.1	4.1	5.3	7.8	4.5	6.2	7.3	5.8	6.0
2008Q3	7.3	5.3	4.3	3.3	6.4	5.8	7.8	6.4	7.5	7.0	5.8	6.2
2008Q4	7.9	5.1	4.5	3.7	7.7	6.3	8.1	8.2	10.3	7.0	5.9	6.7
2009Q1	9.3	5.9	5.5	4.8	11.0	7.0	9.2	11.2	13.3	7.5	6.2	7.5
2009Q2	9.2	6.4	6.5	6.1	13.5	7.7	9.8	13.5	16.4	8.0	6.4	8.4
2009Q3	9.4	7.0	7.3	6.2	15.2	7.8	10.5	14.3	18.8	8.5	7.2	8.6
2009Q4	9.8	8.0	7.4	7.1	15.6	7.8	10.6	15.9	20.2	8.9	7.6	8.8
2010Q1	10.5	8.6	7.8	7.1	19.0		10.9	17.4	21.5	9.7	NA	8.9

Source: European Central Bank.

In the euro area, sustained growth in the labour supply, coupled with weak demand for labour, was behind the steady increase in the unemployment rate. A marked decline in the ratio of job offers to applicants since the beginning of 2009 suggests that the employment downturn in Japan is likely to deepen further. Within EMEs, during the current crisis, India and China have each lost 10 million jobs and 14,000 jobs have gone in South African mining.

3.162 In an integrated world, every region has been affected by the current global crisis, irrespective of the differences in their economic structures or policy frameworks. The volatilities in the financial markets along with the slowdown in economic activities in the advanced economies were, in fact, transmitted to the EMEs through all three channels – trade, financial and confidence – on account of the increased global integration witnessed in recent years. As a result, the decoupling theory which had gained prominence during the pre-crisis period has been discredited. The sharper declines in trade flows in the wake of the current financial crisis could be attributed to the increasing presence of global supply chains in total trade as also to the rapid developments in financial markets which led to the financialisation of global trade. The collapse in commodity prices has been a further blow to the value of global trade and has adversely affected the net commodity exporters. Thus, the crisis has highlighted the vulnerability of a growth strategy that is based on over-dependence on export demand. Consumption and investment witnessed sharp contractions in line with the fall in output and productivity. Industrial production collapsed in response to contraction in global trade while unemployment rates touched an all-time high.

V. CONCLUDING OBSERVATIONS

3.163 The flow of capital between nations, in principle, brings benefits to both capital-importing and capital-exporting countries. But the historical

evidence, reinforced by the current global financial crisis, clearly shows that it can also create new exposures and bring new risks. The failure to analyse and understand such risks, excessive haste in liberalising the capital account and inadequate prudential buffers to cope with the greater volatility in more market-based forms of capital allocation have compromised financial or monetary stability in many emerging market economies. In an integrated world, every region has been affected by the current global crisis, irrespective of the differences in their economic structures, financial systems or policy frameworks.

3.164 Almost all segments of the global financial markets experienced tremors of the financial crisis, though to varying degrees. Interbank markets in advanced economies were the first one to be affected by the crisis – this market segment suffered from a severe liquidity crisis as banks became reluctant to lend to one another for fear of counterparty risks. Subsequently, the crisis spread to the money markets as manifested in the abnormal levels of spreads, shortening of maturities, and contraction, or even closure, of some market segments. In the wake of credit and money markets witnessing a squeeze and equity prices plummeting, banks and other financial institutions experienced erosion in their access to funding and capital base, owing to accumulating mark-to-market losses. The pressure on financial markets mounted with the credit spreads widening to record levels and equity prices crashing to historic lows, leading to widespread volatility across the market spectrum.

3.165 Domestic interbank markets in EMEs, however, did not seize up as severely as their counterparts in developed countries, although they experienced some liquidity strains largely due to the 'knock-on' effects of the crisis. Stock markets in EMEs, on the other hand, bore much of the heat of the crisis as equity markets all over the world witnessed high volatility, sharp declines in prices, turnover volumes and market capitalisation. During the second half of 2009, however, there have been some signs of recovery in the health of global stock markets. Government bond markets all over the world witnessed large swings in yields driven mainly by direct and indirect consequences of the intensified financial crisis. Corporate bond markets of advanced economies exhibited relative resilience during the current financial crisis, even though corporate bond issuance from the EMEs declined significantly amid heightening of spreads since the second half of 2008. Commodity prices, which reached record highs during the initial stages of the crisis as investors sought to hedge against a depreciating US dollar and possibly also as a hedge against higher inflation, witnessed a reversal in trend since the collapse of Lehman Brothers in September 2008, leading to a slowdown in economic activities.

3.166 Against the backdrop of large-scale disruptions in international financial markets and deteriorating macroeconomic conditions, financial institutions also suffered significantly. Commercial banks suffered from a decline in profitability and large mark-to-market losses; as a result, the liquidity problems transformed into a solvency problem leading to bank failures in the US and other matured economies in Europe. In order to restore confidence and revive the financial system, there were large-scale efforts by the governments and central banks in advanced economies. The banking system of the emerging market economies, on the other hand, reflected relative resilience during the crisis on account of their limited exposure to the toxic assets and the regulatory and supervisory measures taken to strengthen their balance sheets in the aftermath of the East Asian crisis. The crisis almost side-lined the investment banking industry, while the financial performance of the monoline insurers and hedge funds was impacted severely. As a result, the crisis accelerated the trend towards greater institutionalisation and transparency.

3.167 The tightening of credit conditions combined with deleveraging and risk aversion by banks and financial institutions led to a sharp slowdown in private sector credit growth, particularly in the advanced economies, which worked as a channel for transmitting the crisis from financial institutions to the real economy. The overall deceleration in bank lending to the private sector

was broadly based though more pronounced in the case of household credit, including mortgages. Despite co-ordinated policy efforts, bank lending in the advanced economies remains restricted during the recent months, while credit growth in the EMEs is yet to pick up. Another channel through which the financial crisis impacted the real economy was through contraction in world trade especially during the second half of 2008. The sharper declines in trade flows in the wake of the current financial crisis could be attributed to the increasing presence of global supply chains in total trade as also to the rapid developments in financial markets which led to the financialisation of global trade. The collapse in commodity prices has been a further blow to the value of global trade and adversely affected net commodity exporters. Thus, the crisis has highlighted the vulnerability of the growth strategy based on over-dependence on export demand. Apart from decline in trade flows, net private capital flows to EMEs also reversed, reflecting global deleveraging and risk aversion on the part of investors, which led to tightening of external financing conditions. The impact, however, varied depending on the country's current account and fiscal position. On the other hand, remittance flows remained more stable than private capital flows. The current and capital account developments across countries indicate signs of rebalancing of the global imbalances in the recent period.

3.168 The global crisis that mainly emanated from the crisis in the financial sector resulted in widespread recession and caused serious output loss and heightened global uncertainties. Interestingly, factors such as globalisation, trade and capital flows which were major drivers of growth and prosperity of the world economy witnessed sharp contraction. The synchronised global economic recession has challenged the theory of decoupling which was emerging during the period before the economic crisis. In fact, the crisis transmitted to the EMEs through all the channels such as trade, financial and confidence channels on account of increased global integration witnessed in recent years. As a result, GDP growth witnessed sharp contraction and the baseline global growth scenario for 2009 fell into a negative trajectory. Many countries witnessed significant losses in their potential output. Consumption and investment witnessed sharp contraction in line with the fall in output and productivity. The industrial production collapsed in response to contraction in global trade, while unemployment rates touched an all-time high.

3.169 As demonstrated during the current crisis, while rising trade integration with the global economy and the increasing importance of their firms and households in international finance over the past decade have brought enormous economic and financial benefits to the EMEs, they have also widened channels through which a slowdown in economic activity in advanced economies could spread to the EMEs. Of the three major channels of contagion, the trade channel which has the strongest linkages with the financial and real sector has inflicted heavy loss of output and confidence. In response to weakening global economic demand, various countries have undertaken co-ordinated monetary-fiscal measures to stimulate demand. The impact of fiscal measures began to provide some signs of recovery in the second quarter of 2009. Emerging market economies, led by resurgence in Asia, are expected to lead the recovery process. However, the downside risk continues to pose challenge to the overall global economic outlook and the shape of the recovery continues to remain uncertain, depending on the exit policy toward discretionary measures. Financial market conditions have also improved markedly supported by strong public policies, but still there is a long way to go before returning to the pre-crisis situation. In recent months, sovereign yield curves have steepened considerably both in the advanced as well as emerging market economies, reflecting a combination of factors, such as monetary policy easing, improved recovery prospects and reduced risk of deflation.

4 INTERNATIONAL RESPONSES TO THE CRISIS

4.1 The recent financial crisis has been very severe in terms of both intensity and depth, as reflected in the speed of transmission of its impact across nations and the extent of the global recession. In view of its wide-ranging impact as detailed in the previous chapter, the regulatory, supervisory, central banking and fiscal policy responses have been unprecedented in scale, while they were co-ordinated globally across various jurisdictions. Within a span of a year or so, forceful and co-ordinated policy actions were successful in averting a global financial collapse and since then, aided by a range of government programmes, financial conditions have improved considerably globally. However, even though the worst financial and economic outcomes were avoided, policymakers and academics are investing in the design of appropriate policies to reduce the probability and severity of any such future crises.

4.2 The recent financial crisis was characterised by the failure of the financial system to perform its core tasks of allocating savings, financing investments, pricing assets and transferring risk. It posed difficult challenges to policy-making in terms of assessment and the calibration of responses. Furthermore, in the light of high inter-connectedness among economies, the management of the crisis was found to be difficult at the domestic level, but even more complex at the global level. It was felt that policymakers should not react superficially to the manifestations of the crisis, but should have a longer-term view on how to prevent the recurrence of such incidents. Thus, after the emergence of the crisis, a well-sequenced policy response assumed utmost importance as that only could have restored normalcy at a faster pace. In the absence of a well-orchestrated policy response, the process of recovery could have been prolonged, causing widespread economic distress.

4.3 Financial crises rarely replicate past patterns. However, the lessons from crises over the years and the wisdom from each successive crisis have given some foresight about managing an emerging crisis. The experience of the recent crisis has, to a large extent, challenged established premises of stable macroeconomic conditions under low inflation and relatively higher growth. Moreover, policy recommendations were bound to be vastly different even for seemingly related problems in different countries. There were several forces at work, both long-term and short-term, which created policy dilemmas.

4.4 In the case of the recent financial crisis, it was observed that just as with the unfolding of the crisis, its resolution has also displayed some distinguishing features *vis-à-vis* previous such episodes. The previous episodes had occurred without credit default swaps, special investment vehicles or even credit ratings. The present crisis brought to light severe problems in the financial system. It is unique in the speed at which its economic impact was transmitted across countries due to the increased interconnectedness of the world economy.

4.5 Another distinguishing feature of the recent financial crisis is that, despite being global in nature, there appears to be a clear divide between the advanced countries and the emerging market economies (EMEs) in terms of impact and policy responses. For advanced countries, the policy priority was to strengthen financial regulation and supervision. In the EMEs, dealing with the collapse of trade and the outflow of capital occupied policy attention. In this context, it may be mentioned that in the aftermath of the East Asian crisis, the policy prescription for many EMEs was to initiate measures to curb liquidity which led to decline in economic growth. In contrast, in the recent crisis, rate cuts and enhancement of liquidity were recommended to invigorate growth in the advanced economies. Moreover, for the first time, EMEs have been invited to participate in the endeavour to find

meaningful solutions to a global problem. The crisis has, thus, highlighted the prominent role of EMEs and brought them to the centre stage of the world economic forum. The increasing engagement of G20 is a case in point.

4.6 In this chapter, the measures taken by the international community during the recent financial crisis are discussed from the perspective of conventional crisis management strategies. Section I provides the policy responses to financial crisis in a historical perspective. The monetary policy responses are documented in Section II. The fiscal policy responses to support the financial sector and its active adoption as counter-cyclical measures are dealt with in Sections III and IV, respectively. Section V brings out the issues on fiscal monetary co-ordination. The responses from multilateral institutions are presented in Section VI. Section VII deals with the actions being taken relating to financial sector policies to reduce the chance of the recurrence of a financial crisis of such a magnitude. The final section provides the concluding remarks in terms of emerging policy challenges on the way forward.

I. POLICY RESPONSES DURING FINANCIAL CRISES : HISTORICAL PERSPECTIVE

4.7 As discussed in Chapter 2, there have been several banking and financial crises in the past. The frequency of such crises compelled policymakers and academics to think about the broad lessons that emerged from previous crisis resolution mechanisms to contain the crisis and prevent a recurrence.

4.8 In responding to financial crisis, the capitalist view talks of 'no management', while the pragmatic approach involves a host of miscellaneous devices. According to the capitalist view, in the formative stage the market is rational. Therefore, deflation and bankruptcy correct the mistakes of the boom on their own. These 'leave it alone liquidationists' view that the government must keep its hands off and let the slump liquidate itself (Hoover, 1952). However, in reality, financial crises are never left alone. The authorities as well as individuals try to bring about orderly conditions in the market using some instruments or the other. The theoretical position that a crisis can take care of itself is difficult to hold in practice as nobody has the patience to let the panic bottom out naturally. The authorities, in fact, act in the same direction, *i.e.*, intervene through one or more means to halt the spread of bankruptcies and falling demand.

4.9 When the first signs of crisis appear, authorities try to douse it through immediate and temporary measures. For example, in the case of a bank run, banks may try to buy time in paying their depositors in hopes that something might turn up in the intervening period. This may prove to be a more pragmatic approach than a complete shutdown of the market, which may add to the panic. In such a case, a preferred option could be to declare a legal holiday or a moratorium, which also cannot be of a long duration. Another device is designing a *circuit-breaker* (when the daily price-change limit is reached, the market is automatically closed) for the scrip of the beleaguered bank. These are, however, more in the nature of immediate and temporary measures to be taken when the first signs of a crisis have come to notice. But once the crisis becomes full blown, a more comprehensive and holistic policy is needed. Crisis resolution policies have been classified into three categories: through financial instruments such as direct transfer to banks to address the immediate problems, operational instruments, which focus on improving governance, bank efficiency and profitability, and structural instruments that address underlying problems and focus on restoring competition and stability (Dziobek, 1998).

4.10 Traditionally, the policy response to financial crisis has followed a two-step approach. In the first stage, traditional monetary policy instruments such as policy rate cuts are combined with injection of liquidity and *ad hoc* interventions or rescues of individual institutions. In the second stage, if the measures taken in the first stage fail in shoring up the confidence in the market fail, a comprehensive policy response in the form of a rescue plan is implemented (Furceri and

Mourougane, 2009a). Crisis management strategies in previous episodes have usually covered three main elements: (i) guaranteeing liabilities; (ii) recapitalising the affected institutions; and (iii) separating out the bad assets. Recapitalisation of banks usually through programmes with conditionality, blanket guarantees, regulatory forbearance, and setting up of bank restructuring agencies and asset management companies have been features of crisis management strategies (Laeven and Valencia, 2008).

4.11 The successive crises have also supported the wisdom of a lender of last resort (LOLR) rather than relying completely on the competitive forces of the market. Whether the LOLR is able to shorten the business depression that follows the financial crisis has been tested several times. During the crises of 1873, 1890, 1921 and 1929, the effective presence of an LOLR was lacking. Therefore, the depressions that followed them were much longer and deeper than the others – those of 1870s and 1930s were both known as the Great Depression. However, even in cases where the LOLR was opted for, it was extremely difficult to judge the effectiveness of the tool in reducing the severity of the depression that followed the crisis (Kindleberger, 2000). The wider claim made for the LOLR functions is that they make it possible to avoid a financial crisis altogether. This is illustrated by the experience of Britain after 1866 and in the US after 1929. The crises were less frequent and less terrifying with the institution of LOLR. A group of distinguished economists in the 1930s supported the view that the existence of an LOLR could calm anxieties when overtrading occurred (Box IV.1).

Box IV.1
Lender of Last Resort

The recent financial crisis has raised serious questions about the role of a lender of last resort (LOLR) and the appropriate role of monetary policy. Academicians and policymakers have debated the extent to which central banks should intervene in the marketplace, provide liquidity and even purchase the non-performing assets of troubled financial institutions. In fact, the recent events have provided added impetus for central banks around the world to revisit the adequacy of their LOLR facilities.

US history provides some insight into the importance of an LOLR in dealing with a financial crisis, especially the provision of liquidity by financial institutions to help cash-strapped firms in the short run. Following the panic of 1907, which was accompanied by one of the shortest but most severe financial crises in American history, the US Congress passed important pieces of legislation that established a lender of last resort: (i) the Aldrich Vreeland Act of 1908, which allowed banks to temporarily increase the money supply during a financial crisis; and (ii) the Federal Reserve Act of 1913, which replaced the Aldrich-Vreeland Act and established a public central bank in the US (Moen and Tallman, 2000).

The legislations were designed to increase the elasticity of the money supply, which was largely fixed by the supply of gold and the requirement that banks could only issue notes, if they were sufficiently backed by US government bonds. The money supply was especially inelastic during the fall harvest seasons when the financial markets tended to be illiquid as cash moved from the central banks to the interior to finance the harvesting of crops. The financial stringency made the New York financial market vulnerable to banking and financial crises in the fall season because financial institutions were often forced to call in stock market loans in response to large unexpected withdrawals of cash, if there was a better-than-expected harvest. Indeed, several of the largest financial crises of the National Banking Period (1870-1913) occurred during the fall harvest season including the 1870, 1890, 1893, and 1907 crises (Kemmerer, 1910; Miron, 1986; Sprague, 1910).

Some studies show that an LOLR reduces financial volatility. First, financial crises can have large economic effects. Second, the provision of liquidity by an LOLR can help contain the spread of a financial crisis that can have significant macroeconomic effects. Third, the reduction in uncertainty associated with an LOLR is likely to increase investment and shorten the duration of recessions. Fourth, though some studies provide insight into the importance of containing a liquidity crisis, they have nothing much to say about the role of an LOLR when the solvency of financial institutions is uncertain (Asaf *et al.,* 2008).

In line with the Bagehot tradition of a central bank acting as LOLR, central banks should readily provide liquidity access but at penal interest rates and against a good

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collateral. Central banks as a LOLR may choose to lend to an institution facing short-term funding problems, particularly if the institution concerned is systemically important. In this context, several issues come to the fore. The first is the assessment of the solvency of the institution, as, in practice, such assessments are often difficult, particularly during crisis conditions. The second issue is the ability of the central bank to assess the quality of collateral that is being offered. Such collateral may not be liquid and the central bank is likely to be exposed to credit risk. Third, there is the problem of the timing of the disclosure of such assistance. Fourth, a loan of last resort is likely to end up simply bridging finance, while a takeover or major restructure of the institution is being organised. Fifth, there is a need for an adequate range of tools to ensure an orderly resolution of the failing institution, *i.e.,* the ability of the authorities to take control of all or part of a failing bank, to arrange for appropriate restructuring and to provide appropriate financial support. Finally, when the need for support arises, arrangements need to be already in place, which could include the government, the central bank or the insurer provider covering depositors. It is also important to have in place the right legal and institutional structure to facilitate swift payout of depositors' claims (G-20 Study Group).

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4.12 There are several lessons that emerge from past crises:

(i) Successful policy response to crisis requires working with market participants' incentives. For instance, the establishment of the Reconstruction Finance Corporation in 1932 in the US to provide financial aid to financial institutions, business corporations, state and public works and agriculture was important in resolving the crisis. The case was similar with the Punto Final Debt Relief Programme (1998) in Mexico that targeted mortgage holders, agri-business and SMEs.

(ii) The choice of instruments depends upon the legal, regulatory, political institutions and the economic structure. In this context, any weaknesses in the regulatory, supervisory and accounting frameworks need to be addressed on a priority basis.

(iii) Identification of the causes and magnitude of the crisis and prompt action to address them need to be initiated (Calomiris *et al*., 2005; OECD, 2002).

(iv) Well-designed policies with clarity and transparency over the restructuring programmes may speed up the resolution process and lower both the costs and future risks. The policy measures have to be comprehensive and credible, and capable of addressing the immediate financial problems of weak and insolvent financial institutions and structural weaknesses, while avoiding the problems of moral hazard.

(v) Capitalisation of banks, though an important element for successful crisis resolutions, should be limited to under-capitalised but viable institutions.

(vi) Blanket guarantees, while necessary in the case of widespread distress, should avoid moral hazard and excessive risk-taking by troubled institutions. And for them to be credible, they should only be provided when the government has the ability to pay (Furceri and Mourougane, 2009b).

(vii) The crisis resolution mechanism that Finland, Norway and Sweden used to deal with their banking crises in the late 1980s and early 1990s indicated that the nature and size of the banking problems should be recognised early. The necessary policy intervention should

follow promptly to avoid hidden deterioration in underlying asset quality, which could enhance the costs of the resolution.

(viii) Delays in adjustment to macroeconomic imbalances resulting from financial crisis could substantially increase the cost of the crisis, and hurt the poor particularly. This was exemplified by the experience of Peru in the 1980s (Lustig, 2000).

(ix) The policy intervention should be in-depth and broad-ranging. After taking the measures needed to stabilise the situation, the authorities should ensure that losses are booked, bad assets are disposed of, the system is recapitalised and any excess capacity is removed (BIS 2009).

4.13 Major lessons emerging with respect to fiscal policy responses during financial crises are:

(i) Fiscal policy aimed at resolving the financial crisis directly had been more successful than a policy aimed at stimulating growth. In other words, successful resolution of a financial crisis had been a precondition for achieving sustained growth, implying that solving the problems of financial instability should precede the solution of the macroeconomic crisis. This was evident from the responses to the Japanese and Korean financial crisis in 1997. The Japanese government initially responded to the crisis through a large fiscal stimulus package to boost the economy without much action to resolve the banking problems. The economy did not respond to the fiscal stimulus and continued to reel under recession. Later, when large funds were provided to support the troubled banks and were accompanied by further stimulus packages, economic growth rebounded. In contrast, the fiscal response of the Korean government was focused on improving the balance sheet of the financial and corporate sectors. Few efforts were made to directly support aggregate demand. The Korean economy recovered much faster than that of the Japanese economy.

(ii) When the financial crisis spills over to the corporate and household sectors, fiscal stimulus has been effective. It has been argued that the economic downturn during the Great Depression was prolonged due to lack of sufficient fiscal stimuli. Even though government expenditures were increased to boost aggregate demand during the 1930s in the US, they were accompanied by sharp increases in tax rates (Brown, 1956). By the time public spending in the US was raised substantially in the early 1940s for war-related purposes, the economy had already recovered through the operation of strong self-corrective forces (Bernanke and Parkinson, 1989).

(iii) Delays and allocating insufficient funds to resolve financial sector problems can substantially increase the fiscal cost of the crisis. This was evident from the Savings and Loan (S&L) crisis in the US of the 1980s and the 1990s. A large part of gross fiscal cost estimated at about 3.3 per cent of GDP could have been avoided with early recognition and response to the crisis.

(iv) The effect of fiscal response on aggregate demand can be increased if specific features of the crisis are properly accounted in the response. The Nordic crisis of the early 1990s warranted preventing the spillovers of weaker economic activity into financial markets. Thus, tax and transfer policies implemented in the early part of the crisis could not stimulate aggregate demand (Spilimbergo, *et al.,* 2008).

4.14 The recent global crisis matches that of the Great Depression in several respects. The US economy was at the epicentre of the worldwide financial contraction during both the crises. Liquidity and funding problems played a key role in the financial sector transmission in both episodes. However, the policy responses have not been the same. During the Great Depression, counter-cyclical policy responses were virtually absent with the exception of the sterling block. In contrast, in the recent crisis, there was a strong and swift recourse to macroeconomic and financial sector policy support (Box IV.2).

Box IV.2
Policy Response during the Great Depression and the Recent Crisis

The recent crisis led to the most serious recession since the Great Depression. There were similarities between the two crises such as the fact that both started in the financial sector and spread more broadly to the real sector. In both the cases, financial institutions either defaulted or had to be bailed out. Both crises originated with the bursting of a bubble, bank credit dried up, and policy rates became ineffective due to a lower zero bound. And both the crises started in the US and subsequently spread to other countries (Cukierman, 2009).

Today, there is consensus on three broad lessons that were learnt from the Great Depression, *viz*., a) the collapse of the financial system could have been averted, if the central bank had realised its function as the LOLR for the short-term stabilisation of the financial system; b) deflation played an important role in deepening the crisis. Hence, setting a target of zero inflation for central banks may be dangerous; and c) the gold standard as a method for supporting the fixed exchange rate system was disastrous (Cecchetti, 1997). The lessons for the construction of financial institutions involve putting in place a system of deposit insurance and regulatory structures to assure that market participants receive adequate information about the riskiness of different financial instruments.

The Great Depression started prior to the Keynesian revolution. Since then, Keynesian policy prescriptions have been tried, criticised and synthesised into more practical models of thinking and policymaking. As a result, today's world is better informed about the potential salutary impact of expansionary monetary policies. There were substantial differences in terms of policy responses and policy-making institutions during the Great Depression and the recent crisis. First, the monetary policy response during the recent crisis was much swifter and more vigorous than that during the first three years of the Great Depression. Second, during the first three years of the Great Depression, the Fed tolerated and even reinforced a substantial shrinkage in the money supply; instead of pumping liquidity into the financial system, it often withdrew funds from problematic banks in default to shield its balance sheet from further losses (Friedman and Schwartz, 1963). Conversely, during the recent episode, there was massive injection of liquidity into the system. Third, there was no banking deposit insurance at the time of the Great Depression while, as the recent crisis intensified, the ceiling on the insured amount was raised. Had deposit insurance existed during the 1930-1933 period, many of the banking failures experienced at that time and associated monetary disruptions might have been averted. There were also no bank capital requirements during that time as is the case now (Cukierman, 2009). Fourth, during the Great Depression due to the disappearance of a large number of banks, there was destruction of banking 'informational capital' about the creditworthiness of potential borrowers, causing serious and protracted declines in the supply of credit by banks. Acknowledging the role that investment banks had played in the Great Depression, the passage of the Glass-Steagall Act in 1933 (repealed later in 1999) separated investment banking and commercial banking to insure that investment bank speculation would not again destabilise commercial banks as it had during the Great Depression, leading to the loss of America's savings. In contrast, during the recent crisis, the authorities either took over insolvent financial institutions themselves or arranged their takeover by other institutions. As a result, the associated adverse impact on the flow of credit was small. However, there was destruction of such capital due to the lack of transparency induced by the complicated structure of mortgage-backed securities and other collateralised debt obligations. Finally, the Great Depression was characterised by beggar-thy-neighbour policies; the Smoot-Hawley Tariff Act of June 1930 raised US tariffs to historically high levels and other countries retaliated by similar actions and competitive devaluations, leading to large-scale contraction in international trade. Owing to the adverse consequences of such policies, trading partners did not engage in such actions during the recent crisis, barring sporadic attempts to impose tariffs on select goods by some countries reportedly on the consideration of quality and health standards as well as for safety and security reasons. In fact, there appeared to be better co-ordination between countries in terms of various policy actions.

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4.15 It is thus evident that financial crises have never been left alone to correct on their own. Policies have responded in one way or the other to contain them. Not all the crises have been of the same type. Therefore, policy responses have not been exactly the same even if the problems appears to be similar. However, the experiences have shown the virtue of having a lender of last resort in crisis resolution. Early recognition of the problem, identification of the causes and magnitude of the

crisis, and prompt action have been crucial for the successful resolution of a crisis. Further, monetary policy has not only been at the core of policy responses but has, more often than not, been the first line of action in the strategy of crisis resolution.

4.16 In the recent crisis, reacting to funding problems and incipient runs, the first round of responses to the current financial crisis came mostly from central banks and regulatory authorities. The objective was to restore the confidence of the public in the financial system and thereby create a base for the stability of the financial system. However, as the impact of the crisis began to reflect on global growth, another round of responses – including fiscal, monetary and regulatory policies – were felt necessary to break the vicious circle of recession translating into credit losses and further impacting the banking industry. To address the twin problems of financial crisis and fall in aggregate demand – both feeding on to each other – it was increasingly viewed that the policy packages should have two components. One component aimed at bringing the financial system back to health and the other at reviving aggregate demand, keeping in view the obvious interactions and synergies between the two. International co-operation in responding to the crisis has been at an unprecedented level. Governments and central banks have been remarkably flexible in recognising that a hasty response in some countries had the risk of increasing moral hazard in others, while, on the other hand, a delay by some countries in joining the others bore dangers of diluting the impact of the response. The following sections of the chapter discuss the monetary, fiscal and regulatory responses and international co-ordination in initiating these responses.

II. MONETARY POLICY RESPONSES

4.17 As the pressure on financial markets mounted with the credit spreads widening to record levels and equity prices crashing to historic lows leading to widespread volatility across the market spectrum, the turmoil transcended from credit and money markets to other segments of the global financial markets. The contagion also spilled over to emerging markets. Amidst this global environment, the central banks in several countries embarked upon an unprecedented wave of both conventional and unconventional policy measures to contain systemic risk, shore up confidence in the banking system and arrest economic slowdown. Liquidity pressures were the primary focus of policymakers in the early stages of the crisis starting in August 2007. Central banks realised at an early stage that they needed to act, and act quickly given the sudden and rapid rise in the market's demand for liquid funds, for which they are ultimately the only source of supply.

4.18 Monetary policy responses, which began in terms of policy rate cuts by individual central banks, became more co-ordinated afterwards. This was reflected in the provision of cross-border liquidity through swap arrangements by major central banks as well as several rounds of policy rate cuts. Dealing with the solvency risks being faced by systemically important institutions together with funding liquidity pressures in interbank markets became important for policymakers. Central banks initially focused on their own markets. But given the effects on cross-border confidence as well as the need for foreign currency liquidity in many markets, they rapidly developed a number of channels of co-operation. These included co-ordinated policy announcements and foreign currency swap lines.

4.19 With the gradual unfolding of the crisis, while the advanced economies co-ordinated their efforts in the same direction, the response in many EMEs was in sharp contrast. Initially, many EMEs raised policy rates to counter threats mainly emanating from their respective domestic economies. However, following the failure of Lehman Brothers in September 2008 and the worsening of the crisis, EMEs also reduced their policy interest rates.

Monetary Policy Response during the Recent Crisis

4.20 Traditionally, under normal circumstances, central banks focus on maintaining price stability,

by smoothing output in a manner consistent with price stability. In some cases, they also intervene to reduce volatility in foreign exchange markets. During the recent financial market turmoil, however, systemic financial stress greatly impeded the monetary transmission. This led to a significant easing of the monetary policy stance with respect to the macroeconomic objectives of price stability and output, and brought financial stability to the forefront. The change in priorities has been manifested in more than one way. The choice of market for policy responses has been atypical and in some cases unprecedented, which rendered recent central bank actions "unconventional" (Disyatat, 2009). Depending upon the policy objective and the key instruments of implementation, the various responses can be segregated into conventional and unconventional measures (Table 4.1).

Advanced Economies

4.21 The monetary policy responses in the wake of the recent global financial market turmoil can be divided into three categories according to their proximate objectives. In the first category are measures that aim to ensure that the market rate is consistent with the policy rate. The second involves initiatives to alleviate strains in the wholesale

Table 4.1: Typology of Conventional and Unconventional Measures of Central Banks

	Measures	Rationale	Instruments
1	2	3	4
I	**Conventional**		
1.	Open market operations (OMOs) and standing facilities (SFs)	To achieve nominal anchor	Repos, lending and issuance of central bank bills.
2 .	Open market foreign exchange operations	To achieve nominal anchor or smooth exchange rates	Cash, swaps, derivatives.
3.	Direct instruments	To complement OMOs and SFs	Reserve requirements and credit ceilings.
4.	LOLR to institutions and markets	To ease financial conditions or market liquidity stress	Discretionary lending.
II	**Unconventional**		
A.	*Liquidity Easing Measures*		
1.	Direct instruments in money markets	To improve monetary transmission and restore market stability	Reserve requirements and regulatory liquidity ratios.
2.	Systemic domestic liquidity arrangements	To enhance monetary transmission and restore market stability	Unlimited domestic liquidity provision, broadening the list of counterparties and easing collateral requirements.
3.	Securities liquidity provision	To improve monetary transmission and restore market stability	Exchange of illiquid for liquid securities.
B.	*Credit Easing Measures*	To enhance monetary transmission and restore credit market functioning	Purchase of targeted private securities, direct credit provision, provision of liquidity to investors in targeted securities.
C.	*Quantitative Easing Measures*	To enable monetary transmission when the policy rate approaches the zero lower bound	Unsterilised outright purchase of government securities and foreign exchange.
D.	*Foreign Exchange Easing Measures*		
1.	Foreign exchange liquidity injection	To ease foreign exchange liquidity pressures	Unlimited liquidity provision, broadening of collateral and counterparties.
2.	Cross-central bank currency swap arrangements	To support national banks' foreign exchange operations	Swaps.

interbank markets. The third consists of responses aimed at supporting specific credit markets, particularly the non-bank segments, and easing financial conditions more broadly (BIS, 2009).

Policy Rate Easing

4.22 Monetary policies in response to the drying up of global liquidity were extremely responsive and co-operative. On October 8, 2008, six major central banks undertook the first-ever round of co-ordinated action in policy rate cuts. Similar swift action followed from other central banks as well. By the end of May 2009, the Federal Reserve, the Bank of Japan, the Bank of England, the Bank of Canada and the Swiss National Bank had brought policy rates close to zero. Between September 2008 and March 2009, the Federal Reserve cut its policy rates by 200 basis points, the Bank of England by 450 basis points and the ECB by 275 basis points. Thus, the softening of interest rates was broad-based and across the spectrum (Table 4.2).

4.23 Not all central banks had room to lower policy rates. A run on the currency forced the central banks of Hungary, Iceland and Russia to tighten policy in late 2008, despite declining inflation and slowing real activity. However, they also began reducing policy rates gradually over the course of the following months.

4.24 Among the first category of measures was anchoring short-term rates to the policy target. The Bank of England and the Federal Reserve reduced the width of the effective corridor on overnight rates by changing the rates applied on end-of-day standing facilities. Concomitantly, central banks were required to re-absorb excess reserves to sterilise the impact on overnight interest rates of the much-expanded operations. This was implemented in a number of ways. The Bank of England, the Swiss National Bank and Riksbank began to issue central bank bills. The ECB and the Reserve Bank of Australia relied increasingly on accepting interest-bearing deposits. The Federal Reserve accepted large amounts of deposits from the Treasury and began to pay interest on reserves.

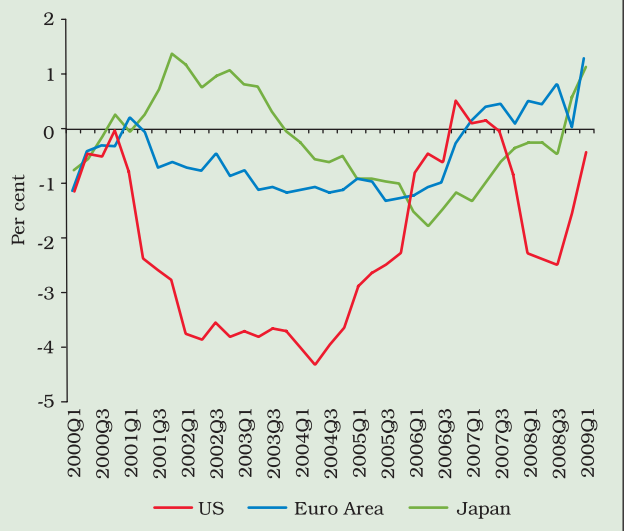
4.25 Notwithstanding the swift and sizeable easing in policy rates, the limitations of interest rate as a policy instrument came to surface in many countries. With persisting strains in the financial markets and the rise in credit and liquidity risk premia, the transmission mechanism was greatly hampered. Illustratively, despite sharp declines in policy rates and yields on government bonds, yields on corporate bonds increased. Though banks generally passed reductions in their funding costs on to their customers, they tightened credit standards substantially, offsetting the impact of rate cuts on overall financial conditions. As policy rates reached historically low levels in many advanced economies, the zero lower bound became a binding constraint, making it impossible to follow policy rules that called for negative nominal interest rates in view of widening output gaps and falling inflation rates (BIS, 2009) (Chart IV.1).

Table 4.2: Policy Rate Cuts in Advanced Countries

Country/ Region	Key Policy Rate	Policy Rate (as on July 9, 2009)		Change in Policy Rates (basis points)		
				Sept 08-Jul 09	Apr 09-Aug 09	Sept 09-Apr 10
1	2	3	4	5		
Australia	Cash Rate	3.00	(Apr. 8, 2009)	(-) 400	(-) 25	125
Canada	Overnight Rate	0.25	(Apr. 21, 2009)	(-) 250	(-) 25	0
Euro area	Interest Rate on Main Refinancing Operations	1.00	(May 13, 2009)	(-) 275	(-) 50	0
Japan	Uncollateralised Overnight Call Rate	0.10	(Dec. 19, 2008)	(-) 40	0	0
UK	Official Bank Rate	0.50	(Mar. 5, 2009)	(-) 450	0	0
US	Federal Funds Rate	0.00 to 0.25	(Dec. 16, 2008)	(-) 200	0	0

Source: International Monetary Fund and websites of respective central banks.

Chart IV.1: Monetary Policy Rates: Deviation from the Taylor Rule



Source: World Economic Outlook Database (April 2009), IMF (2009c)

Liquidity Easing Measures

4.26 Amidst this complex and challenging environment, central banks were forced to look beyond the interest rate channel and explore all possible ways to restore the functioning of the credit markets and ease financial conditions. Thus, the second group of measures was undertaken. These measures focused on reducing term interbank market spreads, seen as an indicator of tensions in the key market segment. This was circumvented in two ways. The first was by directly providing more term funding to offset some of the shortfall in market supply. The second method was by indirectly addressing impediments to the smooth distribution of reserves in the system and ensuring access to funding from the central bank (Table 4.3).

4.27 Many advanced country central banks extended conventional liquidity easing measures such as easing the terms and availability of existing central bank facilities like standing lending windows. Second, the access to central bank lending was enhanced thereafter by extending the tenor of financing and widening the range of counterparty financial institutions. Third, several central banks introduced or eased conditions for lending highly liquid securities – typically sovereign bonds – against less liquid market securities in order to improve funding conditions in the money market.

Table 4.3: Select Recent Central Bank Measures

Category	Objective	No.	Measure adopted	FED	ECB	BoE	BoJ	BoC	RBA	SNB
1	2	3	4	5	6	7	8	9	10	11
I	Achieve	A.	Exceptional fine-tuning operations.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	the official	B.	Change in reserve requirements			Yes				
	stance of	C.	Narrower corridor on overnight rate	Yes	Yes	Yes				
	Monetary Policy	D.	Payment of interest on reserves	Yes			Yes			
		E.	Increased treasury deposit	Yes				Yes		
		F.	Short-term deposit or central bank bill		Yes	Yes	Yes		Yes	Yes
II	Influence	A.	Modification of discount window facility.	Yes		Yes				
	wholesale	B.	Exceptional long-term operations	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	inter-bank	C.	Broadening of eligible collateral	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	market conditions	D.	Broadening of eligible counterparties	Yes		Yes	Yes	Yes	Yes	
		E.	Inter-central bank FX swap lines	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		F.	Introducing or easing conditions for securities lending	Yes		Yes	Yes	Yes		
III	Influence	A.	CP funding/purchase/collateral eligibility	Yes		Yes	Yes	Yes	Yes	
	credit market	B.	ABS funding/ purchase/collateral eligibility	Yes	Yes	Yes			Yes	
	and broader	C.	Corporate bond funding/purchase/collateral eligibility			Yes	Yes	Yes		
	financial	D.	Purchase of public sector securities	Yes		Yes	Yes			
	conditions	E.	Purchase of other non-public sector Securities				Yes			Yes

Blank Space: No

Note : FED: Federal Reserve; ECB: European Central Bank; BOE: Bank of England; BOJ: Bank of Japan; BOC: Bank of Canada; RBA: Reserve Bank of Australia; SNB: Swiss National Bank.

Source : Adapted from BIS Annual Report, 2008-09.

Fourth, stipulations on the provision of reserves were eased substantially by expanding the list of eligible collateral and counterparty coverage, and lengthening the maturity of refinancing operations. For instance, in the US, collateral normally available only at the discount window was made available for open market operations. In the UK, additional securities, including some well-rated asset-backed securities and covered bonds were accepted in the three-month repo operation. Fifth, several central banks also undertook foreign exchange swaps or loans with other central banks to alleviate severe shortages of foreign exchange.

4.28 Though these liquidity-easing measures were mostly in line with the standard central bank LOLR function, their range and magnitude were well above traditional levels. Major central banks provided enhanced term funding to a wider range of institutions and against wider collateral than in the past. In some cases, they stepped in to provide direct lending to distressed institutions and took other exceptional measures to improve funding conditions in credit markets. In the United States, the Federal Reserve lengthened the maturity of its refinancing operations. In addition, an increasing share of the latter was lent to primary dealers against a wide range of less liquid securities to help improve their balance sheets *via* the Fed's Term Securities Lending Facility. Similarly, the Bank of England (BoE) allowed banks to swap less liquid securities against more liquid ones under its Special Liquidity Scheme. The BoE, the ECB and the Swiss National Bank (SNB) substituted longer-term open market operations (OMOs) for shorter-term operations. More auctions were also conducted at a fixed rate with full allotment. The maximum amounts of dollar swap lines and related dollar liquidity-providing transactions was significantly increased and subsequently made unlimited.

Inter-Central Bank Swap Lines and Collateralised Lending

4.29 The shortage of US dollars led to the Federal Reserve using inter-central bank swap lines. With the intensification and spread of US dollar shortages in mid-September 2008, swap lines with the Federal Reserve grew in number, time zone and geographical coverage and size. The range of US dollar distribution operations on offer at partner central banks also broadened. From mainly longer-term (one- and three-month) offers, it was expanded to include one-week and, for a period, overnight offers as well and, from mainly repos and collateralised loans, FX swaps were also included (BIS, 2008).

Credit and Quantitative Easing Measures

4.30 As the crisis deepened and the interest rate channel became ineffective, the central banks in these countries were forced to go for quantitative easing. This response was focused directly on alleviating tightening credit conditions in the non-bank sector and easing broader financial conditions. There have been two approaches to this quantitative easing. In the first approach, funds were provided to non-banking institutions to improve liquidity and reduce risk spreads in specific markets, such as commercial paper, asset-backed securities and corporate bonds. Public sector securities were directly purchased in order to influence benchmark yields more generally. In the second approach, central banks purchased government or government-guaranteed securities from banks or other institutions in order to ease liquidity conditions. The relative emphasis given to private versus public sector securities and bank versus non-bank markets differed across countries. The quantitative easing involving government securities tended to be more important in bank-centred systems (Japan and the United Kingdom). Credit easing with private securities generally played a larger role in market-centred systems (the United States) (BIS, 2009).

4.31 The Federal Reserve focused heavily on non-bank credit markets as well as on operations involving private sector securities such as the Commercial Paper Funding Facility and the Term Asset-Backed Securities Loan Facility. The Bank of England, on the other hand, initially concentrated

its Asset Purchase Facility primarily on purchases of government bonds. The ECB focused on banking system liquidity by conducting fixed rate full-allotment refinancing operations with maturities of up to 12 months and by purchasing covered bonds. In the case of Bank of Japan, substantial efforts were directed at improving funding conditions for firms through various measures pertaining to commercial paper and corporate bonds. The usage levels of various unconventional central bank market operations can be seen from Table 4.4.

Table 4.4: Major Crisis Interventions Introduced by Central Banks

Central Bank Interventions	Maximum Amount	Amount used as at end-June 2009
1 2	3	4
I. US Federal Reserve (in billion US dollars)		
1. *Short-term liquidity provision*		
TAF	**	282
CPFF	***	114
2. *Long-term liquidity provision*		
TALF	1,000	25
3. *Outright purchases of assets*		
Agency mortgage-backed securities	1,250	462
Agency debt	200	97
Treasury securities	300	184
II Bank of England (in billion pounds)		
1. *Outright purchases of assets*		
Asset Purchase Facility#	175	105
III. European Central Bank (in billion euros)		
1. *Short-term liquidity provisions*		
Long-term refinance operations@	Unlimited	728
2. *Outright purchases of assets*		
Covered Bonds	60	0
IV. Bank of Japan (in billion yen)		
1. *Short-term liquidity provisions*		
SFSOFCF^	Unlimited	7,467
2. *Outright purchases of assets*		
Commercial Paper	3,000	197
Corporate Bonds	1,000	174

Note: TAF =Term Auction Facility; CPFF = Commercial Paper Funding Facility; TALF = Term Asset-Backed Securities Loan Facility; SFSOFCF = Special Funds-Supplying Operations to Facilitate Corporate Financing.

** : The amount is determined at each auction.

*** : There is a limit per issuer.

: Purchasing commercial paper, corporate bonds, and gilts.

@ : Providing liquidity at a fixed rate, full allotment basis up to one year.

^ : Providing liquidity against collateral of private credit instruments at a fixed rate, allotment basis up to 3 months.

Source: Global Financial Stability Report, October, 2009.

4.32 In a few cases, central banks directly provided financing to corporate borrowers. Central banks generally pre-announced upper limits on credit-easing facilities rather than target levels, and these upper limits were themselves adjusted in line with changing conditions. As these measures involved an important quasi-fiscal element, they were normally carried out in close co-ordination with the government. Irrespective of the approach adopted, the quantitative easing led to manifold expansion in the balance sheets of central banks (Box IV.3).

Emerging Market Economies

4.33 Prior to September 2008, emerging market economies (EMEs) were grappling with capital inflows and inflationary pressures and were tightening liquidity conditions by actually raising policy rates. As the financial crisis engulfed the EMEs, central banks in these countries embarked on both conventional and unconventional measures in response to the sudden tightening of global liquidity conditions. EMEs undertook several liquidity-easing and foreign exchange measures, although their use of credit easing and quantitative easing has been more limited (Table 4.5).

4.34 As exchange rates in these economies came under pressure with the intensification of stress in the global dollar markets and net capital inflows began to reverse, they initiated foreign exchange liquidity easing measures. It was only at the beginning of November 2008 that policy interest rates were reduced in many EMEs, indicating that conventional domestic monetary policy easing lagged behind unconventional measures (Ishi, *et al.,* 2009). Central banks in many EMEs resorted to liquidity injections and frequent cuts in policy rates, *albeit*, from a much higher level (Chart IV.2).

Domestic Liquidity Augmenting Measures in EMEs

4.35 Central banks in several EMEs resorted to cuts in reserve requirement ratios, the introduction of reserve averaging and hikes in exemption thresholds with a view to ease domestic liquidity shortages. Most of them also eased the terms of

Box IV.3
Quantitative Easing and Central Bank Balance Sheets

Quantitative easing expands the central bank balance sheets, leading to expansion in reserve money. The assets of the Fed and the BoE more than doubled in a matter of weeks, while those of the ECB and the SNB increased by more than 30 per cent. In the Fed's case, this reflected direct lending to banks and dealers through existing and new lending facilities. It included providing indirect lending to money market funds and purchasing commercial paper through special purpose vehicles, and drawings by foreign central banks on dollar swap lines. In Europe, there was also some increase, *albeit*, moderately in the use of central banks' standing facilities. Most of the growth of central banks' balance sheets reflected higher net amounts of domestic and dollar liquidity-providing OMOs, representing mostly term funding. These aggressive unconventional measures, such as quantitative easing, resulted in expansion in the reserve money and the size of the central bank balance sheets in advanced countries (Chart A).

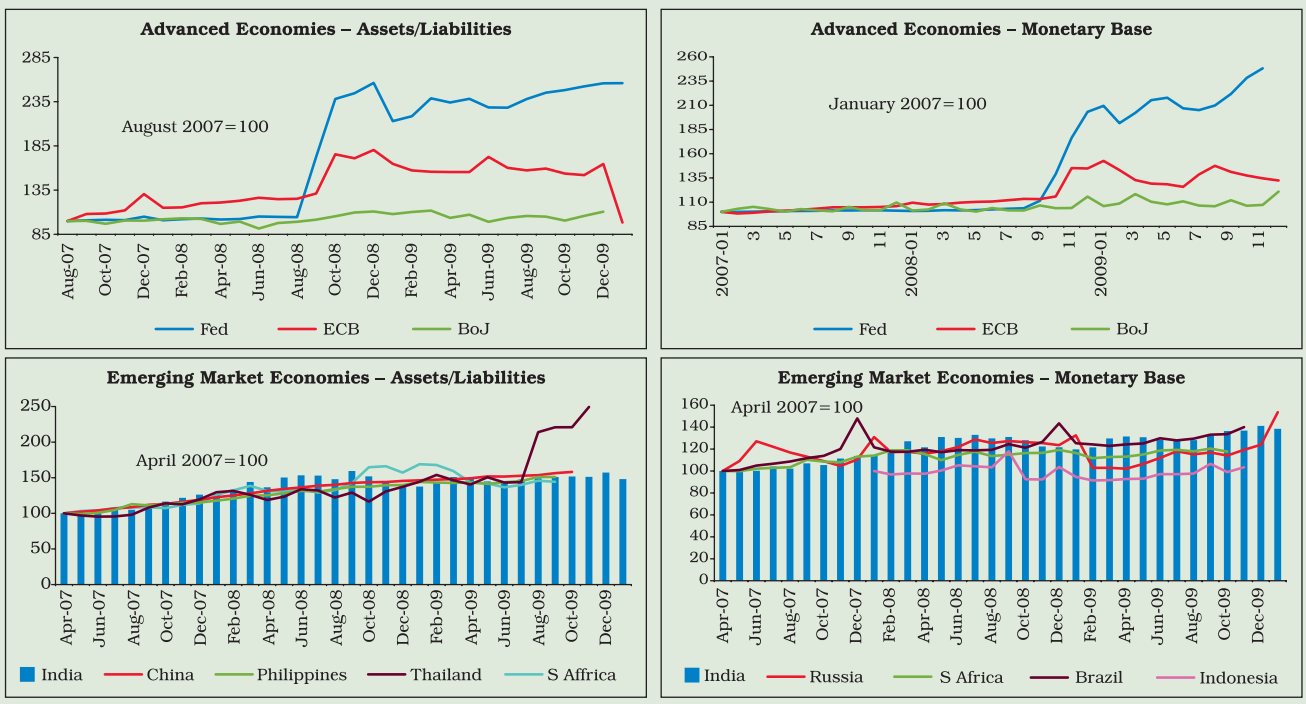
Beginning in September 2008, many emerging market countries began to take measures to ease foreign exchange and domestic currency liquidity conditions, but unconventional measures have not played as important a role for them as in advanced countries. The liquidity-easing measures reinforced in some cases by foreign exchange liquidity provided by reserve currency central banks seemed to have had some success in alleviating short-term liquidity pressures. However, the size of emerging market country central bank balance sheets did not expand by the same magnitude as those of their advanced country counterparts (GFSR October, 2009). The size of central bank balance sheets in EMEs increased by much less due to the near absence of quantitative and credit-easing measures and the rundown in international reserves in many cases (Ishi, *et al.,* 2009).

It also reflects large cuts in cash reserve ratio (CRR) in EMEs such as India and China. Reduction in CRR leads to more liquidity with banks, even as it shows up as a reduction in the size of the central banks' balance sheet and reserve money.

Implications of the Changes in Central Bank Balance Sheets

There could be several implications of the recent changes in the central bank balance sheets. First, with the change in composition, the risk profile of central bank balance sheets underwent a change. The central banks' purchase of assets such as mortgage-backed securities and commercial paper increased their credit and valuation risks. Broadening the set of eligible securities that central banks accept as collateral for extending credit through new facilities and also

Chart A: Size of Central Bank Balance Sheets



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the number of eligible counterparties raised the counterparty credit risk. Second, the income position of central banks also underwent a change. While low returns on central bank assets relating to bank notes and reserves reduced the revenue, liquidity injections increased the amount of reserves over which interest is received, thereby increasing central bank profits. Third, going forward, an exit strategy may require phased reduction in reserves as abrupt unwinding of reserves could disrupt financial markets. Concomitantly, if inflation expectations firm up, central banks may need to increase the remuneration rate they pay on excess reserves as a means to ensure the targeted policy rate. This, in turn, would entail additional cost for central banks; though to some extent this would be offset by the extra income resulting from expanded balance sheets, they face substantial income risk (GFSR, October 2009).

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existing standing and market-based liquidity providing facilities, *viz.,* extension of maturities, easing the collateral requirements, and increasing the frequency of auctions. Several central banks provided domestic liquidity to targeted institutions for on-lending to market entities (Table 4.6).

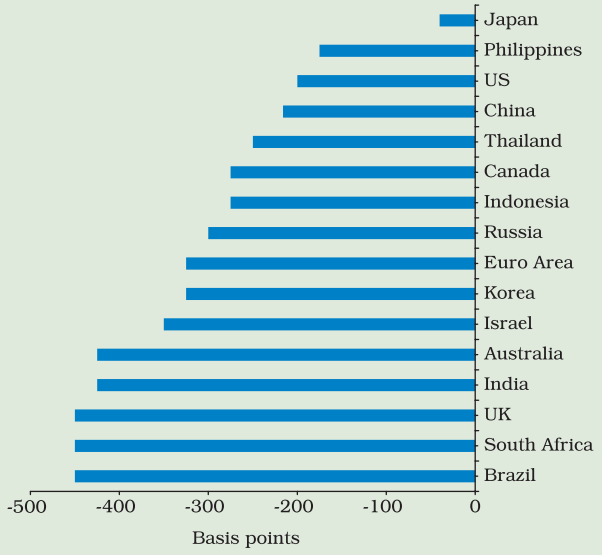
4.36 Central banks in EMEs eased the terms of existing foreign exchange facilities, *i.e.,* extending maturities and broadening the collateral. They also put in place new foreign exchange facilities, such as dollar repo and swap facilities. The list of counterparties was widened to include non-banking

Table 4.5: Select Unconventional Measures by EME Central Banks

	Type	Country	Measure
	1	2	3
I.	**Domestic Liquidity Easing**		
	1. Direct money market instruments	China Hungary Nigeria	Reduction in reserve requirements
	2. Systemic domestic liquidity arrangements	Philippines	Expansion in the eligible collateral for standing repo facility to include foreign currency-denominated sovereign debt securities.
		Israel	Central bank's announcement to transact OMOs with government debt of different types and maturities.
		Chile	Broadening the list of eligible collateral for monetary operations to include commercial papers.
II.	**Foreign Exchange Easing**		
	1. *Foreign Exchange Liquidity Injection*	Brazil	Central bank's announcement to sell 1-month dollar liquidity lines.
		Philippines	Central bank's approval to open dollar repo facility.
		Turkey	Introduction of daily dollar selling auctions.
		Indonesia	Reduction in the foreign exchange reserve requirement for commercial banks.
		Serbia	Reduction in the required reserves against foreign assets.
	2. *Cross-Central Bank Currency Swap Arrangements*	Brazil Mexico Korea Singapore	Temporary reciprocal swap lines with the Federal Reserve, Banco Central de Brazil, Banco de Mexico, Bank of Korea and the Monetary Authority of Singapore.
III.	**Credit and Quantitative Easing**		
		Korea	Announcement of central bank financing (up to a limit) to a bond fund to purchase commercial papers.
		Israel	Central bank announcement to purchase government bonds.

Adapted from Ishi *et al.* (2009).

Chart IV.2: Policy Rate Cuts during Sept. 2008 to Mar. 2009



financial institutions and key non-financial institutions (*e.g.* exporters or energy importers). Foreign exchange liquidity limits were also relaxed, covering removal of ceilings on bank purchases of offshore foreign exchange and easing of capital inflow limits. In addition, some central banks lowered the required reserve ratio for bank foreign currency liabilities and shifted the currency structure of required reserves away from foreign exchange. In order to ease foreign exchange liquidity conditions, central banks in countries like Brazil, Korea, Mexico and Singapore had dollar swap arrangements with the Federal Reserve.

Table 4.6: Measures Implemented in Select EMEs (September 2008 - May 2009)

Country	Liquidity Easing Measures	Foreign Exchange Easing Measures	
		Foreign Exchange liquidity injections	Cross-central bank currency swap
1	2	3	4
Brazil	12	9	2
Mexico	1	1	2
China	4	1	
Hong Kong SAR	3	1	1
India	5	7	1
Indonesia	11	4	
Korea	5	4	5
Malaysia	3	–	–
Philippines	3	4	–
Singapore	–	–	2

Source: Ishi *et al.,* (2009).

4.37 Most major emerging market central banks conducted outright sales of foreign exchange reserves to help meet the local market's demand for foreign currency funding and to relieve pressure on the exchange rate. In addition, some central banks sought to offer foreign exchange reserves to counterparties under repurchase agreements (Brazil and the Philippines). Some central banks announced modifications (widening of counterparty eligibility, extension of term) to their existing FX swap facilities to make the distribution of foreign currency more efficient and flexible (Korea and Indonesia). Others set up new swap facilities (Brazil, Chile and Poland) or announced their readiness to conduct swaps with counterparties as needed (Hong Kong SAR) (BIS, 2008).

Credit and Quantitative Easing Measures

4.38 In respect of EMEs, the use of credit and quantitative easing measures has been limited. Illustratively, the Bank of Korea purchased corporate debt and commercial paper, while the Bank of Israel undertook quantitative easing during March and August 2009.

4.39 While both developed economies and EMEs resorted to unconventional monetary measures, there were differences in terms of their timing, types and magnitudes. (i) In the advanced economies, the switchover was from conventional monetary tools to unconventional measures due to policy rates reaching zero or nearing zero. In contrast, in many EMEs, unconventional foreign exchange easing measures such as currency swap preceded domestic liquidity-easing measures due to the sudden tightening of global liquidity. Thereafter, the conventional measures of loosening policy rates followed. (ii) To ease liquidity, central banks in EMEs relied mostly on direct instruments such as reserve requirements. Advanced countries, on the other hand, resorted to measures such as widening the availability of counterparties and extending the

maturity of liquidity providing operations. Central banks in advanced countries also eased liquidity through securities liquidity provision, *i.e.*, swap of illiquid private sector securities on their books for liquid government securities held by counterparties. Central banks in EMEs hardly resorted to this securities liquidity provision measure. Furthermore, the central banks in advanced countries extensively used credit and quantitative easing measures, while they were barely used in the EMEs. (iii) In view of the extensive use of credit and quantitative easing, the enlargement in the balance sheet of central banks in the advanced countries was far greater than those of the EMEs (Ishi *et al.,* 2009).

Policy Effectiveness

4.40 The list of monetary policy instruments available to central banks to stimulate the economy when official rates are close to or at zero has been fairly wide. They are: (i) "quantitative easing" policy, *i.e.*, expanding the money base beyond what is strictly needed to keep the official rates at zero. This has been aimed at reducing liquidity risks and provide incentives for financial intermediaries to expand their credit; (ii) measures to reduce longer-term interest rates through direct purchase of long-term government securities and/or carefully designed communication to influence market expectations; and (iii) the purchase of a wide range of private assets, from securities to equity.

4.41 On the whole, such interventions by central banks on a massive and unconventional scale helped ease severe liquidity strains leading to tangible improvements in a number of key markets. They not only lowered interest rates on default-free securities, but also helped lower credit spreads.

4.42 According to the IMF's Global Financial Stability Report (October, 2009):

(i) The announcement of interest rate cuts proved effective, although only on a few occasions, in terms of reduction (statistically significant) in the economic stress index (ESI). In general, low policy rates translated into low funding costs to financial institutions that required additional liquidity (Table 4.7).

Table 4.7: Effectiveness of Crisis Interventions

Index/ Indicator	Economic Stress Index		Financial Stress Index	
	Interest rate cuts	Liquidity Support	Interest rate cuts	Liquidity Support
1	2	3	4	5
Period I: Pre-Lehman (June 1, 2007 to September 14, 2008)				
US	x	√	x	x
UK	√	√	x	√
Euro Area	–	x	–	x
Japan	–	–	–	–
Sweden	–	√	–	x
Switzerland	–	x	–	x
Period II: Global Crisis 1 (September 15, 2008 to December 31, 2008)				
US	x	x	√	x
UK	x	x	x	x
Euro Area	x	x	√	√
Japan	x	x	√	√
Sweden	–	x	–	x
Switzerland	√	x	√	x
Period III: Global Crisis 2 (January 1, 2009 to June 30, 2009)				
US	x	√	x	x
UK	x	–	x	–
Euro Area	x	x	√	x
Japan	–	√	–	√
Sweden	–	x	–	x
Switzerland	√	x	√	x

√ : denotes a statistically significant intervention at the 10 per cent level.

X : denotes statistically insignificant

– : denotes that there were fewer than two policy events during the given sub-period.

The statistical significance of the short-term impact of intervention announcements is tested as follows: (1) interest rate cuts on the economic stress index; (2) liquidity support on the three-month LIBOR-overnight index swap (OIS) spread; and (3-5) financial sector interventions on credit default swap spreads of local banks, weighted by the size of total assets.

Source: Global Financial Stability Report October, 2009.

(ii) Even though most countries undertook liquidity support measures, their announcement effect was primarily effective during the initial phase of the crisis in terms of reducing the LIBOR-OIS swap spreads. The effectiveness of liquidity injections was moderated in the later stage of the crisis as credit risk rather than liquidity risk became the main concern.

(iii) The long-term effects of various interventions on the LIBOR-OIS spreads, however, showed improvement. As at end-June 2009, spread levels declined between 53 to 90 per cent from the respective peaks in various countries (Table 4.8).

(iv) In the United States, the immediate positive market response to liquidity support schemes, such as the Term Auction Facility (TAF) and Commercial Paper Funding Facility (CPFF), revealed that there was a persistent decline in LIBOR-OIS spreads from late 2008.

(v) The assessment of the impact on the financial stress index revealed that announcements of monetary easing were more effective in reducing financial stress than economic stress.

4.43 Some of the early credit easing measures helped alleviate pressures in commercial paper, mortgage, and corporate bond markets. Many market participants reported that the extended swap facilities improved term funding conditions. Indeed, actual usage peaked in late October 2008 and gradually declined thereafter, with some central banks never actually having drawn on the swap lines. Foreign exchange swap market deviations declined in particular in EUR/USD and CHF/USD, and overall LIBOR-OIS spreads narrowed. While many other policy actions were taken at the same time, some of this improvement was due to the introduction of central bank swap lines.

Table 4.8: 3-Month LIBOR-Overnight Index Swap Spread: Declines from Peak

Item	US	UK	Euro Area	Japan	Sweden	Switzer-land
1	2	3	4	5	6	7
LIBOR-OIS peak level (in basis points)*	361	244	199	80	155	159
LIBOR-OIS spread decline as on June 30, 2009 (in basis points)	-324	-166	-149	-43	-112	-127
In per cent of peak level	-90	-68	-75	-53	-72	-80
In standard deviations from peak level**	-1.5	-1.8	-2.0	-3.4	-1.8	-0.5

* : The peaks of the LIBOR-OIS are specific to each country or region: Euro area (10/13/2008), Japan (12/18/2008), Sweden (11/27/2008), Switzerland (11/12/2008), the United Kingdom (12/4/2008), and the United States (10/10/2008).

** : The decline of the LIBOR-OIS spread series relative to their peak levels is expressed in terms of standard deviations from the median change in each sub-period weighted by the number of days in that sub-period (pre-Lehman, global crisis 1, and global crisis 2). Using such a standardised measure of changes in LIBOR-OIS spreads allows better comparability across sample countries (and helps quantify relative policy effectiveness over the longer term by allowing the different sub-periods to reflect the different lengths of periods).

Source: Global Financial Stability Report October, 2009.

4.44 Gauging the effectiveness of unconventional measures is difficult as its transmission to the economy is complex and opaque. The success of most unconventional measures hinges not just on the design and magnitude of the measures, but also on the willingness and ability of creditors to lend and of borrowers to borrow. Further, unconventional measures overlap; for example, a liquidity-easing measure aimed at a particular class of financial institutions may, if unsterilised, lead to an increase in reserve money.

4.45 The effectiveness of central bank actions in attenuating the impact of the crisis and restoring the functioning of markets, however, depends on the extent to which they have a catalytic effect on private sector intermediation. Thus, the ultimate success of central bank interventions depends on the appropriate design and forceful implementation of policies that directly address the fundamental weaknesses in bank balance sheets.

Risks and Challenges

4.46 The unconventional measures of liquidity, credit and quantitative easing entail several challenges and risks (IMF, 2009).

(i) Unconventional measures may inadvertently allocate credit to inefficient markets at the expense of efficient markets, constraining financial sector restructuring in the short run, and impairing future economic growth.

(ii) The gradual replacement of high-quality and liquid assets with illiquid claims on central bank balance sheets reduces operational flexibility and thereby may constrain future monetary management.

(iii) The quasi-fiscal nature of some unconventional measures blurs the distinction between monetary and fiscal policies and, together with pressure to continue to provide financing, could potentially compromise central bank independence.

(iv) The inflation potential of expanding reserve money amidst announcements of unconventional measures by central banks may destabilise inflation expectations.

(v) Though these unconventional monetary policy instruments may be effective in boosting the economy, when price stability is at stake, they have their limits because of their broader implications.

- First, as the effects of such policies are not well-known, the conduct of monetary policy is bound to be surrounded by much more uncertainty than is normally the case. For instance, it is unclear how far long-term rates, and in particular the risk premia embedded in those rates, can be brought down by liquidity injections in a situation of widespread uncertainty about economic prospects. Thus, well-designed communication by central banks may be crucial.
- Second, liquidity injections need not be greatly effective when financial intermediaries continue to remain unhealthy.
- Third, there could be a risk of introducing distortions in financial prices without a careful design of the measures.
- Fourth, unconventional measures may have a more direct redistributive impact on specific sectors of the economy or categories in society than normal monetary policy actions. This implies a high degree of common understanding and co-operation between fiscal and monetary authorities, as part of a clear definition of respective responsibilities and fields of action.

4.47 Some of these risks could be reduced through transparency and effective communication. For the same, central banks and fiscal agents engaging in quasi-fiscal measures should publicly explain the objectives, expected effects, and potential fiscal implications of unconventional policy tools. Careful statement of central bank views on the macroeconomic outlook would also facilitate the eventual resumption of positive policy interest rates and absorption of liquidity (IMF, 2009).

4.48 To sum up, the monetary policy response to the crisis began with the conventional measure of easing policy rates in advanced countries. This was increasingly carried out in a co-ordinated manner among the major central banks as the crisis deepened. But the persistence of financial strains even after the policy rate was brought down to zero or near-zero levels led to unleashing of a number of unconventional measures on a scale hitherto unseen. In the EMEs, however, unconventional measures of providing foreign exchange preceded the conventional policy rate cuts, as the liquidity constraints first surfaced in the foreign exchange market. Other unconventional measures have been used sparingly or on a much lower scale. As a result, central bank balance sheets in the advanced economies swelled much more than in the EMEs. This could pose several policy challenges and risks in the future. Yet, central bank actions across countries managed to address the immediate funding needs of the banks and restore some normalcy. However, the monetary policy measures could not stop solvency concerns of some systemically important financial institutions. This led to severe market dislocation with adverse implications on the real sector. Thus, governments were compelled to take several actions to prevent the collapse by extending large-scale fiscal support to financial institutions.

III. FISCAL SUPPORT TO THE FINANCIAL SECTOR

4.49 The present global crisis, as in the past, has been characterised by the twin problems of financial instability and fall in aggregate demand feeding into each other. Thus, the fiscal policy response has consisted of two components with obvious

synergies between them. The first component has been the crisis management strategy directed at bringing the financial system back to health. The strategy has involved providing direct financial support and/or deposit insurance/guarantee to troubled financial institutions in order to make them solvent and stabilise the financial system. The second step has been to activate discretionary fiscal measures to support aggregate demand in order to contain economic slowdown, which is dealt with in the next section.

4.50 The need for fiscal support to financial institutions was much larger in advanced countries than in the EMEs. In the advanced countries, it was initially the financial sector crisis which led to a sharp slowdown of the real sector that, in turn, fed back into the financial sector. Given the severity of the financial crisis, it was found insufficient for the central banks alone to provide the necessary support to the financial sector. In the emerging market economies, the transmission of the crisis was primarily from the real sector to the financial sector. The economic slowdown in the advanced countries adversely impacted exports of goods and services and the aggregate demand. This fed back into the financial sector. The problem was compounded by a sharp fall in capital inflows or increase in outflows due to sell-offs in the equity markets of EMEs by foreign investors. Capital flows also reversed in search of safety or to redress the financial solvency problems faced by parent companies in the advanced countries. Thus, the focus of fiscal policy was weighed towards counter-cyclical measures to stimulate aggregate demand rather than providing financial support to the troubled financial institutions.

4.51 Fiscal support to the financial sector included a combination of up-front government support by way of capital injection and purchase of assets and lending by the treasury, and providing guarantees for bank deposits, interbank loans and bonds. Capital injections were made to directly address the solvency problem. Assets purchases were aimed at repairing impaired assets. Treasury lending to financial institutions was to ensure that these institutions were not starved of funds. Guarantees on deposit and debt were provided with the intention of providing assurance to depositors and lenders.

Direct Financial Support

4.52 The programmes initiated in the US, UK, Switzerland and other European countries to address bank illiquidity and insolvency involved a combination of sales of distressed and illiquid assets and equity injections by the government. Equity injections, mainly through the issue of preferential shares, were increasingly preferred. However, government exit plans have been defined in only a handful of the programmes. Participation in these programmes involved conditions on management compensation and profit distribution. Some countries like the UK and the Netherlands have also introduced special governance arrangements including board representation, while others like the US intended to remain passive investors. This reflected different responses to the dilemma of penalising existing shareholders and management *versus* avoiding political interference in bank operations.

4.53 Most large-scale bank restructuring programmes included two major components: asset sales/bank recapitalisation; and the resolution of problem assets. However, different countries have adopted different approaches for resolving problem assets. In some countries the government carved out the bad loans from balance sheets, but they signed a management contract with the originating banks to recover the loans. Other countries have adopted decentralised good bank/bad bank approaches, which typically entail the transfer of bad assets to bank subsidiaries. In other countries, the resolution of problem assets has been handled by a central agency. This agency typically pools all the individual loans by type of debt, borrower, and sector, and re-sells them (or the underlying collateral) to investors.

4.54 The attempt to recapitalise UK and US banks through publicly acquired preference shares could not address the problem entirely. The banks have merely used these infused funds to hold on

to their toxic assets. Thus, to restore them to health, it was considered necessary to remove the toxic assets from the balance sheets of the concerned banks. The plans proposed to deal with the toxic assets either involved partially nationalising the banks, or keeping them private but nationalising their toxic assets in a public 'bad' bank. In the US, the Obama administration's plan to rid banks of their 'toxic' assets was announced on March 23, 2009. The Obama plan envisaged the establishment of a public-private partnership to acquire loans and securities from banks through a 'Legacy Loans Program' and 'Legacy Securities Program'. In the first, pools of loans were to be auctioned to private investors who would be provided with financing from the Federal Deposit Insurance Corporation (FDIC) to acquire the loans. Both government and the private sector had to contribute to the initial capital. If and when the loans are recovered or sold off, the government would get a share of the profits. The 'Legacy Securities Program' was similar. The objective was to enable banks to dispose of their illiquid mortgage-backed securities to the new special purpose entity. The entity will be funded by the Fed under its existing Term Asset-backed Securities Loan Program.

Guarantees

4.55 The US, European and other developed country governments have provided extensive assurances to bank depositors and creditors. In a few cases, these were extended to non-bank financial institutions such as mutual funds. The move was prompted by systemic stability and, in a few cases, out of competitive concerns. Some of these arrangements include blanket guarantees on deposits and guarantees on new debt issues. The scale of these arrangements had no historic parallel and constituted a paradigm shift.

4.56 Expansion of deposit insurance beyond normal limits, or the use of a blanket guarantee in extreme conditions, could only be undertaken as a temporary and emergency measure. And they were carried out in a co-ordinated fashion across countries. This was followed by a similar announcement in several jurisdictions to guarantee bank deposits. The objective was to counteract the impact of the international market turmoil on their banking systems and remove any uncertainty on the part of counterparties and customers of the credit institutions. The announcement of government guarantees for bank deposits in a few jurisdictions set off dynamics that put pressure on other jurisdictions to respond. Otherwise, there was a risk of disadvantaging and potentially weakening their own financial institutions and financial sectors. Some developed countries announced that the guarantees on new debt issues would be extended for 18-36 months. Some emerging countries have matched these arrangements in order to prevent capital outflows or a shift of deposits to state-owned banks, which are perceived to be safer (Box IV.4).

Box IV.4
Measures Relating to Deposit Guarantee

To assuage the excessive reactions to the recent financial crisis, some countries announced guarantees for bank deposits for a short period and earmarked funds for the purpose. Even though the banking system continued to be sound and resilient, some governments decided to take precautionary action to avoid an erosion of banks' deposit base and ensure a level international playing field for banks in their jurisdiction.

The US

On October 3, 2008, the Congress temporarily increased FDIC deposit insurance from $100,000 to $250,000 per depositor up to December 31, 2009. With effect from October 14, 2008, all non-interest bearing transaction deposit accounts at an FDIC-insured institution, including all personal and business checking deposit accounts that do not earn interest, have been fully insured for the entire amount in the deposit account. This unlimited insurance coverage is temporary and will remain in effect for participating institutions until December 31, 2009.

In addition to the actions announced by the Treasury and the Fed, the FDIC announced on October 14, 2008, a new Temporary Liquidity Guarantee Program to unlock inter-bank credit markets and restore rationality to credit spread.

(Contd....)

(...Concld.)

Europe

The UK: With effect from October 7, 2008, the Financial Services Authority (FSA) of the UK increased the compensation limit on deposits with failed banks, building societies and credit unions from £35,000 to a total of £50,000 per depositor under the Financial Services Compensation Scheme (FSCS). Customers with joint accounts will be eligible to claim up to £100,000 between them.

Denmark: The Danish Financial Supervisory Authority guaranteed all bank deposits with effect from October 6, 2008, as part of a deal with banks to set up a 3.5 billion DKK Liquidation Fund. Earlier the guarantee cover was available up to 300,000 DKK per depositor, net of all loans and other liabilities to the bank.

Germany: On October 6, 2008, the German government offered a blanket guarantee for bank deposits, which would cover some Euro 568 billion (US$ 785 billion) in savings and checking accounts as well as time deposits, or CDs. Prior to this, the compensation scheme of German banks covered 90 per cent of the outstanding deposits and was limited to Euro 20,000 per depositor.

Ireland: The government of Ireland decided to put in place a guarantee arrangement to safeguard all deposits (retail, commercial, institutional and interbank), covered bonds, senior debt and dated subordinated debt (lower Tier II) with six banks and such specific subsidiaries as may be approved by the government. The guarantee was provided at a charge to the institutions concerned and will be subject to specific terms and conditions so that the taxpayers' interests can be protected. The guarantee will cover all existing aforementioned facilities with these institutions and any new such facilities issued from midnight on September 29, 2008 and will expire at midnight on September 28, 2010.

Austria: Austria's parliament approved a Euro100 billion (US$ 196.8 billion) bailout plan on September 20, 2008 to stabilise the country's banking sector. The package, *inter alia*, includes unlimited protection to individuals' bank deposits until December 31, 2009. After that, the state guarantee will be available only up to Euro 100,000 per account. Bank deposits for business account holders will be guaranteed up to Euro 50,000. Before the law was passed, Euro 20,000 per individual/ business account was protected.

Sweden: The Swedish government announced on October 6, 2008 that it will raise the limit for deposit insurance to 500,000 Kroner (US$ 71,000). Sweden previously had deposit insurance for savings of up to 250,000 Kroner.

Greece: A bill to parliament was submitted on October 6, 2008 to raise the legal limit of deposit insurance to Euro 100,000 from the existing Euro 20,000. The guarantee is proposed to be in force for the next three years.

Euro Zone: The minimum deposit insurance provided by euro area members under Euro laws was revised upward from Euro 20,000 to Euro 50,000 on October 7, 2008. Co-insurance has been abandoned and the member countries in the Euro Zone have taken/are taking action accordingly.

Asia

Indonesia: The government increased the deposit insurance cover to Indonesian Rupiah two billion.

Malaysia: On October 30, 2008, a blanket government guarantee was extended through the Philippine Deposit Insurance Corporation (PDIC) on all ringgit and foreign currency deposits with commercial, Islamic and investment banks, and deposit-taking development financial institutions regulated by Bank Negara Malaysia, until December 2010. The guarantee extends to all domestic and locally incorporated foreign banking institutions; and access to Bank Negara Malaysia's liquidity facility will be extended to insurance companies and *takaful* operators regulated and supervised by the Bank.

Singapore: The Singapore government extended guarantee to all Singapore Dollar and foreign currency deposits of individual and non-bank customers in banks, finance companies and merchant banks licensed by the Monetary Authority of Singapore (MAS) until December 31, 2010. All depositors, big and small, corporates and individuals, including those under the current Deposit Insurance Scheme administered by the Singapore Deposit Insurance Corporation would enjoy protection from the government on the full amount of their deposits for the duration of the guarantee. The government guarantee would also be extended to deposits placed with credit co-operatives registered with the Registry of Co-operative Societies. The guarantee will be backed by S$ 150 billion of the reserves of the Singapore government.

Hong Kong: The Hong Kong Monetary Authority (HKMA) on October 14, 2008 issued a blanket guarantee for customer deposits and offered to re-capitalise its banks. The guarantee would be backed by the Exchange Fund of HKMA.

Others

Australia: On October 12, 2008, the Australian government announced a blanket guarantee for all bank deposits, covering around A$ 700 billion. Following wide criticism and withdrawal of funds from cash management trusts and mortgage funds, the government has considered modifying the scheme. It considered providing a limit for the government guarantee and stipulating an "insurance" premium for large depositors to qualify for the full guarantee.

New Zealand: The government initially announced a blanket guarantee for bank deposits under the "Crown Retail Deposit Guarantee Scheme" but this was revised on October 22, 2008. A cap of A$ 1 million per depositor per guaranteed institution has been fixed, which will be extended for two years.

Source: Websites of respective central banks.

4.57 In most of the leading economies, in order to further raise the level of confidence in the financial system, the above-mentioned rescue packages were accompanied by statements that the government would not allow systematically important institutions to fail. Further, in Denmark, the Netherlands, the UK and the US, the governments either nationalised or acquired a majority stake in some of the insolvent financial institutions to protect depositors and contain any contagion (BIS, 2009).

Scale of Financial Support and Utilisation

4.58 The intended upfront government support to financial institutions in the advanced countries had been much larger than in the EMEs. As on June 2009, it ranged from 0.7 per cent of GDP in Italy to a high of 20.0 per cent in the UK, with the majority of them providing far more than 5.0 per cent of GDP. For the EMEs, the upfront government support ranged from nil in a number of them to 3.5 per cent of GDP in Hungary. The average support for the advanced G-20 countries is estimated at about 5.5 per cent of GDP. For emerging G-20 countries, the average is placed at 0.4 per cent of GDP. Guarantees were also larger in the advanced economies, barring Italy, Portugal and Switzerland. It ranged from 6.2 percent of GDP in Greece to as high as 198.1 per cent of GDP in Ireland. In the EMEs, guarantees have also been much smaller, with the highest being Poland at 3.2 per cent of GDP. In contrast to advanced economies, support to financial institutions in EMEs had been mostly through liquidity support by the central banks (Table 4.9).

4.59 The announced fiscal packages were quite large in some of the countries compared to the experience of previous major financial crises. Fiscal costs arising from cleaning up financial markets and/or protecting depositors and banks stakeholders in a sample of 42 crisis episodes in the past averaged around 13 per cent of GDP. But in some of them it was over 31 per cent of GDP (Table 4.10). The past experience also shows that accommodative policy measures such as liquidity support, blanket guarantees and forbearance from prudential regulations tended to increase the fiscal costs while not necessarily accelerating the pace of economic recovery (OECD, 2009a).

Table 4.9: Support to Financial Sector as on June, 2009 (as % of 2008 GDP)

Countries	Capital Injection	Purchase of Assets and Lending by Treasury	Support By Central Bank	Guarantees	Total	Upfront Guarantees Support
1	2	3	4	5	6	7
Advanced Countries						
Australia	0.0	0.7	0.0	8.8	9.5	0.7
Austria	5.3	0.0	0.0	30.1	35.4	8.9
Belgium	4.8	0.0	0.0	26.4	31.2	4.8
Canada	0.0	10.9	1.5	13.5	25.9	10.9
France	1.4	1.3	0.0	16.4	19.1	1.6
Germany	3.8	0.4	0.0	18.4	22.2	3.7
Greece	2.1	3.3	0.0	6.2	11.6	5.4
Ireland	5.9	0.0	0.0	198.1	204.0	5.9
Italy	0.6	0.0	0.0	0.0	0.7	0.6
Japan	2.4	11.4	1.9	7.3	33.8	0.8
Korea	2.3	5.5	6.5	14.5	26.8	0.8
Netherlands	3.4	11.2	0.0	33.6	47.3	14.6
Norway	2.0	15.8	0.0	21.0	32.5	15.8
Portugal	2.4	0.0	0.0	12.0	14.4	2.4
Spain	0.8	3.9	0.0	15.8	22.2	4.6
Sweden	1.6	4.8	13.9	47.5	68.0	5.2
Switzerland	1.1	0.0	24.9	0.0	25.5	1.1
United Kingdom	3.9	13.8	19.0	53.2	81.8	20.0
United States	5.2	1.5	8.1	10.6	25.8	6.9
Emerging Economies						
Argentina	0.0	0.9	5.4	0.0	5.1	0.9
Brazil	0.0	0.8	10.8	0.0	13.3	0.0
China	0.0	0.0	22.5	0.0	21.3	0.0
India	0.4	0.0	8.3	0.0	9.6	0.4
Indonesia	0.0	0.0	1.2	0.1	1.4	0.1
Hungary	1.1	2.4	13.6	1.1	20.3	3.5
Poland	0.0	0.0	5.4	3.2	8.7	0.0
Russia	1.2	1.2	11.6	0.5	17.2	2.3
Saudi Arabia	0.0	1.2	30.6	–	34.3	1.2
Turkey	0.0	0.3	3.7	0.0	3.4	0.0

Note : 1. IMF Staff estimates indicating announced or pledged amounts, and not the actual uptake;

2. Support by central bank indicates the actual changes in central bank balance sheets from June 2007 to April 2009. While these changes are mostly related to measures aimed at enhancing market liquidity and providing financial sector support, they may occasionally have other causes, and also may not capture other types of support, including that due to changes in regulatory policies.

Source: IMF Staff Position Note, Fiscal Affairs Department, International Monetary Fund, November 2009.

Table 4.10: Fiscal Costs of Selected Crises in the Past (as per cent of GDP)

	Gross Fiscal Cost	Net Fiscal Cost*	Output Loss
1	2	3	4
Argentina, 1980	55.1	55.1	10.8
Chile, 1981	42.9	16.8	92.4
Indonesia, 1997	56.8	52.3	67.9
Japan, 1997	24.0	13.9	17.6
Korea, 1997	31.2	23.2	50.1
Sweden, 1991	3.6	3.4	30.6
Russia, 1998	6.0	6.0	0.0
United States, 1988	3.7	–	4.1
Average 42 Episodes	13.3	–	20.0

* Defined as gross fiscal cost minus recovery proceeds.
Source: Laeven and Valencia (2008).

4.60 During the recent crisis, the actual support provided by the governments, however, has been much lower than announced. For capital injection, countries such as Switzerland and the UK have fully utilised the allocated amount. However, in some countries such as Italy and Norway they have not been utilised at all. For the advanced economies, the average utilisation of the allocated amount for capital injection worked out to two-fifths only. The utilisation of allocated amount at one-fifth was even lower for purchase of assets and treasury lending. The utilisation rates were no better in the EMEs, even though the announced quantum was much smaller than in the advanced countries. However, unlike in the advanced countries, the utilisation rates were much higher for purchase of assets and lending by treasury than for capital injection (Table 4.11).

4.61 The low level of utilisation of the allocated amount reflected a variety of factors such as the precautionary nature of initial announcements, indications of increasing stability and improved bank liquidity, and lags in implementation of programmes for recapitalisation and purchase of assets. Even the central bank credit facilities appeared to have been taken up only to a limited extent, as conditions turned out to be less serious than at the time of the announcement (Horton *et al.,* 2009).

Table 4.11: Financial Sector Support Utilised Relative to Announcement (as % of 2008 GDP)

Country	Capital Injection		Purchase of Assets and Lending by Treasury	
	Amount Used	In per cent of Announ-cement	Amount Used	In per cent of Announ-cement
1	2	3	4	5
Advanced Countries				
Australia	…	…	0.5	71.3
Austria	1.7	32.7	…	…
Belgium	4.7	97.6	…	…
Canada	…	…	5.6	51.6
France	0.8	57.0	0.4	26.5
Greece	1.7	82.0	1.8	55.0
Ireland	3.8	63.6	…	…
Italy	0.0	0.0	…	…
Japan	0.0	1.0	0.8	3.6
Korea	0.8	33.0	0.3	4.8
Netherlands	2.3	68.8	10.2	99.4
Norway	0.0	0.0	4.8	30.3
Portugal	1.5	62.5	…	…
Spain			1.8	44.6
Switzerland	1.1	100.0	…	…
United Kingdom	3.9	100.0	3.4	24.4
United States	2.2	41.9	0.7	53.8
Emerging Economies				
Brazil	…	…	0.3	43.5
India*	0.0	5.0	0.0	…
Indonesia	…	…	…	…
Hungary	0.1	9.3	2.1	87.0
Russia	0.5	40.6	0.4	31.0
Saudi Arabia	…	…	0.6	51.4

* In the fiscal measures announced by the Government of India on January 2, 2009, it was indicated that public sector banks in India will be recapitalised to the extent of Rs.20,000 crore over the next two years. As per the Budget 2009-10 and 2010-11, the Government provided an amount of Rs.595 crore in 2008-09 (revised estimates) towards recapitalisation of regional rural banks, while there was no provision made in the revised estimates for 2009-10 for bank recapitalisation. For 2010-11, the Budget makes a provision of Rs.15,000 crore for recapitalisation of public sector banks.

Source: IMF Staff Position Note, Fiscal Affairs Department, International Monetary Fund, July 2009.

4.62 In recapitalising the banks, the governments have mostly bought preferred shares which carry less risk but have no voting power. The deposit and debt guarantee by governments protected the sources of financing of the banks. The issue of government guaranteed bonds in fact remained the major sources of financing, at least up to the first quarter of 2009. However, the take-up of government debt guarantee was lower than

expected due to stringent terms and costs, and the complexities of the programmes and operation issues. Nevertheless, the rescue packages undertaken by the government in leading economies managed to stem the insolvency of key banks. However, they could not entirely dispel the negative sentiments of common shareholders in the banking sector, because the rescue package was not designed to protect the interests of shareholders. Banking stocks, after an initial rise, declined and underperformed in the market. Within banking stocks, banks receiving government support underperformed banks without government support. However, creditors responded to the rescue packages more positively as CDS spreads narrowed across countries, though they remain at an elevated level. Further, the preconditions for a sustainable recovery based on the experience of historical episodes of crisis, *viz*., forcing the banking system to take losses, dispose of non-performing assets, eliminate excess capacity and rebuild its capital base have not been made. The steps taken so far have focussed on providing guarantees and subsidised capital. Thus, there was significant risk that the current stimulus could only lead to temporary pick-up in growth followed by protracted stagnation (BIS, 2009).

4.63 To summarise, the insolvency of systematically important financial institutions, despite unprecedented monetary policy measures, compelled governments to provide large-scale financial support. The support took the form of (i) providing direct headline support by way of capital injection, purchase of assets and lending, and (ii) extending guarantees on bank deposits, inter-bank loans and bonds. In both types of support, the scale has been much larger in the advanced economies than in the EMEs. This was for at least two reasons, *viz.*, (i) The financial crisis was more severe in the advanced economies than in the EMEs; (ii) The transmission of the crisis was from the financial to the real sector in the advanced economies while it was more from the real sector to the financial sector in the EMEs. However, many of the countries have not fully utilised the announced fiscal support. This non-utilisation reflected a number of factors including the precautionary nature of the announcements, improved stability and liquidity conditions, and an implementation lag. On the whole, these steps enabled governments to stem the insolvency of financial institutions. However, due to a large-scale fall in private sector demand, economies continued to slide. Thus, governments across the globe were prompted to simultaneously activate discretionary counter-cyclical fiscal policy measures on an unprecedented scale.

IV. COUNTER-CYCLICAL FISCAL POLICY: KEYNESIAN MEASURES

Effectiveness of Counter-Cyclical Fiscal Policy

4.64 The recent crisis has led to a resurrection of fiscal policy as a counter-cyclical instrument of macroeconomic stabilisation. In this context, before documenting the counter-cyclical measures undertaken across countries, it is pertinent to revisit the debate on the effectiveness of counter-cyclical fiscal policy.

4.65 In normal business cycles, the effectiveness of discretionary fiscal policy as a counter-cyclical measure has been debated, and by the 1980s was largely discredited for a number of reasons. With rule-based policy being the common practice, monetary policy became the prime policy tool for counter-cyclical policy. The only role of fiscal policy for counter-cyclical measures was the operation of automatic stabilisers, *i.e.*, fall in revenue collection and rise in expenditure on social safety nets during an economic slowdown, leading to a rise in fiscal deficit and *vice versa* (Box IV.5).

4.66 Given the severity and unprecedented nature of the present crisis, the relevance of discretionary fiscal policy as counter-cyclical measures, however, has once again come to the fore. It is argued that, in such situations, monetary policy could be ineffective due to a liquidity trap situation and the failure of the monetary transmission mechanism arising from general lack of confidence and dysfunctional credit markets. The

Box IV.5
Discretionary Fiscal Policy as Counter-Cyclical Measures

Due to several inter-related reasons, discretionary fiscal policy for the purpose of macroeconomic stabilisation lost its credence at the beginning of the 1980s. It was increasingly viewed that the marginal propensity to save out of temporary tax cuts would be high and, thus, fiscal policy would be ineffective in raising aggregate demand. Increase in government expenditure to raise aggregate demand would also get ultimately nullified by the induced rise in long-term interest rates. Increased globalisation of economies, by raising the import propensity of consumption, had increased the leakage to national economic stimulus provided through fiscal policy. The decline in the proportion of credit-constrained households, following deregulation in the financial markets and easing access to credit markets, has also reduced the multiplier effect of fiscal policy. It was also considered not desirable to compensate the low fiscal multiplier through a large dose of fiscal policy since deadweight losses arising from the burgeoning national debt would be large and could have a destabilising effect on aggregate demand (Feldstein, 2002). Due to the administrative and political process involved in the pursuance of fiscal policy, there are several lags involved, *viz*., recognition lags, implementation lags and lag effect on aggregate demand. These lags increase the uncertainty of the fiscal policy impact, which can have a destabilising effect on the economy.

On the other hand, monetary policy increasingly became the first policy choice for counter-cyclical purposes for a number of factors. First, in a typically short period of cyclical downturns, monetary policy is more amenable to quicker adjustments than fiscal policy. Second, monetary policy is able to judge the timing and the magnitudes of the needed stimulus better than fiscal policy. Third, policy-making underwent a substantial change towards a rule-based interest rate policy that systematically responds to changes in both inflation and output gap. Taylor (2000), while reassessing the role of discretionary fiscal policy, concludes that only automatic stabilisers should play the role of counter-cyclical fiscal policy. Discretionary fiscal policy, which can interfere with the stabilisation role that is systematically played by monetary policy, should focus only on long-run issues such as tax reform and social security reform.

There are views,which, however, support discretionary fiscal policy over monetary policy under particular economic situations. According to this view, in a sustained downturn when aggregate demand and interest rates are low and when prices are falling or may soon be falling, discretionary fiscal policy can play a constructive role. The required fiscal stimulus can also be achieved without increasing the budget deficits but by providing an incentive for increased private spending (Feldstein, 2002). Elmendorf and Furman (2008) also argue that in rapidly deteriorating economic conditions, a well-crafted discretionary fiscal stimulus has the potential advantage of boosting economic activity much faster relative to monetary stimulus. Further, during a deep downturn with loss of confidence, not only may monetary policy become ineffective due to policy rates nearing zero but there could also be a disconnect in the monetary policy transmission mechanism. Such a situation would warrant a fiscal stimulus rather than any other stimulus. Thus, combining fiscal and monetary stimuli can reduce uncertainty about the total amount of stimulus to the economy.

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size of automatic stabilisers would also be relatively smaller compared to the decline in output. On the other hand, several other factors could make discretionary fiscal policy relevant. They include: the possibility of targeted expenditure by the government; the complementary role of monetary and fiscal policy; greater appetite for government securities helping government borrowing without crowding out; and the irrelevance of implementation lags in discretionary fiscal policy in view of the prolonged nature of the downturn. These views that emphasise the increasing relevance of discretionary fiscal policy in the current context, however, have not gone uncontested (Box IV.6).

4.67 Notwithstanding the contrasting views on the need for activation of discretionary fiscal policy, experiences have shown that many countries did activate discretionary fiscal policy during previous downturns. For the G-7 countries, discretionary fiscal policy had been employed in 23 per cent of economic downturns during the past four decades, though with some lag from the beginning of the

Box IV.6
Relevance of Fiscal Policy in the Recent Crisis

The recent global recession was expected to be much deeper and last much longer than previous downturns. Being a worldwide slowdown, export-led recovery at the individual country level was not considered to be an option for growth revival. The usual monetary policy of lowering interest rates was also unlikely to succeed in reversing such a sharp fall in private consumption demand. The lack of confidence and the dysfunctional credit markets rendered the transmission mechanism of monetary policy ineffective. Furthermore, the scope for further easing of monetary policy was very limited in many countries. Thus, there was no alternative to counter-cyclical discretionary fiscal policy to counter the economic downturn (Summers, 2008).

The arguments that were advanced for the need for fiscal policy to complement monetary policy in the recent global slowdown may be summed as follows. First, fiscal policy when implemented acts faster than monetary policy. Second, fiscal policy can target the beneficiaries and directly promote job creation. Third, complete reliance on monetary policy could lower interest rates to levels that have adverse implications on exchange rate, commodity prices, future asset prices and moral hazard. Fourth, when policy impacts are uncertain, it would be prudent to rely on a diversified set of stimulus measures. Fifth, the monetary transmission mechanism has become ineffective in many countries. Sixth, the complementary role between monetary and fiscal policy during a deep downturn would be more than during a milder one. Seventh, under weak demand conditions and high underutilised capacity during a deep recession, fiscal expansion may not carry the risk of inflationary pressures. Eighth, the scope for conventional monetary policy easing is already limited in many countries. Ninth, with the current downturn expected to be a prolonged one, the risk of fiscal policy turning out to be pro-cyclical due to implementation lags is low. Tenth, as the increased risk averseness of the private sector has boosted the demand for government debt, the government can borrow more at relatively lower cost without crowding out. Eleventh, when the financial crisis spills over to the corporate and household sectors, the earlier episodes of crises have shown the necessity of fiscal stimulus. Twelfth, the operation of automatic stabilisers would not be sufficient to counter the downturn. Thirteenth, the proportion of credit-constrained households that would respond to fiscal stimulus measures has increased with rising unemployment and the sharpened risk perception of financial market participants. Fourteenth, if discretionary fiscal measures are not undertaken, the sharp and prolonged increase in the unemployment rate can lead to loss of human capital and reduce potential growth in the medium to long term (HM Treasury, 2008; Koehler-Toglhofer and Reiss, 2009; Spilimbergo *et al*., 2008; Summers, 2008).

Contesting the above views is that policy responses to global crisis should distinguish between the objective of stabilisation and stimulation. In any crisis, adjustment through stabilisation measures to mitigate pain is inescapable. But, stimulation seeks to eliminate the adjustment period which is untenable. As expectations are important in a large-scale slowdown, the concerns for long-term sustainability should be correctly incorporated in current short-term policy actions. A large discretionary fiscal stimulus involves three medium-term risks. First, there is the risk of perpetuating or even exacerbating current global economic imbalances. Providing demand stimulus in low-saving countries would prevent correction in their current account deficits which would be inconsistent with global rebalancing through higher domestic demand in high-saving countries. Second, fiscal sustainability could be undermined and produce a fiscal crisis when the markets start questioning the sustainability of the fiscal position and credit quality. Third, there is a risk of inflation through higher inflation expectations by economic agents on account of debt sustainability concerns and inflationary financing. Excessive fiscal stimulus measures to stimulate demand also run the risk of too few resources being available for stabilising the financial system (Hannoun, 2009). Without strong measures to further stabilise and strengthen the financial system, fiscal actions are unlikely to promote lasting recovery (Bernanke, 2009).

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downturn. For the EMEs, fiscal response to downturns had been half as frequent as in advanced economies, but by larger doses when they responded due to larger downturns (IMF, 2008). Daniel *et al*. (2009) compared the timeliness and temporariness of the response between discretionary fiscal and monetary policy during downturns in the G-7 countries. They found that discretionary fiscal policy response was weaker and less quick than monetary policy. However, it was timelier than conventional wisdom suggests. Evidence based on cross-country data of 197 countries during the period 1960 to 2005 also shows that fiscal stimulus can be more effective during the rebound from a recession than at any other stage of the business cycle. This was particularly so for industrial countries in recovering from recessions associated with a banking crisis (Cerra, *et al.,* 2009).

4.68 A number of features have been proposed to make fiscal policy effective as counter-cyclical measures. The fiscal measures should be (i) timely, given the urgent need for action; (ii) large enough, since the drop in demand is large; (iii) lasting, since the recession is expected to last longer; (iv) diversified, as there is uncertainty regarding the effectiveness of particular fiscal measures; (v) contingent, to indicate that further action will be taken if needed; (vi) collective among countries, given the severity and global nature of the downturn; and (vii) sustainable, in terms of no debt explosion in the long run, so that there are no adverse effects in the short run (Spilimbergo *et al.,* 2008). While all the above features would be important, collective action among countries and sustainability concerns would have added relevance in the current downturn. Further, it is important for the monetary policy to be accommodative (Box IV.7).

Box IV.7
Some Requirements for Fiscal Policy Effectiveness

Long-term sustainability of debt is an important consideration for the effectiveness of fiscal policy. Primarily due to debt concerns, fiscal stimulus had limited impact on growth in the EMEs in the past episodes of crisis. When there are debt concerns, interest rate risk premiums would rise, making discretionary fiscal policy counterproductive (IMF, 2008). Simulations with a multi-country structural model have found that, if the enlarged fiscal deficit from fiscal stimulus leads to perception of lack of fiscal discipline, the impact of fiscal stimulus would be severely limited or even have a negative impact (Freedman *et al.,* 2009). Thus, fiscal stimulus is likely to be effective if accompanied by credible commitments to scale it back or even reverse it once recovery takes place, thereby underscoring the importance of strengthening medium-term fiscal frameworks for ensuing fiscal sustainability. This would require the announced fiscal measures to be reversible or have clear sunset clauses contingent on the economic situation; increasing the scope of automatic stabilisers; pre-commitment to future policies that help improve fiscal accounts and unwinding of measures either at a specific date or on a contingent basis and strengthen fiscal governance.

Given the global nature and magnitude of the downturn, the other important consideration for effective discretionary fiscal policy is a co-ordinated approach among countries. In open economies, there are leakages to fiscal expansion through imports and the leakage is greater with increasing openness of the economy. These leakages can be neutralised through concerted fiscal stimulus among the trading partners and substantially enhance the impact of fiscal stimulus on domestic expansion. Further, a concerted response can send a strong signal on governments' willingness to co-operatively raise the level of confidence among households and firms and counter the contractionary forces emanating from the loss of confidence.

When monetary policy is accommodative by keeping the nominal interest rate fixed, the rise in inflation due to higher demand would lead to a fall in real interest rates, thereby raising the effectiveness of fiscal policy. Freedman, *et al,* (2009) found that the multiplier for all types of fiscal instruments, except reduction in income taxes, was much higher with accommodative monetary policy than without it.

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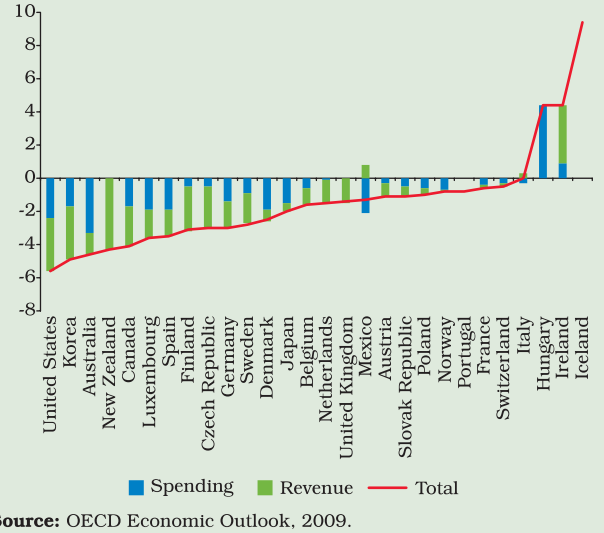
Cross-Country Fiscal Stimulus Measures

4.69 In the cross-country context, virtually all OECD countries have taken discretionary fiscal measures during the current crisis, barring Hungary, Iceland and Ireland. In these three countries, due to very large budget deficits or crisis-related expenditure, problems were faced in placing public debt. Consequently, the governments in these three cases were forced to tighten fiscal policy drastically. These actions were taken simultaneously and for the same reason, which was unprecedented. The average size of the fiscal stimulus packages on account of direct response to the crisis for those OECD countries carrying out a stimulus package over the period 2008-10 is estimated to be 3.5 per cent of area-wide GDP in 2008. However, there has been wide variation in the size of the fiscal stimulus measures across countries, partly reflecting divergence in the severity of the crisis, the initial fiscal position and the size of automatic stabilisers. Five countries (Australia, Canada, Korea, New Zealand and the US) have announced packages larger than 4.0 per cent of GDP (Chart IV.3).

4.70 Similarly, the size of the fiscal stimulus also differs among G-20 countries – from 0.2 per cent of GDP (UK) to 2.4 per cent of GDP (Saudi Arabia).

Chart IV.3: Size of Fiscal Packages (revenue and spending measures) in OECD Countries during 2008-10 (as % of 2008 GDP)



Source: OECD Economic Outlook, 2009.

During 2009, all the G-20 countries announced fiscal stimulus measures ranging from 0.2 per cent of GDP (Italy) to 4.1 per cent of GDP (Russia), and in about half of them the size was close to 2.0 per cent of GDP or more. The fiscal stimulus packages during 2009 are somewhat larger in emerging G-20 countries than in the advanced G-20 countries. The stimulus measures will be sustained in most of the countries during 2010 as well, *albeit* with some moderation. In countries such as France, Germany, Korea and Saudi Arabia, however, fiscal stimulus measures will be the largest during 2010 (Table 4.12).

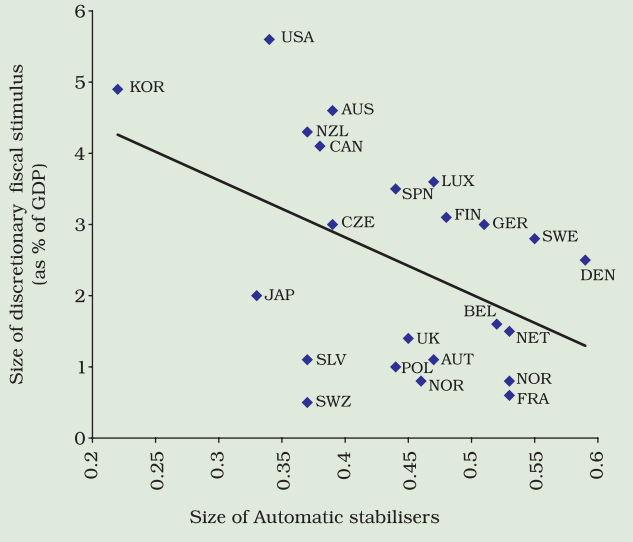
4.71 The need for discretionary fiscal policy, *inter alia*, arises when the operation of automatic stabilisers is weak. Therefore, given the negative output gap during a downturn, it is expected that the size of the discretionary fiscal stimulus will vary inversely with the size of automatic stabilisers. Among OECD countries, those with higher automatic stabilisers have in general announced lower discretionary fiscal stimulus measures (Chart IV.4).

Table 4.12: Size of Discretionary Measures in G-20 Countries, 2008-10

Country	Discretionary		
	2008	2009	2010
1	2	3	4
Argentina	0.0	1.5	0.0
Australia	0.7	2.9	2.0
Brazil	0.0	0.6	0.6
Canada	0.0	1.9	1.7
China	0.4	3.1	2.7
France	0.0	0.7	0.8
Germany	0.0	1.6	2.0
India	0.6	0.6	0.6
Indonesia	0.0	1.4	0.6
Italy	0.0	0.2	0.1
Japan	0.3	2.4	1.8
Korea	1.1	3.6	4.7
Mexico	0.0	1.5	1.0
Russia	0.0	4.1	1.3
Saudi Arabia	2.4	3.3	3.5
South Africa	1.7	3.0	2.1
Turkey	0.0	0.8	0.3
United Kingdom	0.2	1.6	0.0
United States	1.1	2.0	1.8

Source: IMF Staff Position Note, Fiscal Affairs Department, International Monetary Fund, July 2009.

Chart IV.4: Discretionary Fiscal Stimulus and Automatic Stabilisers in OECD Countries



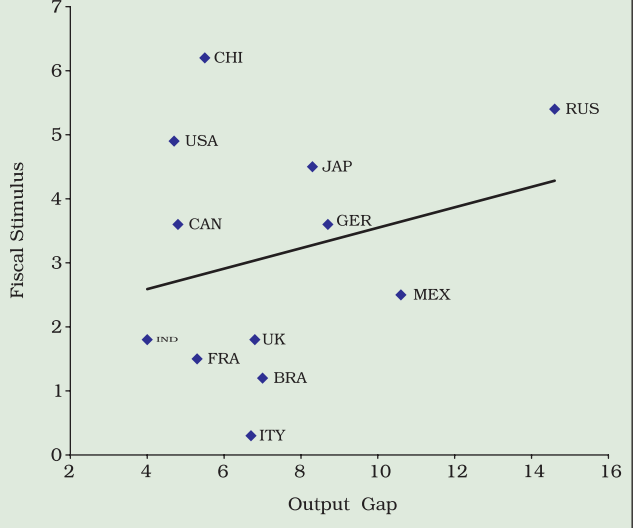
Source: OECD Economic Outlook, 2009.

4.72 It is also expected that given the size of automatic stabilisers, the size of the stimulus package would be explained by differences in the magnitude of the downturn or negative output gaps. For a select group of G-20 countries, this was the case to a certain extent (Chart IV.5).

4.73 The capability of a government to provide a particular dose of discretionary fiscal stimulus would also be determined by the fiscal space available. An important indicator of this available fiscal space is the level of initial debt. In this regard, earlier crisis experiences have shown that due to weak fiscal positions some developing countries were forced to adopt a fiscal contraction policy, making the cost of the crisis even higher (Perry, Serven and Suescun, 2007). Among G-20 countries, the size of the discretionary stimulus appears to have been constrained by the initial level of public debt, *i.e.*, the higher the level of initial public debt, the lower the size of the discretionary fiscal stimulus (Chart IV.6). However, for OECD countries, no significant relationship between the size of packages and the level of outstanding debt was found (BIS, 2009). This implies that in OECD countries debt sustainability concerns may have not been given enough consideration in making decisions to provide fiscal stimulus.

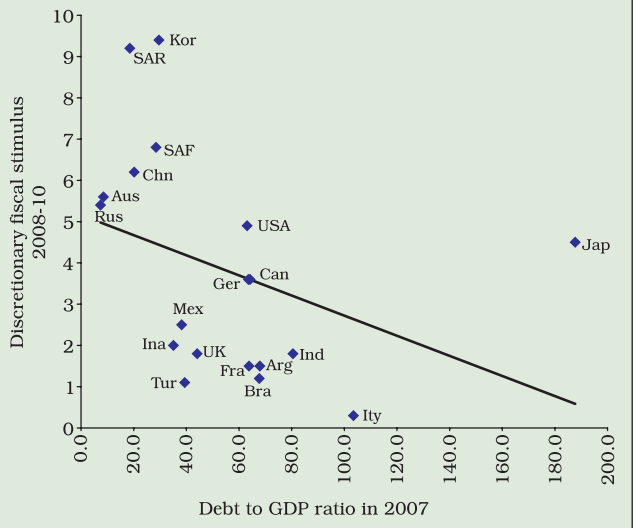
4.74 Besides the size of the stimulus measures, their compositions have also differed across countries. Among OECD countries, the majority have given priority to tax cuts over boosting of expenditure. Tax cuts have been on individuals, business, consumption and social contributions. Expenditure measures included spending on final consumption, investment, transfers to households, transfers to business and transfers to sub-national

Chart IV. 5: Discretionary Fiscal Stimulus and Output Gap in G-20 Countries



Source: IMF Staff Position Note, July 2009.

Chart IV.6: Discretionary Fiscal Stimulus and Initial Debt Position in G-20 Countries



Source: IMF Staff Position Note, July 2009.

governments. Most of the countries have concentrated their tax cuts on personal income tax and, to a lesser extent, on business tax. Among expenditure measures, a larger number of countries have increased expenditure on investment (infrastructure) and provision of safety nets through transfers (Table 4.13).

4.75 Past experience has shown that tax cuts during an economic crisis tend to be less effective as the propensity to save from these cuts increases due to uncertainties. Thus, the emphasis on tax cuts in the OECD countries could limit the impact on GDP. However, the tax cuts have been concentrated more on personal taxes, which support deleveraging of the household sector. This may speed up the recovery further down the road, despite a smaller impact on growth in the short term (BIS, 2009). Experiences from Latin American crises have shown that fiscal austerity induced by crises often led to disproportionate curtailment of expenditure on infrastructure projects, hampering long-term growth prospects (Easterly and Serven, 2003). The OECD countries have given less emphasis to increases in expenditure than to tax cuts. However, the focus of spending on infrastructure and the social safety net would

Table 4.13: Composition of Fiscal Packages in OECD Countries during 2008-10 (as % of GDP)

Countries	Tax Measures					Spending Measures					
	Individuals	Business	Consump-tion	Social contribu-tions	Total	Final Consump-tion	Investment	Transfers to House-holds	Transfers to Business	Govern-ment Transfers to Sub-national	Total
1	2	3	4	5	6	7	8	9	10	11	12
Australia	-1.1	-0.2	0.0	0.0	-1.3	0.0	2.6	0.8	0.0	0.0	3.3
Austria	-0.8	-0.1	0.0	0.0	-0.8	0.0	0.1	0.1	0.0	0.1	0.3
Belgium	-0.3	-0.6	-0.1	0.0	-1.0	0.0	0.1	0.5	0.0	0.0	0.6
Canada	-0.8	-0.3	-1.1	-0.1	-2.4	0.1	1.3	0.3	0.1	-	1.7
Czech Republic	0.0	-0.4	-0.1	-2.0	-2.5	-0.1	0.2	0.0	0.4	0.0	0.5
Denmark	0.0	0.0	0.0	0.0	-0.7	0.9	0.8	0.1	0.0	0.0	1.9
Finland	-1.9	0.0	-0.3	-0.4	-2.7	0.0	0.3	0.1	0.0	0.0	0.5
France	-0.1	-0.1	0.0	0.0	-0.2	0.0	0.2	0.1	0.0	0.0	0.4
Germany	-0.6	-0.3	0.0	-0.7	-1.6	0.0	0.8	0.2	0.3	0.0	1.4
Hungary	-0.1	-1.5	1.6	0.0	0.0	-	0.0	-	-	0.0	-4.4
Ireland	2.0	-0.2	0.5	1.2	3.5	-0.7	-0.2	-0.1	0.0	0.0	-0.9
Italy	0.0	0.0	0.1	0.0	0.3	0.3	0.0	0.2	0.1	0.0	0.3
Japan	-0.1	-0.1	-0.1	-0.2	-0.5	-0.2	0.3	0.5	0.4	0.3	1.5
Korea	-1.4	-1.2	-0.2	0.0	-3.2	0.0	0.9	0.1	0.5	0.2	1.7
Luxembourg	-1.2	-0.5	0.0	0.0	-1.7	0.0	0.7	1.0	0.2	0.0	1.9
Mexico	0.0	0.0	-0.4	0.0	0.8	0.0	1.1	0.3	0.4	0.0	2.0
Netherlands	-0.2	-0.4	0.0	-0.8	-1.4	0.0	0.0	0.1	0.0	0.0	0.1
New Zealand	-4.3	0.0	0.0	0.0	-4.3	0.1	0.6	-0.6	0.0	0.0	0.0
Norway	0.0	-0.1	0.0	0.0	-0.1	0.0	0.3	0.0	0.0	0.3	0.7
Poland	0.0	-0.1	-0.2	0.0	-0.4	0.0	1.3	0.1	0.0	0.0	0.6
Slovak Republic	-0.6	-0.1	0.0	0.0	-0.6	0.0	0.0	0.0	0.5	0.0	0.5
Spain	-1.6	0.0	0.0	0.0	-1.6	0.3	0.7	0.2	0.7	0.0	1.9
Sweden	-1.5	-0.2	0.0	-0.2	-1.8	0.7	0.3	0.1	0.0	0.0	0.9
Switzerland	-0.2	0.0	0.0	0.0	-0.2	0.3	0.0	0.0	0.0	0.0	0.3
United Kingdom	-0.6	-0.1	-0.7	0.0	-1.5	0.0	0.1	0.1	0.0	0.0	0.0
United States	-2.4	-0.8	0.0	0.0	-3.2	0.7	0.3	0.5	0.0	0.9	2.4

Note : Total columns are not the sum columns shown because some components either have not been clearly specified or are not classified in this breakdown.

Source : OECD Economic Outlook, Interim Report, March 2009, Organisation of Economic Cooperation and Economic Development.

increase the impact on GDP and benefit the poor who are more vulnerable during a crisis.

4.76 With regard to G-20 countries, more than three-quarters of the announced fiscal stimulus for 2009 represents expenditure measures and around two-thirds in 2010. The expenditure measures are also mostly temporary in nature, with a focus on infrastructure spending, particularly in the emerging G-20 countries. Infrastructure spending is largely on the transportation network, either directly by the central government or through capital transfers to local governments. Many of these countries have also announced plans to protect vulnerable groups. A few others have taken steps to support small and medium enterprises. A few countries have also taken measures to address long-term policy issues of improving the quality of health and education and introducing incentives for environment-friendly technologies. On the other hand, the tax cuts announced on personal income tax have been permanent in almost all the G-20 countries. Indirect tax exemptions have been permanent in some and temporary or self-reversing in others (Table 4.14).

4.77 The temporary nature of the expenditure measures in the fiscal stimulus package in the G-20 countries indicates that the impact on growth could otherwise be larger. Being temporary, the effect on deficit would also be temporary, thereby reducing debt sustainability concerns in the medium to long-term. Consequently, it will have less effect on increasing long-term interest rates that could dampen the impact of the stimulus. Further, the focus of the spending on infrastructure would have the additional benefit of increasing long-term supply capacity and growth potential. Specific announcements to protect the poor would also lessen the adverse impact of the crisis on the poor who often faced the brunt of earlier crises. On the other hand, the permanent nature of the direct tax cuts has the potential to increase consumption by raising permanent disposable income. However, it could lead to debt sustainability concerns as they would have a permanent effect on deficit and debt.

Table 4.14: G-20 Stimulus Measures, 2008-10

Measure	Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	Spain	UK	US
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Expenditure																		
Infrastructure investment	T	T		T	T	T	T	T	T		T	T	T		T	T	S	T
Support to SMEs and/or farmers							T				T	T						
Safety nets	T	T	T	T	T	T	T		T	T	T	T	T	T		T	T	T
Housing/construction support		T	T	T	T	T	T				T			T		T	T	
Strategic industries support				T	T		T	T						T		T		
Increase in public wage bill																		
Other		T		T	T	T	T				T	T	T			T	T	T
Revenue																		
CIT/depreciation/ incentives		P	P	P		P	P		P		P	P	P	P				P
PIT/exemptions/ deductions			P	P		T	P		P		P					P	P	P
Indirect tax reduction/ exemptions			T		P		P	T	P							S	S	
Other											P						P	

T : Temporary measures (with explicit sunset provisions or time-bound spending)
S : Self-reversing measures (measures whose costs are recouped by compensatory measures in future years)
P : Permanent measures (with recurrent fiscal costs)
Source: International Monetary Fund (2009), "The State of Public Finances: Outlook and Medium-Term Policies After the 2008 Crisis", March.

Therefore, tax reduction measures might be less effective, particularly in a situation of deep downturns where marginal propensity to consume out of tax cuts is generally believed to be low.

4.78 Fiscal stimulus packages have also been unveiled in a number of countries in the African continent. In most of these packages, infrastructure development has been emphasised. Some countries have, however, responded only through hikes in public sector pay, while in others a broad-based approach involving a public investment programme, expansion of public sector employment opportunities, increase in social spending and assistance to the private sector have been adopted. On the other hand, due to declines in the revenue of the government, some countries have exercised fiscal restraint by cutting expenditure on subsidies (UNESCECA, 2009).

Impact of Fiscal Stimulus on Growth

4.79 Assessing the impact of the discretionary fiscal stimulus on economic activity is highly complex and involves a lot of uncertainty. This is reflected in the wide range of outcomes depending upon the econometric models and specifications to estimate the fiscal multipliers. A notable problem is the difficulty of distinguishing passive changes in taxes, transfers, and spending from those that represent a true discretionary adjustment in fiscal policy. Multipliers also depend on country circumstances, including the type of instruments used, trade openness, constraints on borrowing, the response of monetary policy and long-term sustainability (Box IV.8).

4.80 Besides the problems faced in estimating the multiplier, the information on actual implementation

Box IV.8
Determinates of Fiscal Multiplier

The impact of fiscal stimulus measures on growth depends on the fiscal multipliers. The fiscal multiplier is the ratio of a change in output (ΔY) to an exogenous change in the fiscal deficit with respect to their respective baselines (Spilimbergo *et al.*, 2009). Fiscal multipliers, in turn, depend on the instrument used, the degree of monetary policy accommodation and the type of economy. The multiplier would be small for smaller and open economies, more susceptible to financial markets constraints and subject to offsetting monetary policy. On the other hand, it would be large if the composition of the package takes into account the specific features of the crisis. With loss of confidence, fiscal multipliers, particularly for tax cuts, are likely to fall due to an increase in the propensity to save. Thus, government spending measures are likely to provide the maximum short-run impact on aggregate demand rather than tax cuts or lump-sum transfers. If tax cuts are to be implemented, these should be targeted at those facing liquidity constraints. It is found that targeted transfers to poorer households have a multiplier which is two times that of lump-sum transfers. Further, due to the higher share of poorer households, multipliers are larger in emerging Asia and other emerging economies (Freedman *et al.,* 2009). The criteria for selecting individual measures should be those which raise aggregate demand in the short run and raise the aggregate supply in the long run, such as spending on infrastructure and active labour market policy and reduction of income tax particularly on low-income earners (OECD, 2009). In the case of the US, Elmendorf and Furman (2008) distinguish various options by categorising them between more effective, less effective and ineffective or counterproductive. More effective options include temporary increase in unemployment benefits, food stamps and issuing flat and refundable tax credits. The effective options are increase in infrastructure investment and temporary investment tax incentives. On the other hand, options such as tax rate cuts that are permanent could be counterproductive.

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of the announced stimulus measures are not readily available, barring a few countries such as Canada, France and the United States. The rate of utilisation in these three countries as on June 2009 ranged from 41 per cent of the announced package in the US to 81 per cent in Canada (Horton *et al.,* 2009). It is also important to note that fiscal multipliers estimated during normal business cycles could be highly misleading when applied during the period of deep and prolonged crisis characterised by loss of confidence. Given the above uncertainties, fiscal multipliers are estimated in a range. For OECD countries, it is found that spending measures have a higher multiplier than revenue measures. Among spending measures, infrastructure investment had the highest multiplier followed by direct government purchase of goods and government transfers. Among revenue measures, a cut in personal income tax has a higher multiplier than a cut in indirect tax. For each component of stimulus measures, the multiplier is higher in the second year than the first year. The multiplier also diverges among countries, with more open economies in terms of trade-to-GDP ratio having lower multipliers in general (Table 4.15).

4.81 Given the multipliers above, the growth impact of the announced stimulus package in

Table 4.15: Multipliers in OECD Countries

	Consumption		Investment		Transfers		Income Tax Cut		Indirect Tax Cut	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
1	2	3	4	5	6	7	8	9	10	11
USA	0.7	0.8-1.1	0.9	1.1-1.3	0.5	0.8-0.9	0.3-0.5	0.5-0.9	0.2-0.3	0.3-0.5
Japan	0.7	0.8-1.1	0.9	1.1-1.3	0.5	0.8-0.9	0.3-0.5	0.5-0.9	0.2-0.3	0.3-0.5
Germany	0.4	0.5-0.8	0.8	1.1-1.2	0.3	0.5-0.7	0.2-0.3	0.3-0.7	0.1-0.2	0.2-0.4
France	0.6	0.7-1.0	0.8	1.0-1.2	0.4	0.7-0.8	0.2-0.4	0.4-0.8	0.2	0.2-0.4
Italy	0.6	0.7-1.0	0.8	1.0-1.2	0.4	0.7-0.8	0.2-0.4	0.4-0.8	0.2	0.2-0.4
UK	0.5	0.6-0.9	0.8	1.0-1.2	0.4	0.6-0.8	0.2-0.4	0.4-0.8	0.2	0.2-0.4
Canada	0.5	0.6-0.9	0.8	1.0-1.2	0.4	0.6-0.7	0.2-0.4	0.4-0.7	0.1-0.2	0.2-0.4
Australia	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.3-0.6	0.1	0.2-0.3
Austria	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.3-0.6	0.1	0.2-0.3
Belgium	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.2-0.6	0.1	0.1-0.3
Czech Republic	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.2-0.6	0.1	0.1-0.3
Denmark	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.3-0.6	0.1	0.2-0.3
Finland	0.4	0.5-0.8	0.8	1.0-1.2	0.3	0.5-0.7	0.2-0.3	0.3-0.7	0.1-0.2	0.2-0.4
Greece	0.5	0.6-0.9	0.8	1.0-1.2	0.4	0.6-0.7	0.2-0.4	0.4-0.7	0.1-0.2	0.2-0.4
Hungary	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.2-0.6	0.1	0.1-0.3
Israel	0.4	0.5-0.8	0.7	0.9-1.1	0.3	0.5-0.6	0.2-0.3	0.3-0.6	0.1-0.2	0.2-0.3
Ireland	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.2-0.6	0.1	0.1-0.3
Korea	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.2-0.6	0.1	0.1-0.3
Luxembourg	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.2-0.6	0.1	0.1-0.3
Mexico	0.5	0.6-0.9	0.8	1.1-1.2	0.4	0.6-0.8	0.2-0.4	0.4-0.8	0.2	0.2-0.4
Netherlands	0.3	0.4-0.7	0.7	0.9-1.1	0.2	0.4-0.6	0.1-0.2	0.2-0.6	0.1	0.1-0.3
New Zealand	0.5	0.6-0.9	0.8	1.0-1.2	0.4	0.6-0.7	0.2-0.4	0.4-0.8	0.2	0.2-0.4
Norway	0.5	0.6-0.9	0.8	1.0-1.2	0.4	0.6-0.8	0.2-0.4	0.4-0.8	0.2	0.2-0.4
Poland	0.4	0.5-0.8	0.8	1.0-1.2	0.3	0.5-0.7	0.2-0.3	0.3-0.7	0.1-0.2	0.2-0.4
Taiwan	0.4	0.5-0.8	0.8	1.0-1.2	0.3	0.5-0.7	0.2-0.3	0.3-0.7	0.1-0.2	0.2-0.4
Spain	0.5	0.6-0.9	0.8	1.0-1.2	0.4	0.6-0.7	0.2-0.4	0.4-0.7	0.1-0.2	0.2-0.4
Sweden	0.4	0.5-0.8	0.7	0.9-1.1	0.3	0.5-0.6	0.2-0.3	0.3-0.6	0.1-0.2	0.2-0.4
Turkey	0.6	0.7-1.0	0.8	1.0-1.2	0.4	0.7-0.8	0.2-0.4	0.4-0.8	0.2	0.2-0.4

Source: OECD Economic Outlook, Interim Report, OECD, March 2009.

OECD countries is estimated to be rather small (less than 1.0 per cent of GDP) compared to the magnitude of the impending output gap. It ranged from 0.1 per cent of GDP in Slovakia to 1.6 per cent of GDP in Australia. In six countries, *viz*., Australia, Canada, New Zealand, Poland, Spain and the United States, the impact could be more than one per cent. The average support to GDP from the fiscal stimulus in OECD during 2009 and 2010 will be of the order of 0.5 per cent only (OECD, 2009).

4.82 For G-20 countries also, the IMF estimates a range of fiscal multipliers for different components of fiscal stimulus measures. The range is from 0.3 to 0.6 for tax cuts; 0.5 to 1.8 per cent for investment in infrastructure; and 0.3 to 1.0 for other measures. These estimates take note of the simultaneous measures taken across the countries, which thereby reduces the leakage through imports. Given these multipliers, if the announced fiscal stimulus measures for 2009 and 2010 are fully implemented, the average impact on growth for G-20 countries as a whole would range from 0.7 to 2.8 per cent of GDP (Table 4.16).

Fiscal Risks

4.83 While the impact of fiscal stimulus on growth may be uncertain, the level of deficit and debt would increase substantially. On the assumption of a stronger resumption in economic growth, the overall fiscal deficit for the advanced G-20 countries in 2014 has been projected to be higher by 2.5 percentage points over the level of 2007. For emerging G-20 countries, the same will be higher by 1.5 percentage points. During the same period, the debt ratios are expected to rise by 40 percentage points in the advanced G-20 countries. For emerging G-20 countries, it is expected to decline slightly after some initial increase (Horton *et al.,* 2009). Should the downside risks materialise, the situation, however, would become even worse. It is even maintained that given the prolonged downturn, fiscal stimulus should go beyond the measures already announced provided that there is enough fiscal space (Freedman *et al.,* 2009). This has raised fiscal sustainability concerns and other related implications in the medium to long-term. The problem would be more serious in countries that are already facing the looming challenges of population ageing. The prospective cost in terms of pensions and health care together could be more than ten times the costs of the crisis. Therefore, a credible exit strategy, with necessary institutional arrangements, would be required.

Table 4.16: G-20 Countries- Impact of Fiscal Expansion on Growth

(in per cent of GDP and change in percentage points)

	2009	2010	Average
1	2	3	4
Low-high range impact			
G-20 total	1.2 to 4.7	0.1 to 1.0	0.7 to 2.8
Advanced G-20 countries	1.3 to 4.4	0.1 to 1.1	0.7 to 2.7
Emerging market G-20 countries	1.1 to 5.0	0.0 to 0.8	0.6 to 2.9

Source: IMF Staff Position Note, July 2009.

4.84 While the need for the exit of fiscal stimulus packages is well recognised, it is difficult to identify the right time to exit. This poses a policy dilemma. Too early a withdrawal of the fiscal stimulus could thwart any recovery. On the other hand, a delayed withdrawal, by raising debt sustainability concerns, could raise interest rates and reduce the effectiveness of the stimulus itself. Even if the stimulus measures are reversed quickly, the impact of the financial rescue packages on public debt would remain for a number of years. High public debt, by pushing up the real interest rates, could crowd out private investment (BIS, 2009). Further, in contrast to the call for providing co-ordinated stimulus measures, the timing of the exit may have to differ across countries. There are significant divergences across countries in terms of inflation, growth and unemployment. In some countries there are fears of deflation and output is still contracting; in such countries, the exit may have to be cautious and delayed. Similarly, the exit may have to be delayed in countries with very high unemployment rates. On the other hand, in countries with relatively high inflation and growth, the exit may have to be much earlier. Yet there are countries where growth is picking up but the inflationary situation remains highly comfortable.

4.85 Irrespective of the timing of the exit, the quantum of adjustment is going to be very large, particularly for high-debt advanced economies. This would be so even under a strong recovery in economic growth. For these countries, to stabilise the debt ratio to 60 per cent over the period of 15 years beginning in 2014 would require improvement in the primary balance by 5.4 percentage points over the forecasted primary balance for 2014 by the IMF. Though the adjustment required for the EMEs are projected to be limited, some of the high-debt emerging economies could face refinancing challenges (Table 4.17).

4.86 In brief, the severity and unprecedented nature of the present crisis has led to the resurrection of Keynesian fiscal policy. Countries across the globe have activated counter-cyclical fiscal policy simultaneously to overcome the economic slowdown. However, the size, composition and duration of the stimulus measures have varied among the countries. The size of the stimulus measures have partly depended on the size of the automatic stabilisers, the magnitude of the economic slowdown and the fiscal space for providing the stimulus. Some countries have relied more on expenditure measures than taxation measures. The emphasis on infrastructure or consumption expenditure and the temporary or permanent nature of the stimulus measures have also varied. While the impact of the stimulus measures on growth is expected to be positive, it, however, cannot be gauged with any degree of certainty. On the other hand, the deficit and debt of many countries, particularly the advanced economies, would substantially go up and remain at an elevated level for a long time. Thus, debt sustainability concerns in the medium to long term have emerged as an important issue. Consequently, there is the need for exit at an early date. But it is difficult to identify the right time. In any case, the quantum of fiscal adjustment would be very large, particularly in advanced countries. The large-scale fiscal expansion combined with an accommodative monetary policy has also heightened the need for active fiscal and monetary policy co-ordination.

Table 4.17: Debt Dynamics and Debt Stabilising Primary Balances

(in per cent)

	Debt		Primary Balance		Debt stabilising Primary Balance[1]
	2009	2014	2009	2014	
Advanced Economies					
High Debt	101.8	121.7	-8.5	-0.9	4.5
Low Debt	30.0	37.8	-2.8	1.1	0.4
Emerging Economies					
High debt	64.7	60.0	-1.3	1.0	1.8
Low Debt	18.7	18.6	-3.3	0.9	0.2

1. Average primary balance needed to stabilise debt at end-2014 level if the respective debt-to-GDP ratio is less than 60 per cent for advanced economies or 40 per cent for emerging economies (low-debt economies); or to bring the debt-to-GDP ratio to 60 per cent in 2029 (high-debt countries), assuming an interest rate-growth rate differential of 1 per cent beyond 2014.

Source: Horton *et al* (2009), "The State of Public Finances: A Cross-country Fiscal Monitor", *IMF Staff Position Note*, July.

V. FISCAL AND MONETARY POLICY CO-ORDINATION

4.87 Even though fiscal and monetary policies are pursued by two different authorities, they are not necessarily independent of each other. An individual policy instrument has its impact on more than one policy target. Thus, the effectiveness of one policy is influenced by changes in the other policy. In this interdependence, a conflict between the two can arise, particularly when they pursue different objectives. Thus, the need for policy co-ordination arises, without which it may not be possible to achieve the objectives of each of the policies. The nature of the co-ordination, however, would depend upon the stage of development of the financial markets. Where there is no market for government debt and fiscal deficits are financed by the central banks, co-ordination would be in the form of constraining excessive expansion of domestic credit to avoid excessive inflation rates. With some development in financial markets and an increase in the signalling role of interest rates, co-ordination would be required to avoid high interest rates which could harm growth. In well-developed financial market economies, where the central banks have established credibility in

keeping inflation under control, the lack of policy co-ordination gives rise to the risk of high fiscal deficit adversely impacting the targets on interest rates, inflation and growth (Hasan and Isgut, 2009).

4.88 To elaborate further, the effect of fiscal policy on monetary policy is largely determined by the financing pattern of government expenditure. If the monetary authority is not independent and the government follows an expansionary fiscal policy, there could be a strong temptation to monetise the fiscal deficit, leading to involuntary expansion in money supply. This can have the unintended effect of fuelling inflation, real appreciation of the exchange rate and, hence, balance of payment difficulties. When the deficit is financed through market borrowings, this could lead to a rise in interest rates, raise the borrowing cost for the private sector and crowd out private investment. Financing government expenditure by raising indirect taxes also has a direct impact on prices, which can go against the monetary policy objective of price stability. Perceptions and expectations of large and on-going deficits may trigger a lack of confidence in economic prospects and become a destabilising factor in the financial markets. Thus, under normal conditions, financial market participants would expect the monetary policy to react to fiscal expansion by raising short-term interest rates, leading to higher expected long-term interest rates. The result would be a crowding out of household spending, private sector investment and net exports to accommodate the increase in public spending, without any significant net gain in aggregate demand in the economy. Thus, expansionary fiscal policy is not considered to be an effective tool for economic stabilisation during normal business downturns. Further, the effectiveness of monetary policy depends on the financial behaviour of economic agents, which can get altered by the agents' perception of fiscal sustainability. When economic agents expect that higher deficit today will lead to higher taxation in the future (behave in a 'Ricardian Equivalence' manner), they may change their financial behaviour by saving more now.

4.89 Expansionary fiscal policy can also jeopardise the sustainability of the monetary policy regime in an open economy during normal times. Monetary policy would react to the inflationary pressure and worsening of capital account caused by expansionary fiscal policy by raising interest rates. Rising interest rates, however, would attract capital inflows, put pressure on the exchange rate and further worsen the current account. Absorption of capital inflows into reserves to reduce the pressure on the exchange rate would lead to an expansion in the monetary base and inflationary pressure. Though inflationary pressure can be avoided through sterilisation, there could be a limit to the cost of sterilisation that a central bank can bear.

4.90 The current economic slowdown, however, is characterised by a sharp fall in private sector demand, limited scope for further reduction in policy rates and dysfunctional credit markets due to loss of confidence. The downturn is also large and prolonged, which is associated with a deflationary environment. In such a situation, the conflict between the two policy objectives is likely to be smaller, at least in the short term. Thus, market participants are unlikely to expect monetary policy to be reactive to fiscal policy. In fact, monetary policy can be accommodative to the fiscal policy to make the latter a more potent policy tool to provide a sustained boost to economic activity. The fact that expansionary monetary policy may have become less effective also calls for support through expansionary fiscal policy. Accommodative monetary policy, by keeping the interest rate fixed at an already low level, would lead to a decline in real short-term interest rates if inflation expectations rise due to a fiscal stimulus. Thus, accommodative monetary policy can significantly increase the effectiveness of fiscal actions to boost economic activity in the short to medium term. In other words, the two policy instruments can reinforce each other in containing the downturn without concerns about inflationary pressure, at least in the short-term. Empirical estimates have found that the impact of fiscal stimulus measures is much larger (more than twice) with monetary policy accommodation than without.

4.91 On the other hand, in countries where the central banks have resorted to unconventional monetary policy measures of quantitative/credit easing, the fiscal implications of monetary policy have increased substantially. This development has underscored the need for greater co-ordination between the two policies. The purchase of long-term government securities and a wide array of non-traditional assets, such as agency debt and mortgaged-backed securities, by the central banks had been aimed at holding down the intermediate and long-term interest rates to boost the real economy. This led to massive expansion of central banks' balance sheets. In other words, central banks have assumed many responsibilities involving using of public money to affect allocation of resources, which the fiscal authority should take. This has not only led to confusion about the respective roles of the central bank and the fiscal authority, but also exposed the balance sheet of central banks to credit risk. Thus, the ability of the monetary authority to pursue price stability, financial stability and economic growth can potentially get undermined. In this regard, it has been suggested that the non-treasury assets and other loans in the balance sheet of the central banks be transferred to the government's balance sheet by way of issuing government securities to the central bank through a co-ordinated approach (Plosser, 2009). However, it is maintained that the change in the overall profile of public sector debt following from large purchases of government securities by the central banks also heightens the need for closer co-operation between the two authorities Further, when central banks take greater credit and market risk by accepting more private sector securities as collateral, closer co-operation between the monetary and fiscal authority is necessary to ensure that potential losses do not impair the operational independence of central banks (BIS, 2009).

4.92 In addition, large government support to financial institutions and stimulus packages announced have led to the ballooning of fiscal deficit and debt across countries. This has severely reduced the fiscal space, while entailing a large borrowing programme for the government. Large government borrowing that leads to a rise in interest rates can severely constrain the use of monetary policy instruments. This would be particularly so with the revival of growth and in countries where the domestic financial markets are not well developed. Central banks trying to ease the cost of credit to support growth also run the risk of inflationary pressure. This traditional tension between the two policies appears to have already resurfaced in many countries because of the large fiscal deficit following the stimulus measures and support to the financial sector. Though the fiscal stimulus was necessary in the circumstances, to avoid any conflict with monetary policy objectives, there is a need to return to the path of credible fiscal consolidation. But, due to demographic factors and the sustained spurt in pension liabilities in many advanced countries, fiscal deficits and government borrowings are likely to remain at elevated levels. Thus, the need for conduct of monetary policy in co-ordination with fiscal policy is likely to continue even after the crisis gets over (Subbarao, 2009).

4.93 From the perspective of financial stability also, the co-ordination between the two policies is essential. Expansionary fiscal policy accompanied by monetary policy accommodation has the potential to raise inflation expectations and the interest rates on government securities. When that happens, financial institutions, particularly the banks, can incur substantial losses due to the mark-to-market requirement, which can threaten financial stability. Though both policies are required to revive the growth slowdown, they will have to be tightened at some point of time. However, if the exit of the expansionary measures is not carried out in a co-ordinated manner, there is the risk of perpetuating financial instability.

4.94 For the EMEs, prolonged and sizable liquidity easing could be counterproductive as they are prone to large and potentially destabilising capital inflows. As the tradeoffs between prices, fiscal and financial stability objectives are sharper in EMEs, the case for credit easing by central banks is also weaker. Fiscal policy can handle the

objectives of credit policy better. Quantitative easing is also less appropriate for EMEs than advanced countries. First, while the financial crisis is less severe and inflation is higher, policy rates are far from being zero. Secondly, the vulnerability of EMEs to volatile capital flows would require keeping the policy rate higher to compensate currency holders for exchange risk. Otherwise, quantitative easing could lead to capital outflows in these countries (Ishi *et al.*, 2009).

4.95 Summing up, the present crisis has highlighted the need for a co-ordinated response by monetary and fiscal policy. The large-scale economic downturn and impairment of the monetary transmission mechanism have warranted the monetary policy to be accommodative to fiscal policy. The massive expansion of central bank balance sheets through some of the quasi-fiscal functions of credit/quantitative easing undertaken by them has also increased the need for closer co-operation between the two authorities. Furthermore, as a large fiscal deficit can potentially conflict with the objectives of monetary policy and financial stability in the near future, the need for co-ordination would continue to remain. Besides the co-ordination between the two policies in a country, the present crisis has demonstrated the need for international co-ordination. And for many of the developing countries and EMEs, national policy supports have not been enough, warranting support from multilateral institutions.

VI. RESPONSE OF MULTILATERAL INSTITUTIONS

4.96 Multilateral institutions played a very active role during this crisis. Even though a broad consensus was reached on the need for expansionary counter-cyclical macroeconomic policies, a number of developing and emerging market economies (DEEs) faced resource constraints. Pursuing expansionary macroeconomic policies in the resource-constrained developing and emerging market economies depended crucially on the provision of adequate external financing (Akyuz, 2009). The reform of international financial institutions (IFIs) covering their mandates, scope and governance to reflect changes in the world economy and the new challenges of globalization is also in progress.

G-20 and the IMF

4.97 Recognising the severe resource constraints faced by low income countries, a number of initiatives have been taken by the G-20 and Bretton Woods institutions. These initiatives are: i) increased funding for multilateral financial institutions; ii) widening the access for developing and emerging economies to multilateral funding; and iii) improvements in the terms and conditions of multilateral lending.

4.98 In the London Summit of the G-20 in April 2009, an additional international support of US$ 1.1 trillion was secured to increase the funding from multilateral financial institutions to strengthen the global financial safety net. This included: i) trebling the resources available to the IMF to US$ 750 billion; ii) mobilisation of an additional US$ 100 billion for multilateral development banks (MDBs); and iii) US$ 250 billion of trade financing from various public and private institutions, including credit agencies.

4.99 With regard to widening the access of DEEs to multilateral lending, the initiatives taken included: (i) doubling the normal access limits in the enhanced fund of the IMF; (ii) doubling the borrowing limits for the low income countries eligible for Poverty Reduction and Growth Facility (PRGF) and Exogenous Shock Facility (ESF); (iii) a new Flexible Credit Line (FCL) was established for crisis prevention in the EMEs facing contagion from the global crisis. The FCL has no cap, but would be available to countries with strong fundamentals, policies and track records of policy implementation on which the IMF would make the assessment; and (iv) under the umbrella of new Poverty Reduction and Growth Trust, a new architecture of concessional financing facilities has been introduced. These are: Extended Credit Facility for flexible medium-term support; Standby Credit Facility to address short-term and precautionary needs; and Rapid Credit Facility for emergency support with limited conditionality.

4.100 The IMF has also taken steps to modernise the conditionality to borrowers under its lending framework to make it more flexible with fewer conditions and to suit the specific conditions of a given country. First, access to the FCL facility will be based on *ex ante* conditionality rather than *ex post* as in the past. Second, in all fund arrangements including those with low-income countries, the conditionality on structural performance criteria will be discontinued. Third, under the IMF's concessional lending, low-income countries (LICs) will receive exceptional relief on all interest payments through 2011.

4.101 While reaffirming the central role of the IMF as a critical forum for multilateral consultation and cooperation on monetary and financial issues as well as in promoting international financial and monetary stability, the G-20 members recognise that the global financial crisis has highlighted the urgency of accelerating changes to the IMF so that it can more effectively fulfil its mandate (Box IV.9).

Box IV.9
G-20 Working Group 3: Reform of the IMF

Recognising the need to reform the International Financial Institutions (IFIs), the Working Group 3 was entrusted with advancing the actions covered in the November 2008 Leaders' Declaration in the context of the reform of the IMF. It noted that G-20 members reaffirm the central role of the IMF as a critical forum for multilateral consultation and co-operation on monetary and financial issues as well as in promoting international financial and monetary stability. It emphasised that the global financial crisis has highlighted the urgency of accelerating changes to the IMF so that it can more effectively fulfil its mandate. Such changes should address any underlying deficits in resources, lending instruments, and governance structures, with a view to enhancing legitimacy, ownership and efficiency, and clarifying the roles and responsibilities of the Fund. The Action Plan put forth as immediate and medium-term measures in reforming the Fund is as follows:

Immediate Measures

1) IMF to take a leading role in drawing lessons from the crisis

The IMF, given its universal membership and core macro-financial expertise, should, in close co-ordination with the FSF and others, take a leading role in drawing lessons from the current crisis, consistent with its mandate.

2) Review of the adequacy of IMF resources

Emphasising the need for reviewing the adequacy of the resources of the IMF, the World Bank Group and other multilateral development banks, the Group recommended that we should stand ready to increase their resources where necessary.

3) Review of IMF lending instruments and lending role

IFIs should also continue to review and adapt their lending instruments to adequately meet their members' needs and revise their lending role in light of the ongoing financial crisis. These include a substantial increase in members' access limits to Fund financing as a proportion of their quotas as well as to review and streamline conditionality, so that it is focused on areas directly related to a program's objectives while safeguarding IMF resources. This review should also examine the need for an increase in the Fund's ability to provide concessional financing to low-income countries including a widening of donor support for its concessional lending instruments. It also supports the IMF working with the World Bank in restoring emerging and developing countries' access to credit and private capital flows, and supporting the provision of finance for counter-cyclical fiscal responses.

4) IMF/FSF collaboration

The IMF, with its focus on surveillance, and the expanded FSF, with its focus on standard setting, should strengthen their collaboration, enhancing efforts to better integrate regulatory and supervisory responses into the macro-prudential policy framework and conduct early-warning exercises.

Medium-term Measures

1) Strengthening Fund surveillance

The IMF should conduct vigorous and even-handed surveillance reviews of all countries, as well as giving greater attention to their financial sectors and better integrating the reviews with the joint IMF/World Bank financial sector assessment programs. On this basis, the role of the IMF in providing macro-financial policy advice would be strengthened.

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2) Greater voice and representation in the IMF for emerging markets and developing economies

It is underscored that the Bretton Woods institutions must be comprehensively reformed so that they can more adequately reflect changing economic weights in the world economy and be more responsive to future challenges. Emerging and developing economies should have greater voice and representation in these institutions.

3) IMF involvement in capacity building

Advanced economies, the IFIs, and other international organisations should provide capacity-building programs for EMEs and developing countries on the formulation and implementation of new major regulations, consistent with international standards.

Additional Recommendations

1) With regard to reviewing the mandate and governance of the IMF, the Group requested the G-20 Finance Ministers to formulate additional recommendations, including in the area of reviewing the mandates, governance, and resource requirements of the IFIs. The Group, however, points out that G-20 members recognised the importance of the IMF ceasing to rely primarily on the income of its lending activities to cover its administrative expenses. In this regard, the Group called for a swift activation of the IMF's new income model, including the speeding up of the process required for the agreed sale of a limited amount of the IMF's gold, and taking the legislative steps required to expand the IMF's investment authority.

The World Bank

4.102 Reflecting the various policy initiatives, the World Bank Group stepped up its financial assistance to developing countries with a commitment of US$ 60 billion in fiscal year 2009, showing an increase of 54 per cent over the previous year. International Development Association (IDA) commitment increased by 25 per cent to touch US$ 14 billion in the same year and would deliver US$ 28 billion over the next two years. Under the IDA Financial Crisis Response Fast-Track Facility, procedures have been streamlined and project restructuring and disbursement have been facilitated. IDA will also be adjusting the implementation of its Non-Concessional Borrowing Policy (NCBP). In addition to funds mobilised for crisis initiatives, the International Finance Corporation (IFC) provided US$ 12.9 billion for private sector development in 2009 and launched a number of new crisis-response facilities in both investment and advisory services. The Multilateral Investment Guarantee Agency (MIGA) issued guarantees of US$ 1.4 billion in 2009 and has stepped up its support to important financial institutions.

4.103 To mitigate the impact of the crisis on developing countries, especially LICs, the World Bank Group started with crisis-response initiatives focusing on three themes: (i) protecting the most vulnerable from the fallout of the crisis; (ii) maintaining long-term infrastructure investment programmes; and (iii) sustaining the potential for private sector-led economic growth and employment creation, particularly through SMEs and microfinance. These themes are being addressed through three operational platforms, *viz.*, Vulnerability Financing Facility, the Infrastructure Recovery and Assets (INFRA) platform and the IFC-led private sector platform mentioned above. The Vulnerability Financing Facility is aimed at streamlining crisis support to the poor and vulnerable through the Global Food Crisis Response Programme (GPRF) and the Rapid Social Response Programme (RSR). On GPRF, which focuses on social protection and priority food policy interventions, the total Bank-funded projects amounted to US$ 1.2 billion in April 2009. The RSR is designed to help build institutional capacities to address urgent social needs stemming from the crisis.

The Asian Development Bank (ADB)

4.104 The ADB responded to the crisis by substantially enhancing the volume of lending under various windows and guarantees. The commitments under non-concessional ordinary capital resources (OCR) for lending to middle-income countries, which include a counter-cyclical support facility, were enhanced to US$ 26.1 billion

during 2009-10 from US$ 17 billion during 2007-08. During the same period, the concessional resources of the Asian Development Fund (ADF) for providing concessional loans and grants to low-income countries was raised to US$ 6.2 billion from US$ 4.9 billion. Similarly, co-financing was raised from US$ 2.5 billion to US$ 4.5 billion and technical assistance from US$ 524 million to US$ 567 million.

4.105 Lending and assistance are extended at three levels, *viz*., sub-regional, public sector and private sector. The sub-regional initiatives are aimed at: building institutional capacity and support policy to help cope with the crisis; knowledge support to produce appropriate responses to the crisis; and strengthening of economic surveillance and crisis monitoring. Support to the public sector included: demand-based support for fiscal expansion, social protection, maintaining development momentum and strengthening national monitoring and surveillance; counter-cyclical support facility; and expanding infrastructure development. For the private sector, the approach has been: demand-based support for easing liquidity constraints and building business confidence; supporting trade under the Trade Finance Facilitation Programme (TFFP); and financing infrastructure development.

4.106 The current crisis has also led to a rethinking on the future role and reforms of Bretton Woods institutions. Multilateral financial institutions have not only scaled up their financing to developing countries and EMEs, but also substantially eased the financing conditions. This has been enabled by substantial enhancing of the funds provided by member countries to these institutions. The process is also on to reform these institutions so as to increase their participation and benefits to poorer countries. Meanwhile, steps have been undertaken as an ongoing process to scale up co-ordination among central banks, multilateral institutions and supervisors in ensuring global financial and economic stability and supporting growth and development.

VII. FINANCIAL SECTOR POLICIES

4.107 Major regulatory and supervisory failures, along with excessive risk-taking by banks and other financial institutions, were among the fundamental causes of the crisis. Banks are systemically important because their deposits are a key part of the payment mechanism for households and non-financial corporations. Banks also play an important role in the clearing and settlement of large-value transactions. Globalisation and greater consolidation of the banking system the world over have substantially enhanced the contagion and domino effect of a financial crisis. Consequently, the collapse of some large global financial institutions had severe repercussions on the world economy.

4.108 The present crisis has, thus, demonstrated the urgent need for effective financial regulation and supervision. The imminent requirement to restore confidence and rebuild trust in the financial system gave way to a broad-based initiative towards financial reforms. A reassessment of crisis management arrangements has been undertaken, apart from potential medium-term changes in the conduct of financial sector policy. The medium-term changes are mainly in the area of minimal capital requirements, liquidity requirements, other prudential constraints on permissible liabilities and assets, reporting requirements and governance requirements. Certain other areas of the regulatory framework, such as the treatment of certain aspects of liquidity risk and the securitisation framework, have also been revisited. In developing financial sector initiatives, there is a broad underlying consensus among authorities regarding the goal to create a financial system that is less leveraged, better capitalised and more transparent, and features stronger incentives for all participants in the system. The focus of the financial sector reforms has been on building a stronger, globally more consistent supervisory and regulatory framework for the financial sector in future, which will support sustainable global growth[1]. It has been emphasised that regulation and supervision of financial

[1] The official communiqué issued at the close of the G-20 London Summit, 'Global Plan for Recovery and Reform' April 2, 2009.

institutions should take into account the increasing inter-linkages in the financial sector, as also the, greater need to contain systemic risks. The focus is on better and effective regulation rather than on tighter regulation.

4.109 Supervisors the world over have been actively reviewing prudential standards and supervisory approaches to incorporate the lessons from the crisis. This has produced the most comprehensive financial sector review in modern times, which is documented in numerous official reports. Prominent among these are: the G-30 (January 2009); the Geneva Report (Brunnermeier *et al.,* January 2009); the de Larosière Group (EU, February 2009); the Turner Review (FSA, March 2009); Communiqué of the G-20; the UN Commission of Experts on Reforms of International Monetary and Financial System (2009), the Obama administration's "Financial Reform Plan" of July 2009, and others. The series of reports/reviews provided an important analysis of the unfolding events during the crisis and useful insight in charting the roadmap for finding solutions to the crisis.

4.110 In July 2008, a steering committee of the Group of Thirty (G-30) led by chairman Paul Volcker examined the global financial crisis and suggested 18 specific recommendations highlighting the need for legislation, regulation and supervision. Rather than dealing with questions about the appropriate focus and nature of national administrative arrangements, the Report focuses on how the financial system might reasonably be organised once the present crisis has passed, to better assure a reasonable degree of stability (Box IV.10).

Box IV.10
G-30 Report on Financial Reform: A Framework for Financial Stability

In July 2008, the Group of Thirty (G-30) launched a project on financial reform under the leadership of a Steering Committee chaired by Paul A. Volcker, with Tommaso Padoa-Schioppa and Arminio Fraga Neto as its Vice Chairmen. The report of the G-30 Group, released in January 2009, focused on how the financial system might reasonably be organised once the present crisis has passed, to better assure a reasonable degree of stability. The core recommendations of the report are briefly set out below:

- **Core Recommendation I: Gaps and weaknesses in the coverage of prudential regulation and supervision must be eliminated**. All systemically significant financial institutions, regardless of type, must be subject to an appropriate degree of prudential oversight. The largest and most complex banking organisations should be subject to particularly close regulation and supervision, meeting high and common international standards. Large, systemically important banking institutions should be restricted in undertaking proprietary activities that present particularly high risks and serious conflicts of interest. A framework for national-level consolidated prudential regulation and supervision over large internationally active insurance companies should be established. Managers of private pools of capital that employ substantial borrowed funds should be required to register with an appropriate national prudential regulator.
- **Core Recommendation II: The quality and effectiveness of prudential regulation and supervision must be improved.** This will require better-resourced prudential regulators and central banks operating within structures that afford much higher levels of national and international policy co-ordination. In all cases, countries should explicitly reaffirm the insulation of national regulatory authorities from political and market pressures and reassess the need for improving the quality and adequacy of resources available to such authorities. National regulatory authorities and finance ministers are strongly encouraged to adapt and enhance existing mechanisms for international regulatory and supervisory co-ordination. The focus of needed enhancements should be to: (i) better co-ordinate oversight of the largest international banking organisations, with more timely and open information sharing, and greater clarity on home and host responsibilities, including in crisis management; (ii) move beyond co-ordinated rule making and standard setting to the identification and modification of material national differences in the application and enforcement of such standards; (iii) close regulatory gaps and raise standards, where needed, with respect to offshore banking centres; and (iv) develop the means for joint consideration of systemic risk concerns and the cyclicality implications of regulatory and supervisory policies. The appropriate agencies should strengthen their actions in member countries to promote implementation and enforcement of international

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standards. Furthermore, in respect of role of central banks, it was recommended that:

a. Central banks should accept a role in promoting and maintaining financial stability. The expectation should be that concerns for financial stability are relevant not just in times of financial crisis, but also in times of rapid credit expansion and increased use of leverage that may lead to crises.

b. In countries where the central bank is not the prudential regulator, the central bank should have (i) a strong role on the governing body of the prudential and markets regulator(s); (ii) a formal review role with respect to proposed changes in key prudential policies, especially capital and liquidity policies and margin arrangements; and (iii) a supervisory role in regard to the largest systemically significant firms, and critical payment and clearing systems.

c. A sharp distinction should be maintained between those regulated banking organisations with normal access to central bank liquidity facilities and other types of financial institutions whose access, if any, should be limited to extreme emergency situations of critical systemic importance.

d. Central bank emergency lending authority for highly unusual and exigent circumstances should be preserved, but should include, by law or practice, support by appropriate political authorities for the use of such authority in extending such credit to non-bank institutions.

e. Central bank liquidity support operations should be limited to forms that do not entail lending against or the outright purchase of high-risk assets, or other forms of long-term direct or indirect capital support. In principle, those forms of support are more appropriately provided by directly accountable government entities. In practice, to the extent the central bank is the only entity with the resources and authority to act quickly to provide this form of systemic support, there should be subsequent approval of an appropriate governmental entity with the consequent risk transfer to that entity.

- **Core Recommendation III: Institutional policies and standards must be strengthened, with particular emphasis on standards for governance, risk management, capital, and liquidity.** Regulatory policies and accounting standards must also guard against pro-cyclical effects and be consistent with maintaining prudent business practices. Regulatory standards for governance and risk management should be raised, with particular emphasis on: (i) strengthening boards of directors with greater engagement of independent members having financial industry and risk management expertise; (ii) co-ordinating board oversight of compensation and risk management policies; (iii) ensuring systematic board-level reviews and exercises aimed at establishing the most important parameters for setting the firm's risk tolerance and evaluating its risk profile relative to those parameters; (iv) ensuring the risk management and auditing functions are fully independent; (v) conducting periodic reviews of a firm's potential vulnerability to risk arising from credit concentrations, excessive maturity mismatches, excessive leverage, or undue reliance on asset market liquidity; and (vi) ensuring that all large firms have the capacity to continuously monitor, within a matter of hours, their largest counterparty credit exposures on an enterprise-wide basis and to make that information available, as appropriate, to its senior management, its board, and its prudential regulator and central bank. Other areas of reform are:(i) regulatory Capital Standards to address tendencies toward procyclicality; (ii) standards for Liquidity Risk Management for maintaining a sizable diversified mix of long-term funding and an available cushion of highly liquid unencumbered assets; and (iii) re-evaluation of fair value accounting with a view to developing more realistic guidelines for dealing with less liquid instruments and distressed markets.

- **Core Recommendation IV: Financial markets and products must be made more transparent, with better aligned risk and prudential incentives**. The infrastructure supporting markets must be made much more robust and resistant to potential failures of even large financial institutions. In particular, emphasis should be on (i) restoring confidence in securitised credit markets, (ii) rating agency reforms, (iii) the oversight of credit default swaps (CDS) and Over-the-Counter (OTC) Markets, (iv) a resolution mechanism for financial institutions, (v) improving transparency of structured product markets, and (vi) sharing market activity and valuation information.

4.111 While reviewing the work underway, the G-20 in March 2009 made recommendations to strengthen international regulatory standards, enhance transparency in global financial markets and ensure all financial markets, products and participants are appropriately regulated or subject to oversight, depending on their circumstances (Box IV.11).

Box IV.11
Report of G-20 Working Group 1 on Enhancing Sound Regulation and Strengthening Transparency: Major Recommendations

During the Washington Summit (November 15, 2008) on the international response to the global financial and economic crisis, G-20 Finance Ministers were entrusted to take forward work in the following five areas: (i) strengthening transparency and accountability, (ii) enhancing sound regulation, (iii) promoting integrity in financial markets, (iv) reinforcing international co-operation and (v) reforming international financial institutions. Accordingly, it was decided to set up four working groups to examine these issues. The G-20 Working Group I (Co-Chairs: Tiff Macklem and Rakesh Mohan) on enhancing sound regulation and strengthening transparency focused on strengthening microprudential policy while supplementing it with a greater emphasis on a system-wide approach to regulation, so as to better mitigate the build-up of systemic risks. The Final Report (March 25, 2009) set out 25 recommendations that will support the vital role of the financial system in promoting economic growth while, at the same time, reducing the likelihood of a similar crisis in the future and mitigating the consequences of future periods of financial stress. The key recommendations are summarised below:

(i) System-wide Approach to Regulation

- It was recommended that as a supplement to their core mandate, the mandates of all national financial regulators, central banks, and oversight authorities, and of all international financial bodies and standard setters (IASB, BCBS, IAIS and IOSCO) should take account of financial system stability.
- Within each country, there should be an effective mechanism for appropriate domestic financial sector authorities to jointly assess systemic risks across the financial system and to co-ordinate the domestic policy response to limit the build-up in systemic risk. The structure of this co-ordinating mechanism should be transparent, with clear assignments of roles, responsibilities and accountability for each authority.
- Financial sector authorities should have suitable macroprudential tools to address systemic vulnerabilities.
- The expanded FSF, together with the IMF, should create an effective mechanism for key financial authorities in each country to regularly come together around an international table to jointly assess the systemic risks across the global financial system and to co-ordinate policy responses.

(ii) Scope of Regulation

- All systemically important financial institutions, markets and instruments should be subject to an appropriate degree of regulation and oversight, applied consistently and proportionate to their local and global systemic importance.
- The IMF, in consultation with the BIS and the expanded FSF and other bodies, should jointly develop a common international framework and guidelines to help national authorities assess whether a financial institution, market or an instrument is systemically important as consistently as possible across jurisdictions. This framework should strive to treat similar activities more similarly for regulatory or oversight purposes regardless of the legal form of the institution, so as to avoid regulatory arbitrage.
- The boundaries of the regulatory framework should be reviewed periodically within national jurisdictions, in light of financial innovation and broader trends in the financial system. International bodies will promote good practice and consistent approaches in this area.
- All credit rating agencies whose ratings are used for regulatory purposes should be subject to a regulatory oversight regime that includes registration and that requires compliance with the substance of the IOSCO Code of Conduct Fundamentals. National authorities should obtain the authority to enforce compliance and required changes to a rating agency's practices and procedures. Given the global scope of some credit rating agencies, the oversight framework should be consistent across jurisdictions with appropriate sharing of information between national authorities responsible for the oversight of credit rating agencies.
- Given the interconnectedness of private pools of capital, including hedge funds, with other parts of the financial system, they or their managers should be required to register with financial authorities and disclose appropriate information to assess the risks they pose.

(iii) Transparent Assessment of Regulatory Regimes

- All G20 members should commit to undertake a Financial Sector Assessment Program (FSAP) report and to publish its conclusions. National authorities may also periodically undertake a self-assessment of their regulatory frameworks based on internationally agreed methodologies and tools. The FSAP process, the basis upon which countries are assessed, should be expanded to encompass macroprudential oversight, the scope of regulation, and supervisory oversight of the influence

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of the structure of compensation schemes at financial institutions on risk taking.

- The FSF and other bodies, particularly the BCBS, should develop and implement supervisory and regulatory approaches to mitigate pro-cyclicality in the financial system by promoting the build-up of capital buffers during the economic expansion and by dampening the adverse interaction between fair valuation, leverage and maturity mismatches in times of stress.
- Accounting standard setters should strengthen accounting recognition of loan loss provisions by considering alternative approaches for recognising and measuring loan losses that incorporate a broader range of available credit information.
- Once conditions in the financial system have recovered, international standards for capital and liquidity buffers will have to be enhanced, and the build-up of capital buffers and provisions in good times should be encouraged so that capital can absorb losses and be drawn down in difficult times such as the current period. In this context, the BCBS should develop standards to promote the build-up of capital buffers in good times that can be drawn down in periods of stress.

(iv) Liquidity

- Prudential supervisors and central banks should deliver a global framework for promoting stronger liquidity buffers at banks, including cross-border institutions, to ensure that they can withstand prolonged periods of market and funding liquidity stress.

(v) Infrastructure for OTC Derivatives

- Financial institutions should continue to strengthen the infrastructure supporting OTC derivatives markets.
- Central counterparties should be subject to transparent and effective oversight by prudential supervisors and other relevant authorities, including central banks, and meet high standards in terms of risk management, operational arrangements, default procedures, fair access and transparency. The CPSS and IOSCO should review their experiences in applying their recommendations for central counterparties to derivatives.

(vi) Compensation Schemes and Risk Management

- Large financial institutions should ensure that their compensation frameworks are consistent with their long-term goals and with prudent risk-taking.
- In order to promote incentives for prudent risk taking, each financial institution must review its compensation framework to ensure it follows sound practice principles developed by the FSF.

(vii) Accounting Standards

- Accounting standard setters should accelerate efforts to reduce the complexity of accounting standards for financial instruments and enhance presentation standards to allow the users of financial statements to better assess the uncertainty surrounding the valuation of financial instruments.
- The IASB should enhance its efforts to facilitate the global convergence towards a single set of high-quality accounting standards by sharing the experience of countries that have completed this process and by providing technical assistance.

(viii) Enforcement

- The effective enforcement of regulation should be a priority of all financial regulators.
- Recognising that the degree of development of financial systems varies considerably across the G-20, national authorities should commit to assist each other in enhancing their capacity to strengthen regulatory frameworks. In addition, IOSCO, the IAIS and the BCBS should have the appropriate capacity to provide technical assistance. The needs of EMEs deserve particular consideration.

4.112 In the UK, the Chairman of the Financial Services Authority (FSA), Lord Turner, was entrusted by the Chancellor of the Exchequer to review the events that led to the financial crisis and to recommend reforms. The Turner Review of global banking regulation identifies three underlying causes of the crisis – macro-economic imbalances, financial innovation of little social value and important deficiencies in key bank capital and liquidity regulations. These were underpinned by an exaggerated faith in rational and self-correcting markets. It stresses the importance of regulation and supervision being based on a system-wide "macro-prudential" approach rather than focussing solely on specific firms (Box IV.12).

Box IV.12
Turner Review: Major Recommendations

The Turner Review was submitted in March 2009. Focusing on banking and bank-like institutions, the Turner Review made the following recommendations on the changes in regulation and supervisory approach which are needed to create a more robust banking system for the future:

- **A systemic approach:** Many of the most important challenges in banking regulation are systemic rather than idiosyncratic. There was inadequate focus on the analysis of systemic risk and of the sustainability of whole business models and a failure to design regulatory tools to respond to emerging systemic risks. The future approach to banking regulation and supervision needs to be rooted in the fact that the risks involved in performing bank or bank-like functions are different not only from those involved in non-financial activities, but also from those which arise in performing non-bank financial activities, such as life insurance.
- **Fundamental changes in regulatory approach - capital, accounting and liquidity:** Seven key measures on capital adequacy, accounting, and liquidity policies are: (i) increasing the quantity and quality of bank capital, (ii) significant increases in trading book capital: and the need for fundamental review, (iii) avoiding pro-cyclicality in Basel II implementation, (iv) creating counter-cyclical capital buffers, (v) offsetting pro-cyclicality in published accounts, (vi) a gross leverage ratio backstop and (vii) containing liquidity risks in individual banks as well as at the systemic level.
- **Institutional and geographic coverage - economic substance, not legal form:** One crucial factor in the origin of the crisis was the development of major institutions and financial devices – sometimes labelled near-banks or shadow banks – which performed bank-like functions, but which were not regulated as banks. The essential principle which needs therefore to be agreed on and implemented internationally is that regulation should focus on economic substance and not legal form. Prudential oversight of financial institutions should ideally be co-ordinated in integrated regulators (covering banks, investment banks and insurance companies), reducing the dangers of inconsistency and arbitrage between different authorities within one country. Global agreement on regulatory priorities should include the principle that offshore centres must be brought within the ambit of internationally agreed financial regulation (whether relating to banking, insurance or any other financial sector).
- **Deposit insurance and bank resolution:** The system of bank regulation and supervision needs to be buttressed by arrangements for retail deposit insurance (to protect depositors in the event of default) and for bank resolution (to ensure orderly wind up and avoid knock-on effects to the rest of the banking system).
- **Other important changes - C*redit Ratings*:** There should be a fundamental review of the use of structured finance ratings in the Basel II framework. Regulation can and should address issues relating to the proper governance and conduct of rating agencies and the management of conflict of interest. ***Remuneration:*** Remuneration policies should be designed to avoid incentives for undue risk-taking; risk management considerations should be closely integrated with remuneration decisions. This should be achieved through the development and enforcement of UK and global codes. Achieving international agreement on mechanisms to ensure application of the principles by all major supervisory authorities will be a crucial subsequent step. ***Counterparty Risks***: Clearing and central counterparty systems should be developed to cover the standardised contracts which account for the majority of CDS trading.
- **Macro-prudential analysis and intellectual challenge:** Macro-prudential analysis needs to identify the trends in the economy and in the financial system which have implications for financial stability and, as a result, for macroeconomic stability, and to identify the measures which could be taken to address the resulting risks.
- **A new approach to supervision - more intrusive and more systemic:** In the context of the UK, since the launch of the Supervisory Enhancement Programme (SEP) programme in April 2008, a new approach termed 'intensive supervision' is being followed. However, the crisis illustrated the need for changes that go beyond those initially outlined in the SEP. Two issues are particularly important, *viz*., (i) macro-prudential as well as sectoral analysis and (ii) a major shift in the role which the FSA plays in relation to published accounts and accounting judgements, with far more intense contact with bank management and auditors on these issues. Furthermore, the crucial changes needed in the approach are : (i) changes in supervisory approach already planned and being implemented, significantly increasing the intensity of supervision but without progressing to a bank-examiner model; (ii) further steps to intensify supervision in particular high impact areas, *e.g.,* oversight of accounting judgements; (iii) more macro-prudential analysis, and more analysis of and willingness to make judgements on business models;

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and (iv) the more effective design and use of a small number of high-impact prudential levers, in particular those relating to capital, liquidity and accounting policies.

- **Risk management and governance - firm skills, responsibilities and structures:** An analysis of the causes of the crisis suggests that there is a limit to the extent to which risks can be identified and offset at the level of the individual firm. But improvements in the effectiveness of internal risk management and firm governance are essential. The key dimensions of required improvement are likely to be: i) improved professionalism and independence of risk management functions; ii) risk management considerations embedded in remuneration policy; iii) improvements in the skill level and time commitment of non-executive directors, and iv) shareholder discipline over corporate strategies.
- **The regulation of large complex banks - 'utility banking' versus 'investment banking':** Although the narrow banking versus investment bank debate raises important issues requiring a regulatory response, it does not seem practical to work on the assumption that we can or should achieve the complete institutional separation of 'utility banks' from 'investment banks'.
- **The regulation and supervision of cross-border banks:** The appropriate response needs to combine both greater international co-ordination and actions focused on specifically national concerns. The effective supervision of large cross-border institutions can be improved by maximising the flow of information between home and host country supervisors, sharing insights into the risks which firms are running. In fact, the FSF has defined the objective that all major cross-border financial institutions should be covered by a 'college of supervisors'. Alongside enhanced international co-operation, it is inevitable and appropriate that supervisory authorities throughout the world will increase their focus on the resilience of local legal entities.

The Turner Review also sets out a wider set of policy changes which might be appropriate, but where debate on principles is required with regard to the role of regulators of banks and markets regarding: i) product regulation, in either retail or wholesale markets, ii) using other tools in addition to the variation of capital and liquidity requirements to achieve counter-cyclical effects or at least offset pro-cyclicality and iii) whether approaches to the regulation of markets need more overtly to recognise tradeoffs between the benefits of technical efficiency and liquidity and the potential for harmful irrational momentum effects.

4.113 While in the UK the Turner Report set the road map for wide-ranging reforms, the High-Level Group on Financial Supervision in the EU (Chairman: Jacques de Larosière) was appointed by the European Commission to advise on the future of European financial regulation and supervision. The Report observed that it was not appropriate to blame the Basel II rules *per se* for being a major cause of the crisis. However, the report emphasised a fundamental review of the Basel II framework (Box IV.13).

Box IV.13
Recommendations of the High-Level Group on Financial Supervision in the European Union

The European Commission constituted a High-Level Group on Financial Supervision (Chairman: Jacques de Larosière) to give advice on the future of European financial regulation and supervision. The report of the Group released on February 25, 2009 laid out a framework to take the European Union forward towards a new regulatory agenda, stronger co-ordinated supervision and an effective crisis management procedure. The major recommendations of the report are set out below:

Correcting Regulatory Weaknesses

- Basel II rules need a fundamental review with a view to gradually increase minimum capital requirements; reduce pro-cyclicality by, for example, encouraging dynamic provisioning or capital buffers; introduce stricter rules for off-balance sheet items; tighten norms on liquidity management; and strengthen the rules for banks' internal control and risk management, notably by reinforcing the "fit and proper" criteria for management and board members.
- A common definition of regulatory capital should be adopted in the EU, clarifying whether and, if so, which hybrid instruments should be considered as Tier 1 capital with the confirmation by the Basel Committee.
- A strengthened Committee of European Securities Regulators (CESR) should be in charge of registering and supervising credit rating agencies. The report also emphasised (i) a fundamental review of their business model, financing and the scope for separating rating and advisory activities; (ii) lower dependence on ratings in

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financial regulations over time; and (iii) transformed ratings for structured products introducing distinct codes.

- With respect to accounting rules, a wider reflection on the mark-to-market principle is needed. It was recommended that (i) expeditious solutions should be found for the remaining accounting issues concerning complex products, (ii) accounting standards should not bias business models, promote pro-cyclical behaviour or discourage long-term investment; and (iii) the IASB and other accounting standard setters should clarify and agree on a common, transparent methodology for the valuation of assets in illiquid markets where mark-to-market cannot be applied.
- The Solvency 2 directive – setting out new, strengthened EU-wide requirements on capital adequacy and risk management for insurers with a view to reducing the likelihood of an insurer failing – must be adopted for setting-up harmonised insurance guarantee schemes.
- Competent authorities in all Member States must have sufficient supervisory powers, including sanctions, to ensure the compliance of financial institutions with the applicable rules and should also be equipped with strong, equivalent and deterrent sanction regimes to counter all types of financial crimes.
- Concerning the 'parallel' banking system, it is recommended to (i) extend appropriate regulation to all firms or entities conducting financial activities of a potentially systemic nature, even if they have no direct dealings with the public at large; (ii) improve transparency in all financial markets by imposing registration and information requirements on hedge fund managers, concerning their strategies, methods and leverage, including their worldwide activities; and introduce appropriate capital requirements on banks owning or operating a hedge fund or being otherwise engaged in significant proprietary trading and to closely monitor them.
- There is a need to simplify and standardise over-the-counter derivatives, and introduce and require the use of at least one well-capitalised central clearing house for credit default swaps.
- Common rules for investment funds concerning definitions, codification of assets and rules for delegation need to be further developed and accompanied by tighter supervisory control over the independent role of depositories and custodians.

Equipping Europe with a Consistent Set of Rules

- Member States and the European Parliament should avoid in the future legislation that permits inconsistent transposition and application. This would improve the functioning of the single financial market; reduce distortions of competition and regulatory arbitrage; or improve the efficiency of cross-border financial activity in the EU.

Corporate Governance

- Compensation incentives must be better aligned with shareholder interests and long-term firm-wide profitability based on the recommended principles. Supervisors should oversee suitability of financial institutions' compensation policies, require changes where compensation policies encourage excessive risk-taking and, where necessary, impose additional capital requirements under Pillar 2 of Basel II.
- Internal risk management must be made independent and responsible for effective, independent stress testing. Internal risk assessment and proper due diligence must not be neglected by over-reliance on external ratings. Supervisors should be called upon to frequently inspect financial institutions' internal risk management systems.

Crisis Management and Resolution

- A transparent and clear framework for managing crises should be developed by equipping all relevant authorities in the EU with appropriate and equivalent crisis prevention and intervention tools, and removing legal obstacles for using the tools.
- Deposit Guarantee Schemes in the EU should be harmonised and preferably be pre-funded by the private sector and provide high, equal protection to all bank customers.

Supervisory Repair

- A European Systemic Risk Council (ESRC) should be set up under the auspices of the ECB in order to pool and analyse all information relevant for financial stability that pertains to macroeconomic conditions and to macro-prudential developments in all the financial sectors.
- An effective risk-warning system should be put in place under the auspices of the ESRC and the Economic and Financial Committee (EFC).The ESRC should prioritise and issue macro-prudential risk warnings with mandatory follow-up and, where appropriate, action shall be taken by the relevant competent authorities in the EU.
- The European System of Financial Supervisors (ESFS) should be set up on a decentralised network. Three new European Authorities would be set up, replacing CEBS, CEIOPS and CESR, to co-ordinate the application of supervisory standards and guarantee strong co-operation between the national supervisors; colleges of supervisors would be set up for all major cross-border institutions. The ESFS will need to be independent of the political authorities, but be accountable to them.

Global Repair

- The Financial Stability Forum (FSF), in conjunction with international standard-setters like the Basel Committee

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of Banking Supervisors, should be put in charge of promoting the convergence of international financial regulation to the highest level benchmarks as it is important that the FSF is enlarged to include all systemically important countries and the European Commission. It should receive more resources and its accountability and governance should be reformed by more closely linking it to the IMF. The FSF should regularly report to the IMF's International Monetary and Financial Committee (IMFC) about the progress made in regulatory reform in implementing the lessons from the current financial crisis. The IMFC should be transformed into a decision-making Council, in line with the Articles of the IMF Agreement.

Enhancing Co-operation among Supervisors

- The colleges of supervisors for large complex cross-border financial groups currently being set up at the international level should carry out robust comprehensive risk assessments and pay greater attention to banks' internal risk management practices and should agree on a common approach to promoting incentive alignment in private sector remuneration schemes *via* Pillar 2 of Basel II. The FSF should ensure coherent global supervisory practice between the various colleges and promote best practices.

Macroeconomic Surveillance and Crisis Prevention

- The IMF, in close co-operation with the FSF, the BIS, central banks and the European Systemic Risk Council (ESRC), should be put in charge of developing and operating a financial stability early warning system, accompanied by an international risk map and credit register. All IMF member countries should commit themselves to support the IMF in undertaking its independent analysis (including the FSAP).
- The IMF and the FSF, in co-operation with other relevant international bodies, should assess the existing regulatory standards in financial centres, monitor the effectiveness of existing mechanisms of enforcing international standards and recommend more restrictive measures where standards are considered to be insufficient.

Crisis Management and Resolution

- EU Member States should show their support for strengthening the role of the IMF in macroeconomic surveillance and contribute towards increasing the IMF's resources in order to strengthen its capacity to support member countries facing acute financial or balance of payment distress.

European Governance at the International Level and Deepening the EU's Bilateral Financial Relations

- A coherent EU representation in the new global economic and financial architecture should be organised. This could imply a consolidation of the EU's representation in the IMF and other multilateral fora. In its bilateral relations, the EU should intensify its financial regulatory dialogue with key partners.

4.114 The European Commission on September 23, 2009 unveiled the final version of its ambitious reforms for the region's regulatory and supervisory framework based on the proposals made by the de Larosière report of February 2009. The European Commission is currently reviewing the Lamfalussy Process and the banking supervisory arrangements. The European Parliament is closely monitoring all ongoing developments in different fora and a number of legislative proposals are already lined up.

4.115 The report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System (September 2009) identified that much of the effort to co-ordinate international economic policy has focused on putting constraints on countries whose behaviour is not systemically significant, while doing little about countries whose policies can have systemically significant consequences (Box IV.14). Furthermore, it was emphasised that international liquidity has to become gradually less dependent on the monetary policies of a few countries that issue reserve currencies. Developed countries, in particular, need to become aware of the consequences of their negative externalities, and developing countries need frameworks to help protect them from regulatory and macroeconomic failures in the major industrialised countries.

4.116 The global financial crisis demonstrated that the collective response must occur in a coordinated and timely fashion that will not harm market or confidence. In this context, the G-20 Working

Box IV.14

Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System (Chairman: Joseph E. Stiglitz)

Following the outbreak of the financial crisis in 2008, the President of the United Nations General Assembly established a Commission of Experts whose mandate was to reflect on the causes of the crisis, assess impacts on all countries and suggest adequate responses so as to avoid its recurrence and restore global economic stability. The Report released in September 2009 provides an outline of some of the reforms that will help to move in the right direction for global economic governance. In the context of reforms in international institutions, the salient points emerging from the Report are as follows:

- Attention needs to be paid to the policies and philosophies underlying the operations of international institutions. Without substantial reform of international institutions, it will be difficult to ensure financial stability.
- In addition to the need for substantial reforms in existing institutions, there is also a need to create a new institution in the longer term, *viz*., the Global Economic Co-ordination Council (GECC), to be supported by an International Panel of Experts. The Council could be at a level equivalent with the UN General Assembly and the Security Council. Its mandate would be to assess developments and provide leadership in addressing economic issues that require global action, while taking into account social and ecological factors. Based on this mandate it would promote development, seek consistency of policy goals and policies of major international organisations, and support consensus building among governments on efficient and effective solutions for global economic, social, and environmental issues. Its work would go beyond simply the co-ordination of existing institutions. With the support of the Panel of Experts, the GECC could also promote accountability of all international economic organisations, identify gaps that need to be filled to ensure the efficient operation of the global economic and financial system, and make proposals to the international community for remedying deficiencies in the current system.
- As an immediate step, the International Panel of Experts should be tasked with the assessment and monitoring of both short-term and long-term systemic risks in the global economy. The panel could serve as an internationally recognised source of expertise in support of better coherence and effectiveness in the global governance system, fostering dialogue between policymakers, the academic world, international organisations, and recognised social movements. The Panel should establish criteria for the identification of systemic risks and issue recommendations as to preventive measures and sound economic policymaking. The panel could thereby also play an important "early-warning function", the need for which has been noted by the G-20 and others.
- The current crisis reflects problems that go beyond the conduct of monetary policy and regulation of the financial sector. It has been made clear that globalisation of trade and finance need enhanced global co-operation and global regulation.
- Given the greater scope of externalities due to greater economic globalisation, there is a need for global collective action to address not only the issues of global 'externalities' but also the provision of global public goods. Among the global public goods are the stability of the global economic system and fair trading rules.
- While the financial crisis has brought to the fore severe structural lacunae in the existing global economic governance structure, in particular the lack of incentives for global collective action and the failure of the institutional framework to ensure consistency in global policy making, many of the problems have long been apparent. There is a pressing need for a substantial improvement in the co-ordination of global economic policy.
- The IMF and the Multilateral and Regional Development Banks continue to have a very important role in the international economic financial architecture. For the IMF to be fully effective, both in addressing the crisis in the short run and in promoting growth and stability in the long run, there have to be substantial reforms, not only in governance but also in the policies that it has traditionally espoused.
- There is a need for independent and even-handed macroeconomic surveillance. The IMF has not implemented its mandate consistently and even-handedly. Surveillance should pay special attention to those countries and sectors that are systemically important, including the financial sectors in the U.S. and Europe. It should also address the adequacy of the "circuit breakers" that might prevent the contagion of a problem in one country from spreading to another.
- The governance reforms have to be based on a joint understanding of the respective mandates and a common understanding of the strategic directions of the respective institutions. Better voice and representation of developing countries in IFIs must, therefore, be high on the agenda. Governance reform must strengthen, in particular, the weight of low-income countries.
- In order to address the issue of voting imbalance in the IMF, double majority voting (*e.g.*, shares and chairs) should be extended to the selection of the Managing Director and the chair of the IMF Committee, as well as for key policy decisions and approval of access to lending

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operations. At the same time, the reform must consider eliminating effective veto powers over decisions to amend the Articles of Agreement. Consideration should be given to alternative forms of double majority (*e.g.*, developed and developing countries).

- As regards the governance reforms in the World Bank, the first stage of voice reform should be implemented rapidly. The doubling of basic votes and a third African seat on the Board will increase the influence of developing countries. The second stage, focusing on a reform of quotas, should be accelerated and completed by the Spring Meetings in 2010.
- In April 2009, the Financial Stability Forum (FSF) was re-established as the Financial Stability Board (FSB) and needs a marked departure from the stance of the FSF. Making marginal changes to the regulatory structure would neither ameliorate the current situation nor be effective in preventing future crises. Deeper reforms in the FSB must, accordingly, address deficiencies in its governance, mandate, and economic perspectives.
- The task of ensuring coherence in regulatory principles among national authorities must be undertaken by international standard-setting bodies. International financial regulation will require co-ordination beyond central banks (the major constituency of the BIS) and must include securities and corporate regulators as well as accounting standards among its key priorities.
- The lack of accountability of important, private standard-setting bodies is an additional area of concern. Private entities such as the International Accounting Standards Board (IASB) and the International Organization of Securities Commissions (IOSCO) develop, for instance, standards for cross-border regulation that have systemic impacts on the international financial system, yet they are exempt from any political accountability. .
- Taking cognisance of protectionist measures undertaken by many countries in the wake of the crisis, it is necessary that the WTO should systematically assess the policies conducted by member States in the framework of their stimulus and recovery packages, giving adequate attention to the consistency of the letter and spirit of WTO agreements, the exigencies of the situation, and adverse effects, especially on developing countries. We need to avoid at all costs a return to the beggar-thy-neighbour policies that the creation of the WTO was intended to prevent.

Group 2 submitted its report on March 10, 2009 highlighting various areas of international policy co-ordination which need to be addressed in a short- to medium-term perspective (Box IV.15).

4.117 While the epicentre of the crisis was continuously making efforts to come to grips with the emerging situation, the gaps and weaknesses in the supervision and regulation of financial firms presented challenges to the US government's ability to monitor, prevent, or address risks as they built up in the system. Though measures were being announced continuously, a comprehensive financial sector plan was unveiled by the US as late as June 2009 (Box IV. 16).

Box IV.15
G-20 Working Group 2: Reinforcing International Cooperation and Promoting Integrity in Financial Markets

The Working Group 2 was tasked by the G-20 troika to develop proposals to enhance international cooperation and co-ordination in the regulation and oversight of international financial markets, improve the management and resolution of cross-border financial crises and protect the global financial system from illicit activities and non-cooperative jurisdictions. Working Group 2 was asked to undertake work on: i) regulatory and supervisory cooperation, ii) IMF/FSF collaboration and iii) promoting market integrity.

Regulatory and supervisory cooperation

Immediate actions:

Supervisory colleges: Supervisors should collaborate to establish supervisory colleges for all major cross-border financial institutions, as part of efforts to strengthen the surveillance of cross-border firms. Major global banks should meet regularly with their supervisory college for comprehensive discussions of the firm's activities and assessment of the risks it faces.

Information sharing arrangements: National and regional authorities should work to promote information sharing about domestic and cross-border threats to market stability and ensure that national (or regional, where applicable) legal provisions are adequate to address these threats.

Cross-border crisis management: Regulators should take all steps necessary to strengthen cross-border crisis management arrangements, including on co-operation and communication with each other and with appropriate

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authorities, and develop comprehensive contact lists and conduct simulation exercises, as appropriate. In accordance with the action plan item, the Financial Stability Forum (FSF) has agreed on a set of principles for cross-border co-operation on crisis management.

Medium-term actions:

Resolution regimes and bankruptcy laws: National and regional authorities should review resolution regimes and bankruptcy laws in light of recent experience to ensure that they permit an orderly wind-down of large complex cross-border financial institutions. It is underscored to develop an international framework for cross-border bank resolutions, and to address the issue of ring-fencing and financial burden-sharing. It is also recommended that the FSF and the BCBS explore the feasibility of common standards and principles as guidance for acceptable practices for cross-border resolution schemes, thereby helping reduce the negative effects of uncoordinated national responses, including ring-fencing.

Convergence in regulatory practices: Authorities, drawing especially on the work of regulators, should collect information on areas where convergence in regulatory practices such as accounting standards, auditing, and deposit insurance is making progress, is in need of accelerated progress, or where there may be potential for progress.

Exit strategies: Authorities should ensure that temporary measures to restore stability and confidence have minimal distortions and are unwound in a timely, well-sequenced and co-ordinated manner.

The Role of International Bodies: IMF/FSF collaboration:

Immediate actions:

FSF membership: The FSF should expand to a broader membership of emerging economies. It is important that the FSF continues to be effective in promoting international financial stability. Thus, the mandate of the expanded FSF should be enhanced, in particular, to monitoring the implementation of the FSF and G-20 recommendations in close cooperation with the IMF.

IASB governance: With a view to promoting financial stability, the governance of the international accounting standard-setting body should be further enhanced, including by undertaking a review of its membership, in particular in order to ensure transparency, accountability, and an appropriate relationship between this independent body and the relevant authorities.

IMF-FSF collaboration: The IMF, with its focus on surveillance, and the expanded FSF, with its focus on standard setting, should strengthen their collaboration, enhancing efforts to better integrate regulatory and supervisory responses into the macro-prudential policy framework and conduct early warning exercises.

Drawing lessons: The IMF, given its universal membership and core macro-financial expertise, should, in close co-ordination with the FSF and others, take a leading role in drawing lessons from the current crisis, consistent with its mandate.

Medium-term actions:

Regulatory responsiveness to financial innovation: International standard-setting bodies, working with a broad range of economies and other appropriate bodies, should ensure that regulatory policy makers are aware and able to respond rapidly to the evolution and innovation in financial markets and products.

Asset prices: Authorities should monitor substantial changes in asset prices and their implications for the macro-economy and the financial system.

Promoting market integrity

Immediate actions:

Protection against market manipulation and fraud: National and regional authorities should also review business conduct rules to protect markets and investors, especially against market manipulation and fraud and strengthen their cross-border cooperation to protect the international financial system from illicit actors. In case of misconduct, there should be an appropriate sanctions regime. It is encouraged that the IOSCO continue its work on cross-border enforcement-related co-operation through its Multilateral Memorandum of Understanding Concerning Consultation and Cooperation and the Exchange of Information (IOSCO MMoU) and also urge all firms to uphold high standards of business conduct.

Medium-term actions:

Uncooperative and non-transparent jurisdictions that pose risks of illicit financial activity: National and regional authorities should implement national and international measures that protect the global financial system from uncooperative and non-transparent jurisdictions that pose risks of illicit financial activity.

Financial Action Task Force: The Financial Action Task Force should continue its important work against money laundering and terrorist financing, and it is by supported the efforts of the World Bank – UN Stolen Asset Recovery (StAR) Initiative.

Tax information exchange: Tax authorities, drawing upon the work of relevant bodies such as the Organisation for Economic Cooperation and Development (OECD), should continue efforts to promote tax information exchange. Lack of transparency and a failure to exchange tax information should be vigorously addressed.

Box IV.16
US Administration's Financial Sector Plan

On June 17, 2009, the Obama administration outlined its much-anticipated framework for financial regulatory reform (the "Financial Reform Plan" or "Plan") in its release "Financial Regulatory Reform, A New Foundation: Rebuilding Financial Supervision and Regulation" and the accompanying fact sheets. Introducing the Plan, President Obama emphasised on creating a framework in which markets can function freely and fairly, without the fragility in which normal business cycles suddenly bring the risk of financial collapse. The major highlights of the plan include greater focus on systemic risks, higher capital and liquidity requirements for financial institutions, tougher regulation of systemically important financial institutions, expanded "resolution authority" for regulators to take over troubled financial institutions, modest consolidation of regulatory functions, new regulations for securitisations and derivatives, stronger consumer protections led by a new Consumer Financial Protection Agency and greater international co-ordination.

Systemic regulation: In order to address perceived gaps in the consolidated oversight of the financial industry, the first part of the Financial Reform Plan focuses on reforming the current oversight structure by, *inter alia*, (i) creating a new Financial Services Oversight Council, (ii) providing new authority to the Board of Governors of the Fed to regulate systemically important financial institutions, regardless of whether those institutions own banks or other insured depository institutions, (iii) consolidating the Office of the Comptroller of the Currency (OCC) and the Office of Thrift Supervision (OTS) into a single National Bank Supervisor (NBS), (iv) requiring advisers to hedge funds and other private pools of capital to register with the Securities and Exchange Commission (SEC), (v) revising the regulation of money market mutual funds to avoid circumstances that can create runs on such funds and (vi) creating a new Office of National Insurance (ONI) to work toward international co-operation in the regulation of the insurance industry.

Higher capital and other prudential requirements: With respect to capital requirements, the Plan proposed to review issues including reducing pro-cyclicality, increases on capital requirements for high-level investments and exposures, with simpler leverage measures with respect to supervision of banks and BHCs.

Tougher regulation of systemically important financial institutions: A newly designated group of Tier 1 Financial Holding Companies (Tier 1 FHCs) as 'any firm whose combination of size, leverage and interconnectedness could pose a threat to financial stability if it failed' would be established by the Fed, in consultation with the FSOC. These entities would be required to hold more capital and bear additional restrictions not applicable to other financial institutions.

New regulations for securitisations and derivatives: The Financial Reform Plan recommends a number of significant changes relating to the asset-backed securities market. The federal banking agencies would be required to mandate that loan originators or sponsors retain 5 per cent of the credit risk of securitised exposures. The administration proposes that the compensation of brokers, originators, sponsors, underwriters and others involved in the securitisation process should be linked to the longer-term performance of the securitised assets, rather than only to the production, creation or inception of those products. The issuers of asset-backed securities would also be required to disclose loan-level data as well as the nature and extent of broker, originator and sponsor compensation for each securitisation.

Stronger consumer protections: The administration has proposed creating a new federal agency – Consumer Financial Protection Agency (CFPA) – responsible for all aspects of regulation of mortgages, credit cards, and other consumer-focused financial products, with a few exceptions, such as mutual funds, which are left with the SEC. Agencies that currently have rule-making power, other than the Federal Trade Commission (FTC), would be stripped of that authority.

Expanded resolution authority: Federal regulators have much less authority to deal with troubled financial institutions other than bank-holding companies, with the level of authority falling to zero for insurers or hedge funds. While the Financial Reform Plan indicates that the regime should be modelled on the FDIA scheme for the resolution of insured depository institutions, it does not provide any details beyond that.

Greater international co-ordination: Finally, the Plan also highlighted the need for greater international regulatory co-operation.

The proposals are comprehensive, though in certain areas they stop short of a full solution. Nonetheless, these proposals could prove vital for reviving the financial system of the US which has been attributed with the genesis of the financial crisis.

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4.118 The crisis has had an impact on the formulation of financial sector policies and the design of regulatory frameworks, not only in advanced countries, but also in EMEs. This was mainly due to the direct knock-on effects of the crisis on EMEs, changes to the 'rules of the game' introduced by standard-setting bodies (FSF, BCBS, IAIS, IASB, IOSCO, *etc.*) and demonstration effects related to the policy measures being implemented by developed countries (World Bank, 2008). The progress so far in revisiting the financial sector policies is discussed in separate sub-sections below.

Capital Adequacy and Risk Management

4.119 The recent crisis has reinforced the importance of maintaining strong capital positions at banks and other key financial institutions, and improving their risk management practices. The capital levels of banks took a beating in the post-crisis period, especially in advanced countries. The bail-out packages, however, helped in restoring their capital and, by October 2009, banks in almost all regions have achieved a degree of stability in their capital positions (GFSR, October 2009). Following the stress test conducted by US authorities, capital markets were re-opened to US banks. Around US$ 104 billion of capital was raised during the first half of 2009, taking their Tier 1 capital to around 11.5 per cent of risk-weighted assets (RWA).

4.120 The review of the current regulatory capital framework has been carried forward to ensure that banking organisations have a level of capital sufficient to facilitate lending, while also ensuring safe and sound operations throughout the economic cycle. As far as capital adequacy is concerned, the key issues being examined in various international fora are: (i) increasing the quantity and quality of bank capital; ii) significant increases in trading book capital; iii) avoiding pro-cyclicality in Basel II implementation; iv) creating counter-cyclical capital buffers; v) offsetting pro-cyclicality in published accounts; vi) a gross leverage ratio backstop; and vii) containing liquidity risks in individual banks and at the systemic level. While the future design of prudential norms for banks and financial institutions is being contemplated, the progress in adopting Basel II into national regulatory frameworks continues at a reasonable pace. The Basel Committee on Banking Supervision (BCBS) remains on schedule to issue a fully calibrated, comprehensive set of proposals by the end of 2010. In July 2009, the BCBS proposed enhancements under Pillar 1, Pillar 2 and Pillar 3 with a view to improving resilience to future episodes of stress (Box IV.17). Following the release of the July 2009 trading book reforms, the BCBS has also initiated a fundamental review of the trading book, with a view to issuing concrete proposals for public consultation in the first half of 2011. The BCBS is developing concrete proposals to substantially strengthen the quality, consistency and transparency of capital, which will be finalised by end-2010.

4.121 As regards the pro-cyclicality of capital standards, work is underway to develop an approach that would allow banks to retain more capital in good economic times and to allow this excess or buffer to be reduced as the economic cycle worsens. The goal is to have a level of capital that is sufficient to support lending, while maintaining safety and soundness. The FSB has initiated different work streams directed at reducing pro-cyclicality in the financial system. An agreement was also reached by the BCBS in September 2009 to introduce a framework for counter-cyclical capital buffers over and above the minimum requirement. The framework will include capital conservation measures, such as constraints on capital distributions, and review of an appropriate set of indicators, such as earnings and credit-based variables, as a way to condition the build-up and release of capital buffers.

4.122 The BCBS has strengthened guidance for use in the Pillar 2 supervisory review process of the Basel II framework to address key lessons of the crisis. The BCBS issued principles for sound stress-testing practices and supervision in May 2009. National authorities have also strengthened their guidelines for risk management practices following the shift to Basel II. They are also taking steps to encourage firms to improve and develop risk management and stress-testing.

Box IV.17
Enhancements to the Basel II Framework

The Basel Committee on Banking Supervision (BCBS) announced proposals for enhancing the Basel II framework on July 13, 2009. The Committee announced strengthening the treatment for certain securitisations in Pillar 1 (minimum capital requirements). It also introduced higher risk weights for resecuritisation exposures to better reflect the risk inherent in these products and has proposed that banks conduct more rigorous credit analyses of externally-rated securitisation exposures.

The supplemental Pillar 2 (supervisory review process) guidance addresses several notable weaknesses that have been revealed in banks' risk management processes during the financial turmoil that began in 2007. These include: firm-wide governance and risk management; capturing the risk of off-balance sheet exposures and securitisation activities; managing risk concentrations; providing incentives for banks to better manage risk and returns over the long term; and sound compensation practices.

The Pillar 3 (market discipline) requirements have been strengthened in several key areas, including securitisation exposures in the trading book; sponsorship of off-balance sheet vehicles; resecuritisation exposures; and pipeline and warehousing risks with regard to securitisation exposures.

Banks and supervisors are expected to begin implementing the Pillar 2 guidance immediately. The new Pillar 1 capital requirements and Pillar 3 disclosures should be implemented no later than December 31, 2010.

The Group of Central Bank Governors and Heads of Supervision (GHOS), the oversight body of the BCBS, met on September 6, 2009 to review a comprehensive set of measures to strengthen the regulation, supervision and risk management of the banking sector with a view to substantially reduce the probability and severity of economic and financial stress. The GHOS reached agreement on a number of key measures to strengthen the regulation of the banking sector, such as raising the quality, consistency and transparency of the Tier 1 capital base, introducing a leverage ratio as a supplementary measure to the Basel II risk-based framework with a view to migrating to a Pillar 1 treatment based on appropriate review and calibration, ensuring comparability fully adjusting for differences in accounting, introducing a minimum global standard for funding liquidity that includes a stressed liquidity coverage ratio requirement underpinned by a longer-term structural liquidity ratio, and introducing a framework for counter-cyclical capital buffers above the minimum requirement.

The GHOS endorsed the following principles to guide supervisors in the transition to a higher level and quality of capital in the banking system:

- Building on the framework for counter-cyclical capital buffers, supervisors should require banks to strengthen their capital base through a combination of capital conservation measures, including actions to limit excessive dividend payments, share buybacks and compensation.
- Compensation should be aligned with prudent risk-taking and long-term, sustainable performance, building on the Financial Stability Board (FSB) sound compensation principles.
- Banks will be required to move expeditiously to raise the level and quality of capital to the new standards, but in a manner that promotes stability of national banking systems and the broader economy.

The framework would include capital conservation measures such as constraints on capital distributions. BCBS would review an appropriate set of indicators, such as earnings and credit-based variables, as a way to condition the build-up and release of capital buffers. In addition, the Committee would promote more forward-looking provisions based on expected losses. The Committee would also assess the need for a capital surcharge to mitigate the risk of systemic banks.

Supervisors would require to ensure that the capital plans for the banks in their jurisdiction are consistent with these principles.

References:

1. BIS. 2009. "Comprehensive Response to the Global Banking Crisis". Press Release dated September 7.
2. BIS. 2009. "Basel II Capital Framework Enhancements Announced by the Basel Committee". Press Release dated July 13.

4.123 The Basel Committee's revised principles for sound liquidity risk management (2008), are being incorporated into new inter-agency guidance in the US that re-emphasises the importance of rigorous stress testing to determine adequate liquidity buffers. Two major consultation papers were published in December 2009 on *International Framework for Liquidity Risk Measurement, Standards and Monitoring* and *Strengthening the Resilience of the Banking Sector*. Alongside the consultation, the BCBS is undertaking a comprehensive "bottom-up" quantitative impact assessment (QIS) of how much

minimum capital requirements will increase due to the reform proposals, as well as a detailed "top-down" assessment, which will determine the overall calibration of the new regulatory standards for capital and liquidity. Reports on the bottom-up QIS and the top-down calibration assessments will be reviewed by the BCBS in mid-July 2010. In addition, a joint FSB-BCBS Macroeconomic Assessment Group has been established under the chairmanship of BIS to assess the macroeconomic implications of the implementation of the reform proposals, in close collaboration with the IMF. The macroeconomic impact study will inform the development of the phase-in period of the new standards such that it does not impede the recovery of the real economy.

4.124 Internationally, the Financial Stability Board has called for significantly stronger capital standards, and the G-20 has committed to developing rules to improve both the quantity and quality of bank capital. Reforming the accounting standards and making it consistent across nations emerged as another priority task.

Accounting Standards

4.125 The role that accounting played during the crisis has been widely analysed and recommendations to strengthen accounting standards and the standard-setting process have been put forward. Although accounting conventions were not the cause of the financial crisis, certain accounting measures, such as the use of fair value accounting for illiquid financial instruments and the impairment model for loans and debt securities, have been viewed as weak areas. Standard setters responded by providing guidance on the determination of fair values in the stressed market environment and the determination of financial instrument impairment (Box IV.18). On the issue of

Box IV.18
FASB and IASB Approaches

Standard setters are now actively engaged in a discussion of the appropriate accounting principles for measuring financial instruments. The Generally Accepted Accounting Principles (GAAP) includes the US Financial Accounting Standards Board (FASB), and the International Accounting Standards Board (IASB), which issues International Financial Reporting Standards (IFRS). Many other countries have instituted local standards resulting in a local country GAAP. Currently, FASB and IASB are pursuing measurement approaches that diverge in important ways.

As regards *fair value measurement,* the IASB and FASB have initiated work to arrive at a convergence. In November 2009, the IASB issued IFRS 9, *Financial Instruments*, on classification and measurement of financial assets that establishes a mixed amortised cost and fair value accounting model. In response to comments from stakeholders, the IASB made changes to the approach set forth in its July 2009 exposure draft (ED). IASB has also issued an Exposure Draft on Classification and Measurement of Financial Liabilities in May 2010. Although the two standard setters are developing separate proposals for their revised financial instruments standards, they have expressed the intention of collaborating in their work. FASB and the IASB will consider together the comments received on the financial instruments EDs issued by the two Boards.

As regards expected loss provisioning for financial assets, the IASB also issued for public comment an ED. The FASB will explain its credit loss impairment approach in its comprehensive ED in the second quarter of 2010. However, the approach towards expected loss provisioning by both the Boards are also not similar in nature. In view of the above, the two bodies have established an Expert Advisory Panel (EAP) on impairment to assist the Boards in addressing a number of practical issues associated with their respective credit impairment (provisioning) approaches.

The BCBS has been discussing with the IASB and EAP ways to further enhance the IASB's proposed expected loss approach in a manner that seeks to better integrate expected loss estimation processes with bank risk management systems, draw from information used for Basel II purposes, improve the quality of the expected loss estimates and mitigate risks of procyclicality while reducing undue burden on banks.

Thus, the evolution of a single set of global accounting standards is not an easy task though efforts towards this direction have been initiated by both IASB and FASB

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1. Duke, Elizabeth A. 2009. "Regulatory Perspectives on the Changing Accounting Landscape". AICPA National Conference on Banks and Savings Institutions. Washington D.C. September 14.
2. Financial Stability Board. 2010. "Progress since the St Andrews meeting in Implementing the G20 Recommendations for Strengthening Financial Stability". April.

financial accounting, a broad consensus is emerging that it should be simplified and made to converge globally.

4.126 In 2006, the IASB and the US Financial Accounting Standards Board (FASB) agreed a Memorandum of Understanding (MoU) that described a programme to achieve improvements in accounting standards, and substantial convergence between IFRSs and US generally accepted accounting principles (GAAP). The MoU was updated in 2008, and in November 2009 the two boards issued a further statement outlining steps for completing their convergence work by *June 2011*.

Compensation Reforms

4.127 Compensation practices, especially of large financial institutions, were one of the factors which contributed to the recent global financial crisis. The FSB brought out the *Principles for Sound Compensation Practices* (April 2009) and their *Implementation Standards* (September 2009) and launched in December 2009 a review of the steps taken by FSB member jurisdictions to implement the *Principles* and *Standards.* The review also covered progress to date in implementation by significant financial institutions. The review was concluded and published in March 2010. To maintain momentum, the FSB will conduct a further and more detailed review of implementation in the second quarter of 2011.

4.128 The BCBS issued *Compensation Principles and Standards Assessment Methodology* on January 22, 2010. The Methodology seeks to foster supervisory approaches that are effective in promoting sound compensation practices at banks and help support a level playing field.

The Securitisation Framework

4.129 The modern financial system has become dependent upon securitisation as an important intermediation tool. During the sub-prime crisis, most of the off-balance sheet vehicles (OBSVs) were motivated primarily by regulatory arbitrage, while others were created for tax avoidance reasons or to address the needs of governments and other public authorities for off-budget and off-balance sheet finance, generally to get around public deficit or debt limits (Buiter, 2008). The crisis highlighted the imperative of reforming the securitisation framework with a view to ensure: i) rigorous due diligence at the credit appraisal stage so as to rightly assess the amount of credit risks on low-quality/sub-prime counterparties; ii) the need to consider market disruption scenarios as well as institution-specific scenarios in liquidity planning; iii) the importance of reliable valuations and transparency of risk exposures; iv) sufficient recognition of residual risks in the structured products; and v) sufficient transparency and disclosure.

4.130 In July 2009, the BCBS issued final standards to raise capital requirements for re-securitisations, and enhanced risk management requirements around structured products and off-balance sheet activities. The BCBS is working to ensure that capital requirements for OTC derivatives adequately reflect the risks of derivatives, taking into account the benefits of central clearing and the impact of collateralisation and other counterparty credit risks. The new standards are expected to be issued by end of 2010.

4.131 The International Organisation of Securities Commissions (IOSCO) published a report on regulatory issues in September 2009 related to securitised products and credit default swaps (CDS). The report recommended regulatory approaches to be implemented in the securitisation markets. IOSCO also finalised in June 2009 its report on Good Practices in relation to Investment Managers Due Diligence when investing in Structured Finance Instruments. The recent G-20 agreement proposed retention of risk, or “skin-in-the-game” approach for asset securitisations. National and regional initiatives are also underway in some jurisdictions to introduce quantitative retention requirements for originators/sponsors of securitisations.

4.132 As for CDS standardisation, some of the major issues have already been addressed by the industry. The International Swaps and Derivatives

Association published two supplements to its 2003 Credit Derivatives Definitions (the "Big Bang" and "Small Bang" protocols) in April and in July 2009. Initiatives to promote the establishment of central clearing counterparties for CDS contracts is gathering pace, with an initial focus on CDS indices. A number of CDS clearinghouses have already begun operations.

4.133 The OTC Derivatives Regulators' Forum was established in September 2009, thus putting on a more formal basis the arrangements already underway for cooperation and information sharing on OTC derivatives, central counterparties and trade repositories, including promoting globally consistent oversight. With a view to better address risks associated with the central clearing of OTC derivatives, the Committee on Payment and Settlement Systems (CPSS) of BIS and IOSCO have created a joint working group that is revising the standards set out under the *Recommendations for Central Counterparties* which was jointly published in March 2004. Centralised reporting platforms such as Trade Information Warehouse (TIW) of the Depository Trust and Clearing Corporation (DTCC) have been set up to collect the information relating to OTC derivatives to enable higher transparency. The New York Fed has long spearheaded efforts to create a global central counterparty for the industry. The European Union is also pushing for a separate OTC derivatives counterparty for the region.

4.134 Apart from the securitisation framework, the role of credit rating agencies in understating the risk of many financial products and papers, and misleading investors came under severe criticism during the crisis.

Reforming the Credit Rating Agencies

4.135 The complexity of financial instruments and their pace of issue – specially asset-backed securities and structured finance products – over the past decade made the rating business more profitable, but also more difficult. In the end, the rating agencies inadvertently contributed to the build-up of systemic risk by issuing unrealistically high ratings (BIS, Annual Report, 2009).

4.136 National and regional initiatives are ongoing to strengthen oversight of credit rating agencies (CRAs). The European Commission (EC) has taken steps to supervise CRAs in Europe. The EC proposals constitute a first and necessary step towards global supervision of credit rating agencies in the years to come. The updated provisions of the IOSCO Code of Conduct Fundamentals for CRAs published in March 2009 have been adopted by several CRAs into their codes of conduct. Regulators are working, including through IOSCO, to evaluate whether national and regional regulatory initiatives are consistent with the IOSCO Principles and Code of Conduct Fundamentals. They are also identifying whether divergences between initiatives might cause conflicting compliance obligations for credit rating agencies working together towards appropriate and globally compatible solutions by 2010.

4.137 In response to the FSB and G20 recommendations to review the use of ratings in the regulatory and supervisory framework, the BCBS is working to address a number of inappropriate incentives arising from the use of external ratings in the regulatory capital framework.

4.138 The G-30 has proposed revision in regulatory policies with regard to Nationally Recognised Securities Rating Organisations (NRSROs) and the use of ratings, with a view to achieving the following: (i) users of risk ratings, most importantly regulated users, should be encouraged to restore or acquire the capacity for independent evaluations of the risk of the credit products in which they are investing; (ii) risk ratings issued by the NRSROs should be made more robust to reflect the risk of potential valuation losses arising not just from default probabilities and loss in the event of default, but also from the full range of potential risk factors (including liquidity and price volatility); and (iii) regulators should encourage the development of payment models that improve the alignment of incentives among the providers of risk ratings and their clients and users, and permit users to hold NRSROs accountable for the quality of their work product.

4.139 Apart from the insufficient regulation and supervision of the structured products and credit rating agencies, the build-up of excessive systemic risk has been identified as a prominent cause of the crisis. The focus has been on institution-wide risk at the expense of systemic risk.

Addressing Systemic Risk

4.140 The starting point for building a comprehensive framework that safeguards financial stability is to identify the sources of systemic risk in each of the three elements of the financial system, *viz*., instruments, markets and institutions. In order to deal with the problem of a porous regulatory perimeter, no part of the financial system should be allowed to escape appropriate regulation. From a supervisory perspective, the unregulated segments were huge 'black holes', including what has been called a 'shadow banking system' where most of the excesses of securitisation took place (Dewatripont *et al*., 2009). The regulatory gaps in which the unregulated entities operate are being identified so that the systemically-important regulated entities are not put to undue risk by the activities of the unregulated entities (Box IV.19).

4.141 Two important themes have emerged from these efforts. First, the importance of effective consolidated supervision, particularly at large, complex organisations, has been reaffirmed so that supervisors can properly understand risks and exposures that cross legal entities and business lines. Second, the significance of a system-wide, or macro-prudential, perspective with firm-specific risk analysis to better anticipate problems that may arise from the interactions of firms and markets has been recognised. To support these approaches, the supervisory processes are being restructured to include analyses that draw on multiple disciplines, updated surveillance tools and more timely information, so that supervisors can identify emerging risks sooner and respond more effectively.

Systemically Important Financial Institutions (SIFIs)

4.142 The FSB has been working with its members to develop in a comprehensive and consistent framework to address the moral hazard

Box IV.19
Expanding the Scope of Financial Regulation

The Joint Forum, composed of the BCBS, IAIS and IOSCO, is analysing regulatory gaps in order to help ensure that the scope and the nature of financial regulation are appropriate. In January 2010, the Joint Forum, composed of the BCBS, IAIS and IOSCO, published its report on the Differentiated Nature and Scope of Financial Regulation. While the report covers a broad waterfront, the recommendations are focused on five key areas: (i) Key regulatory differences across the banking, insurance and securities sectors; (ii) Strengthening supervision and regulation of financial groups; (iii) Promoting consistent and effective underwriting standards for mortgage origination; (iv) Broadening the scope of regulation to hedge fund activities; and (v) Strengthening regulatory oversight of credit transfer products.

For the insurance sector, the International Association of Insurance Supervisors (IAIS) published on April 12, 2010, a guidance paper on treatment of non-regulated entities in group-wide supervision sector. The IAIS is also researching the design and practicality of a common assessment framework for insurance group supervision. Finally, the IAIS is currently preparing a new *Roadmap for standard setting within the framework for insurance supervision* which aims at setting out the policy direction and priorities for all IAIS standard-setting activities within the Framework for Insurance Supervision over the two-year period commencing January 1, 2010. The IAIS has launched a consultation process among its members in order to raise the issue of what standard-setting initiatives should be undertaken in respect of supervisory review, reporting and assessment within the timeframe of this Roadmap.

IOSCO, which is a member body of the FSB, published in June 2009 a set of high-level principles for hedge fund regulation. The six principles include requirements on mandatory registration, regulation and provision of information for systemic risk assessment purposes. They also state that regulators should co-operate and share information to facilitate efficient and effective oversight of globally active hedge fund managers/hedge funds. IOSCO will continue its work in this area. National and regional initiatives are also underway in key jurisdictions.

A number of initiatives are also underway at the national level to review the adequacy of domestic regulation and fill identified regulatory gaps, including as part of broader financial sector reform proposals.

arising from SIFIs. The IMF/BIS/FSB joint paper issued in October 2009 set out a framework for assessing the systemic importance of a firm. The FSB will provide an interim report on this project including likely policy options in June 2010 and final recommendations in November 2010. Three main work streams identified in this regard relate to: (i) reducing the probability and impact of failure; (ii) improving the capacity to resolve firms in crisis; and (iii) reducing interconnectedness and contagion risks by strengthening the core financial infrastructures and markets. A private sector task force will release a report with recommendation on how to mitigate risks related to tri-party repo transactions in the first half of 2010.

Macro-prudential Regulation

4.143 The need for a wider range of macro-prudential tools, particularly those that will tend to limit *ex ante* the scope of systemic risk in time-series and cross-sectional terms, has come into prominence following the recent financial crisis. Since its origin in the late 1970s, the term 'macroprudential' has always denoted concerns over the financial system's stability and its link with the macroeconomy. In a narrow sense, macroprudential regulation refers to the use of *prudential* tools with the explicit objective of promoting the stability of the *financial system as a whole*, not necessarily of the individual institutions within it. It is, however, important to ensure an adequate balance between macro-prudential and micro-prudential regulation to control risks, and to develop the tools necessary to monitor and assess the build-up of macro-prudential risks in the financial system. Central banks and supervisors have responded to the crisis by strengthening micro-prudential regulation, in particular the Basel II framework, and work is ongoing towards the introduction of a macro-prudential overlay which includes a counter-cyclical capital buffer, as well as practical steps to address the risks arising from systemic, interconnected banks. Efforts to establish system-wide oversight and macro-prudential policy arrangements are ongoing at the national level, for example, through changes to institutional arrangements and reviewing the powers of relevant authorities. The BCBS has established a working group on macro-prudential supervision that will cover, *inter alia*, supervisory tools to address the externalities of systemically important banks.

4.144 The FSB and its members are developing quantitative tools to monitor and assess the build-up of macro-prudential risks in the financial system. These tools aim to improve the identification and assessment of systemically important components of the financial sector and the assessment of how risks evolve over time. The use of macro-prudential tools will require that authorities expand data collection on the financial system. The IMF and FSB have launched a joint initiative to identify and address data gaps and submitted a report outlining priorities and work plans to G-20 Finance Ministers and Central Bank Governors in November 2009.

Single versus Multiple Regulators

4.145 In light of the crisis, it is argued that there has been a downplaying of the importance of financial regulation in many advanced countries by divesting the central bank of the powers of regulation and supervision and bestowing those powers on a separate entity such as the Financial Services Authority (FSA) as in the UK. While the debate on the merits of single versus multiple regulators is still not settled, it needs to be recognised that market participants can sometimes arbitrage by providing different sets of information to different regulators, thus exploiting the information asymmetry problem among regulators. In the aftermath of the sub-prime crisis, there is an emerging view that if central banks have to discharge LOLR responsibilities in bailing out errant institutions that have shown 'irrational exuberance' in extending credit, they ought to have supervisory and regulatory powers over the balance sheets of these institutions. Even if the central bank does not have regulatory and supervisory responsibilities, it needs to have access to different sources of information across regulators such that the quality and accuracy of information can be monitored

regularly, even if it entails some duplication in terms of reporting to different regulators. As monetary stability and financial stability are mutually reinforcing, a single super-regulator can have an inherent advantage over multiple regulators working at cross-purposes.

4.146 In view of the above, Germany announced on October 9, 2009 that it would appoint the Bundesbank as the sole banking regulator, divesting the existing regulator BaFin of its responsibility for banking supervision. The National Bank of Georgia also regained supervision in December 2009 – 20 months after the establishment of the Georgian Financial Supervisory Agency in April 2008. On June 16, 2010 a major overhaul of the financial regulatory apparatus in the UK was announced which would be completed by 2012. Accordingly, the prudential oversight wing of the FSA will move inside the Bank of England, and a new Consumer Protection and Market Authority will be created.

4.147 The reforms in Europe's supervisory framework, which is outlined in the European Commission's communication of May 27, 2009, will see the creation of two new authorities: a European Systemic Risk Council (ESRC) and a European System of Financial Supervisors (ESFS). The ESRC, which will comprise the heads of each of the European Union's central banks and financial regulators, will conduct macro-prudential supervision to monitor and assess risks to the stability of the financial system as a whole, addressing the exposure of the financial system to interconnected, complex, sectoral and cross-sectoral systemic risks as highlighted by the crisis. The ESFS will be charged with firm-level or micro prudential supervision. According to the plan, the new framework would comprise a network of national financial supervisors working together with the new European supervisory authorities. The reforms will scrap the Committee of European Banking Supervisors, the Committee of European Insurance and Occupational Pensions Committee and the Committee of European Securities Regulators, with the new agencies performing their existing functions. The ESFS shall be responsible for linking national supervisors to form an operational European network.

Co-ordination in Strengthening the Global Financial Architecture

4.148 The recent turmoil in financial markets underscored the need for a higher degree of co-ordination among central banks and supervisors. From the start of the current crisis, it was clear that short-term measures to address liquidity and solvency have had to be complemented by actions to strengthen the system in the longer term. There are critical externalities in both the short-term and long-term response measures that call for international co-ordination. These longer-term actions have needed to address the cross-border effects of regulatory policies in order to assure the maintenance of a level playing field. The work to strengthen global systemic resilience has been proceeding with a degree of international co-operation and at a speed that would have been unthinkable only a year ago.

4.149 The FSF and the Bank for International Settlement (BIS) also made a series of recommendations for mitigating the impact of the crisis and improving the global financial system. In early April 2008, the G-7 countries ratified a comprehensive proposal made by FSF to be implemented over the next 100 days. The proposal covered steps to be taken on accounting and disclosure standards for off-balance sheet entities; and strengthening of risk management practices, supported by supervisors' oversight, including rigorous stress testing; and strengthening of capital positions as needed. In addition, the FSF made certain proposals for implementation by end-2008 which were supported by the International Monetary and Financial Committee (IMFC). Furthermore, the Economic and Financial Affairs Council (Ecofin) endorsed a programme of work on the recent market turbulence, focusing on broadly the same issues as the FSF. In addition, in May 2008, the Committee of European Securities Regulators (CESR) proposed the establishment of an international Standard Setting and Monitoring Body

(SSMB) at IOSCO to set standards of agencies together with the regulators. Compliance with these standards was to be monitored by the SSMB, *albeit* without the involvement of the agencies. This approach is claimed to be virtually a midway solution between self-regulation and sovereign regulation. A considerable degree of international consensus seems to be emerging on the key issues raised by the recent events.

4.150 The Financial Stability Board (FSB)[2] held its inaugural meeting on June 26-27, 2009, and has set up the internal structures needed to address its mandate. These new structures include a Steering Committee and three Standing Committees – for Assessment of Vulnerabilities; Supervisory and Regulatory Cooperation; and Standards Implementation. The FSB also established a Cross-border Crisis Management Working Group, and an Expert Group on non-cooperative jurisdictions. These groupings have all begun their work on the development of a mechanism for peer reviews, drawing on the experiences of other organisations and bodies, as well as the identification of priority themes and countries.

4.151 It has been realised that systemic risk associated with the operations of cross-border banks could be reduced only through international co-operation. Thus, work is in progress to implement the FSF Principles for Cross-border Cooperation on Crisis Management. Firm-specific cross-border contingency planning discussions took place in 2009 and are scheduled in the first half of 2010. The FSB Cross-border Crisis Management Working Group is preparing a list of the main elements to be included in contingency planning discussions, including a template for 'de-risking' plans to be prepared by the firms. De-risking plans will cover options the firms would need to consider to exit risky positions and scale back their activities in an orderly fashion and without government intervention.

4.152 The IMF, BIS and FSB have been working jointly on this aspect of response to the crisis. The objective has been ensuring that all systemically-important institutions, markets and instruments are subject to an appropriate degree of oversight and regulation. The FSB has developed a work program to propose by the end of October 2010 on possible approaches to address the "too big to fail" problems associated with systemically important financial institutions. It provided an interim report on this project, including likely policy options, to the June 2010 Summit of the G 20.

4.153 Two major international initiatives on bank resolution frameworks are also underway. The first is the Cross-Border Bank Resolution Group (CBRG) of the BCBS, and the second is the initiative by the IMF and the World Bank on the legal, institutional and regulatory framework for national bank insolvency regimes. The CBRG of the BCBS released its recommendations on cross-border bank resolution in March 2010. In parallel, the IMF is currently examining the principal legal and policy issues that arise in the insolvency of cross-border financial groups, and the approaches that could be taken in addressing them, and plans to lay out proposals for the design of an international framework guiding the insolvency of a cross-border financial group in early July 2010.

4.154 Supervisors have agreed to co-operate more closely in overseeing internationally active banks through such vehicles as supervisory colleges. So far, supervisory colleges have been established for more than 30 large complex financial institutions identified by the FSB as needing college arrangements. In March 2010, the BCBS released a consultative document on good practices on supervisory colleges to help both home and host supervisors by outlining expectations in relation to college objectives, governance, communication and information sharing. The FSB

[2] G-20 Leaders at the London Summit in April 2009 transformed the FSF into the Financial Stability Board (FSB), with an expanded membership and a broadened mandate to promote financial stability.

is reviewing the merits of developing overarching cross-sectoral principles to guide and improve the operation of supervisory colleges.

4.155 The financial sector reforms under progress in various countries is thus being worked on a very wide canvas encompassing not only a revamp of the prudential standards, accounting practices and transparency norms, but also challenging the present philosophy as well as the existing structure of the regulatory and supervisory framework.

Co-ordinated Response to the Greek Crisis

4.156 More recently, in the wake of the financial stress triggered by Greece, comprehensive support measures have been announced focusing on preserving economic and financial stability within the euro area. Measures announced since early May 2010 include: a joint euro area - IMF package of Euro 110 billion for Greece based on strong conditionality; accelerated fiscal consolidation by a number of Member States; and the creation of a European Stabilisation Mechanism (ESM) and a European Financial Stability Facility (EFSF) with a total value of up to Euro 500 billion. The ESM incorporates strong conditionality and has two components. The first permits the European Commission to provide up to Euro 60 billion of emergency assistance to an EU Member State facing a severe deterioration in borrowing conditions due to factors beyond its control. The second is a voluntary inter-governmental agreement of Member States to complement the European Commission's mechanism through a temporary Special Purpose Vehicle (SPV) worth up to Euro 440 billion over a period of three years. The EU has made clear that in both cases financial assistance will be provided in partnership with the IMF. Under these arrangements, the IMF has indicated that it is prepared to contribute on a country-by-country basis and broadly in proportion of the IMF's recent European arrangements.

4.157 In parallel with the announcement of the ESM, the ECB took action to ensure the effective functioning of the monetary policy transmission mechanism. This involved actions to address strains in some segments of the euro area debt securities markets, through sterilised purchases of sovereign debt of certain countries, without amending the monetary policy stance. The Federal Reserve, ECB, Bank of England, Bank of Canada, Swiss National Bank and Bank of Japan also decided to reactivate bilateral dollar swap lines.

VIII. CONCLUDING OBSERVATIONS

4.158 The severity of the financial crisis called for responses which included varying combinations of deposit guarantees, debt guarantees, capital injections, asset purchases, and monetary and fiscal measures to stimulate the economy and which were co-ordinated globally on an unprecedented scale. Despite the interlinkages between markets getting more intricate and complex with feedback into the real economy that was capable of spilling wide-spread disaster, the timely and co-ordinated responses were forceful enough to extinguish the initial damage and stop the crisis from spreading further. However, policymakers face the challenge of continuing or withdrawing the stimulus measures at the appropriate time, as well as carrying forward the task of restructuring the financial systems in a manner that fosters financial stability and growth. The global crisis has offered the opportunity to revisit the conventional wisdom in many areas, and the future approach to financial sector reforms as well as supervision must be guided by the primary objective of making the financial sector serve the needs of the real economy (Chakravarty, 2009).

4.159 Monetary authorities in much of the industrial world were forced to cut policy interest rates to record lows. These measures proved insufficient to contain the crisis of confidence. Thus, central banks moved to ease financial conditions even further by using their balance sheets in unconventional ways. The unconventional measures, while helping to stabilise the financial system, have posed several challenges and risks. The mitigation of these challenges and risks would,

inter alia, require transparency and effective communication from the authorities. In emerging economies, the tasks are complicated by the need to sustain external stability in the face of highly fragile financing flows and mismatches in the balance sheet due to domestic borrowing in foreign currencies.

4.160 The present financial crisis has tested the ability of central banks to act as the LOLR. A key issue that emerged was the need for an adequate array of policy tools to contain the stresses in the financial markets. Another challenge that central banks faced was the need to provide sufficient liquidity to the market without undermining the monetary policy setting.

4.161 Governments across countries responded to the present crisis through large-scale fiscal support to the financial system. These actions have largely helped to contain the problem of insolvency of financial institutions and to stabilise the financial system. The unprecedented scale of economic slowdown accompanying the financial crisis also led to the activation of counter-cyclical fiscal policy of magnitudes unobserved *hitherto*. The stimulus measures are expected to have a positive impact on growth, as they have been undertaken simultaneously across countries and, therefore, reduce leakages. Furthermore, the monetary policies have been accommodative. However, their precise impact is uncertain, while the deficit and debt across the countries, particularly in the advanced economies, have increased substantially. These countries are already facing the fiscal stress that would arise from population ageing in the near future and beyond. Loan losses and credit defaults may rise further as the crisis prolongs. This could entail further government support to financial institutions and thus higher government deficits.

4.162 The high deficit and debt has thus raised concerns about fiscal sustainability, financial stability and other longer-term issues. Concern about unsustainable fiscal policy could lead to a rise in long-term interest rates and crowd out the private sector, thereby thwarting a sustained revival of growth. High fiscal deficit leading to higher inflation and interest rates can induce substantial losses to the banks due to mark-to-market requirements, thereby threatening financial stability (Subbarao, 2009). Government support to banks also raises several long-term concerns. First, short-term actions that delay adjustment and the stimulation of aggregate demand may not be compatible with the deleveraging of banks' balance sheets in the medium-term. Second, rescue packages for 'too large to fail' banks or too interconnected banks raise moral hazard problems. Third, the rescue packages and government-assisted sale of failed banks can unintentionally create larger financial institutions, which can increase systemic risk. Fourth, an uncoordinated response in terms of difference in coverage and cost, by distorting competition risks can create an uneven playing field for global banks (BIS, 2009).

4.163 Ensuring fiscal solvency would thus be paramount in the near future. This would require: i) firm commitment and a clear strategy to contain ageing-related expenditure; ii) structural reforms to enhance growth; and iii) medium-term fiscal frameworks with identified policies and supportive institutional arrangements that envisage commitment to fiscal correction once economic conditions improve (IMF, 2009a).

4.164 The lack of well-articulated exit strategies for the monetary, fiscal and financial repair programmes could hinder rather than support the necessary macroeconomic adjustments. A comprehensive exit strategy is crucial. The strategy should encompass the resuscitation of financial markets displaced by unconventional measures, as well as the resumption of fully market-based monetary operations. More importantly, a plan for the gradual winding down of liquidity and credit-easing measures, which can include a tightening of funding conditions, traditional mopping-up operations, and adjustment of the reserve requirement framework, needs to be put in place. In addition, it would be helpful to develop tools to facilitate a smooth unwinding of the significantly expanded central bank balance sheets. In some

cases, amendments to central bank legislative frameworks may be needed to provide the necessary instruments.

4.165 As the work towards securing a sustained economic recovery progresses, the need to re-orient the supervisory approach and to strengthen our regulatory and legal framework to help prevent a recurrence of the events of the past two years cannot be ignored. Post-crisis, there was a natural effort to understand and assess the nature of various inexactitudes which had earlier been missed and incorporate these in the policy frameworks. Supervisors and standard-setting bodies have been actively engaged in strengthening the standards that govern bank capital, liquidity, risk management, incentive compensation, and consumer protection, among other areas. The work on improving supervision and giving it a greater macro-prudential focus through enhanced consolidated supervision and the development of new supervisory tools – including comprehensive horizontal reviews, off-site quantitative evaluations, and more extensive information gathering – is also gaining momentum. Regulators and supervisors can do a great deal, but comprehensive financial reform requires action by the government through the introduction of an appropriate legal framework.

4.166 During the past two years, a co-ordinated effort by industrialised and emerging countries alike has brought most important financial actors under the umbrella of supervision. Principles and rules have been enacted for rating agencies to deal with their conflicts of interest, enhance their rating process, and increase transparency and their oversight through compulsory registration. Hedge funds would go through a process of licensing and oversight and would have to meet transparency requirements towards both investors and regulators. Furthermore, off-balance sheet activities would be consolidated and disciplined through changes in the accounting and prudential frameworks. Goodhart and Persaud (2008) recommend establishing a list of systemically important instruments and requiring them to be registered and, where appropriate, exchange-traded and centrally cleared.

4.167 The need for balancing innovation and safety in financial instruments requires some form of product registration that limits investor access to instruments according to their degree of safety. There must be a mechanism for holding securities issuers accountable for the quality of what they sell. This will mean that issuers bear increased responsibility for the risk assessment of their products. As policymakers work to create a new framework for securitisation, the impact of the new accounting rules and the new regulatory capital regime on securitisation activities needs to be taken into account as banking organisations implement the new standards. Rather than being too stringent on this particular tool, it is crucial to focus on providing the appropriate incentives, oversight, and accountability.

4.168 Strengthening consolidated supervision, setting up a mechanism (such as a systemic oversight council) to identify and monitor risks to financial stability, and creating a framework that allows the safe unwinding of failing, systemically critical firms are among the essential ingredients of a new system that will reduce the probability of future crises and greatly mitigate the severity of any that occur (Bernanke, 2009).

4.169 It is critical that policymakers work to build a system that is as efficient as possible for the maximum tolerable level of risk they choose. Broadly, two kinds of policy responses are being debated: (i) reducing the probability and impact of failure of a systemically important institution and (ii) making the financial system better able to deal with such a failure (Gopinath, 2009). The onus on the authorities is also to be vigilant so as to be able to constantly scan the horizon and recognise that a problem is brewing, and take pre-emptive action before the problem becomes disruptive (Thorat, 2009).

5 IMPACT AND POLICY RESPONSES IN INDIA: FINANCIAL SECTOR

5.1 The developments in the global economy during the past three decades indicate that the process of financial development and globalisation is, at times, susceptible to crisis. Nevertheless, it is argued that the recurrence of financial crisis has not changed the positive relation between financial development and growth (Lipsky, 2009). The global crisis of 2008 that originated in the mortgage sector of the US spread to the entire financial system and the real economy across countries. Exchange rates in many economies depreciated, equity prices crashed, volatility heightened, liquidity dried up in financial markets, and the cost of external borrowings moved significantly upward. While in the case of advanced countries the external shocks were largely carried through direct channels with the exposure of banking systems to the sub-prime mortgage assets, the contagion to developing countries was transmitted mainly through trade, finance, and commodity price channels and rapid changes in expectations (Subbarao, 2009). The rising financial linkages resulted in a higher degree of business cycle co-movement and the greater wealth effect of external shocks, while the trade linkages generated both demand-side and supply-side spillovers across countries, resulting in more highly correlated output fluctuations.

5.2 Initially, it appeared that emerging market economies (EMEs) are better positioned to weather the storm created by the global financial meltdown on the back of substantial foreign exchange reserve cushions, improved policy frameworks and generally robust banking sector and corporate balance sheets. However, any hope about EMEs escaping unscathed could not be sustained after the failure of Lehman Brothers in September 2008 and the ensuing rise in global risk aversion; EMEs were also adversely affected by the spillover effects of the macroeconomic turbulences created by the global financial meltdown. Depressed consumer and investor spending in the advanced economies led to a slump in demand for EME exports, which reinforced the inflow reversal (BIS Annual Report, 2008-09). However, the effect varied across these economies depending on their level of global integration.

5.3 During the initial phase of the crisis, the impact on the Indian financial markets was rather muted; however, since mid-September 2008, the impact on Indian financial markets became amplified. In fact, banks dominated financial system and their negligible engagement in off-balance sheet activities and illiquid securitised assets, which remained at the heart of the recent global financial crisis in advanced economies, protected India from early turmoil in international financial markets. Nonetheless, India could not remain unscathed and the global developments affected its financial and real activities in the second half of 2008-09.

5.4 India's financial markets – equity markets, money markets, forex markets and credit markets – had all come under pressure from a number of directions. First, the substitution of overseas financing by domestic financing brought both the money market and credit market under pressure. Second, the forex market came under pressure because of reversal of capital flows as part of the global deleveraging process and, simultaneously, corporates were converting the funds raised locally into foreign currency to meet their external obligations. Third, the Reserve Bank's intervention in the forex market to manage the volatility in the rupee further added to liquidity tightening. Fourth, Indian banks as well as corporates were finding it difficult to raise funds from external sources as a consequence of the global liquidity squeeze and, as a result, pressure escalated sharply on banks for the credit requirements of corporates. Also, in their frantic search for substitute financing,

corporates withdrew their investments from domestic money market mutual funds, putting redemption pressure on the mutual funds and, down the line, on non-banking financial companies (NBFCs) where the mutual funds had invested a significant portion of their funds. Finally, India also witnessed large capital outflows, exchange rate depreciation, protracted contraction in merchandise exports, and a steep fall in equity prices in the second half of 2008-09. All these factors resulted in a sharp deceleration in the growth of the Indian economy in the second half of 2008-09.

5.5 Against this background, Chapter 5 and Chapter 6 cover the impact of the global financial crisis on the Indian economy and the policy responses of the authorities. Here, in Chapter 5, the impact on India's financial sector is analysed in detail. In Chapter 6, the final impact through the trade and financial channels on saving, investment and growth is discussed.

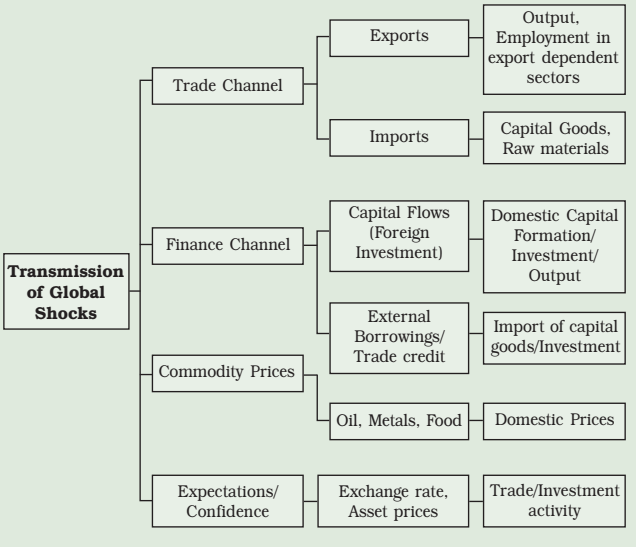
5.6 In examining the impact of the financial crisis on the financial sector, this chapter first sets out the context by analysing the evolving global integration of the Indian economy through trade and financial channels over the years in Section I. The impact of the crisis on various financial markets and respective policy measures has been delineated in Section II. The spillover effects traversing to the banking sector, mutual funds and non-banking finance companies and policy measures to counter their impact have been examined in Section III. The policy responses to the crisis by the Government of India and the Reserve Bank are discussed in Section IV. Section V contatins the conclusions.

I. CHANNELS OF GLOBAL INTEGRATION

5.7 The literature recognises four principal channels through which global developments could percolate to the domestic economy. These relate to foreign trade, cross-border financial flows, global commodity prices and expectations/confidence. Although distinguished in various ways, these channels share some features. First, each channel could be associated with some direct and indirect effects. Second, all these channels may be interlinked and work simultaneously to cause an impact that is different from what could be achieved if each channel work independently. Both the trade and finance channels could interact due to the interaction between trade and trade credit and commercial borrowings, and foreign direct investment and exports and imports. Third, the varied impact of trade and financial channels could be associated with their micro characteristics (Chart V.1).

5.8 The relationship between foreign trade and the economic growth of nations has been analysed extensively in the literature. Basically, the foreign trade channel is expected to work through exports and imports of merchandise goods and tradable services. There are a number of reasons within trade theory to support the export-led growth hypothesis (Havyrlyshn, 1990; Krugman, 1987). Exports are expected to contribute to growth through, *inter alia*, enhanced demand, economies of scale, better technology and productivity, optimal allocation of resources, and research and development. The transmission of the trade

Chart V.1: Key Transmission Channels of Global Shocks on the Domestic Economy



channel could occur in three ways: the income effect, competitiveness effect, and cheap-import effect (Forbes, 2001). The empirical literature provides a mixed perspective on the causal nexus between exports and economic growth. Eichengreen and Rose (1999) and Glick and Rose (1998) in their study of 20 industrial countries supported trade links rather than macroeconomic similarities as the dominant channel for contagious international transmission of shocks. A number of empirical studies also argue that trade was not important in the propagation of crises. Masson (1998) categorised trade as a spillover effect and showed that it was not important during the Mexican crisis or the Asian crisis. Harrigan (2000) also rejected the trade channel; the impact of the Asian crisis on the US industries was small and localised.

5.9 Similar to the trade channel, the relationship between finance and growth in general and the importance of foreign capital for the economic progress of developing economies has been deliberated at length over the years. In theory, financial globalisation can help developing countries to better manage output and consumption volatility (Prasad *et al.*, 2003). Indeed, a variety of theories imply that the volatility of consumption relative to that of output should go down as the degree of financial integration increases; the essence of global financial diversification is that a country is able to offload some of its income risk in world markets. Since most developing countries are rather specialised in their output and factor endowment structures, they can, in theory, obtain even bigger gains than developed countries through international consumption risk-sharing, that is, by effectively selling off a stake in their domestic output in return for a stake in global output (Box V.1).

5.10 Analytical arguments supporting financial openness revolve around considerations such as the benefits of international risk sharing for consumption smoothing, the positive impact of capital flows on domestic investment and growth, enhanced macroeconomic discipline and increased efficiency as well as greater stability of the domestic financial system associated with financial openness (Agenor, 2001). In recent years, there appears to be some rethinking about financial globalisation based on the experiences of various crises in the late 1990s and the current global imbalances. Owing to contagion effects, some economists have viewed increasing capital account liberalisation and unfettered capital flows as a serious impediment to global financial stability (Bhagwati, 1998; Rodrik, 1998; Stiglitz, 2002). Others argue that increased capital account openness has largely proven essential for countries aiming to upgrade from lower to middle income status. Thus, it is widely accepted that the beneficial effects of international capital inflows can be harnessed by ensuring sound macroeconomic policies and strong institutions and adopting an appropriate regulatory framework for the stability of financial systems.

5.11 The potential costs associated with financial globalisation include a high degree of concentration of capital flows, misallocation of flows which may hamper their growth effects and exacerbate domestic distortions, the loss of macroeconomic stability, the pro-cyclical nature of short-term capital flows and the risk of abrupt reversals, a high degree of volatility of capital flows in part due to herding and contagion effects and risks associated with foreign bank penetration (Dadush, Dasgupta and Ratha, 2000). Thus, unlike trade integration, where benefits to all countries are demonstrable, in the case of financial integration a threshold in terms of preparedness and resilience of the economy is important for a country to get full benefits (Kose *et al.*, 2006).

5.12 An issue that assumed importance during the present global crisis is the relative strength of various channels of transmission especially against the backdrop of the sharp escalation of India's financial integration with global markets over the past few years. While the crisis was transmitted to India through both the trade and finance channels, the latter was by far more significant in terms of the intensity of the impact (Subbarao, 2009). Thus, how global asset price movements affect the domestic asset market and, in turn, the real economy has assumed critical significance during

Box V.1
Financial Openness and Economic Growth

Traditional development thinking was guided by the notion that the savings gap could be bridged through capital inflows from countries with higher income and savings in order to achieve faster growth. According to this premise, the strategy to reduce global poverty and to allow the catching up of poorer countries is built on two blocks. First, the endowments of less developed countries can be enriched by giving them access to those factors of production that they lack – through the provision of private foreign capital or official aid. Second, as developed countries open up their markets to the products of developing countries that possess natural resources or abundant labour but little capital, the developing countries are able to raise their export earnings and capacity to import more sophisticated equipment. The savings gap theory refers to the standard growth model (Harrod-Domar model), which identifies certain necessary components of growth, but does not explain the functional relationships that determine the interaction of these components. Most approaches based on this growth theory see the rate of capital accumulation determined by the difference between capital deepening (the capital-labour ratio) and capital widening (the amount of saving per capita needed to hold the capital-labour ratio constant as the population grows and the existing capital stock depreciates). Countries with relatively low growth rates are encouraged to increase their savings enough to keep up with the requirements of capital widening.

According to the neoclassical growth model, savings determine capital accumulation (as in the Harrod-Domar model), but savings and investment are not always related to economic growth (in contrast to the Harrod-Domar model). Savings (and investment) drive growth only when the economy is out of equilibrium, but they do not influence growth when the economy is in equilibrium. In the long run, growth is determined solely by technology, which in turn is determined exogenously by non-economic variables. It is conceived that consumers prefer a stable consumption path and any transitory shock to income is, under normal circumstances, compensated by a change in savings in the same direction and *vice versa*. If GDP growth increases permanently, individuals will immediately jump to a higher consumption path and the increase in growth will lead to lower savings. By contrast, if a shock has its origin in the savings rate, for example, if a change in preferences leads to higher savings, then both investment and growth increase (as in the Harrod-Domar model), at least in the transition to a "new steady state". Thus, the model predicts different relationships between savings and growth, depending on the nature of the shock and on whether the shock is permanent or temporary. These assumptions are based on a closed economy model, in which *ex post* national savings are always equal to *ex post* investment.

In open economy models with free capital flows – savers can invest in other countries – there should be no correlation between domestic savings and investment decisions. Under the assumption that profits per unit of output are the same in all countries, the marginal product of capital should be higher in countries with a relatively small capital stock, which should record net capital inflows (Lucas, 1990). Accordingly, the observed relatively small capital flows from developed to developing countries – the "Lucas Paradox" – triggered debate that sought to explain the factors limiting the incentives to invest in developing economies. The recent literature seeks to explain the Lucas Paradox by switching the emphasis from factor accumulation to total factor productivity, which is the part of the overall productivity increase that cannot be attributed to either labour or capital. It also argues that countries with faster productivity growth will have a lower savings rate because agents anticipate the potential for future consumption, which increases with rising productivity growth. The neoclassical open economy model predicts that an exogenous increase in national savings will be associated with an improvement in the current account, but that it will have no effect on domestic investment and growth. Similar to the savings-gap model, the neoclassical model predicts a positive correlation between savings and growth for a closed economy.

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the recent global financial crisis. While the movement in financial flows could have a direct impact on the economy through changes in the availability of credit and investment, these financial flows also simultaneously affected the price of credit and the return on investment.

Indian Context

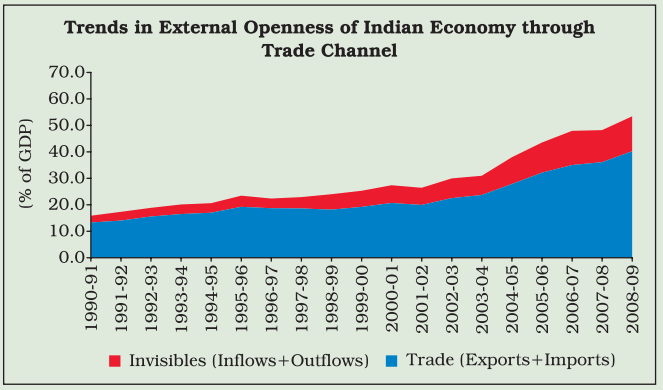
5.13 The globalisation process in India was strengthened and reinforced in the 1990s and 2000s due to several important developments. First, trade openness (goods and services trade) increased substantially with the trade-GDP ratio doubling since 1999-2000. Second, services, which were largely considered non-tradable, turned increasingly tradable mainly due to off-shoring led by rapid innovations in information technology, labelled as information technology-enabled services (ITES) and business process outsourcing (BPO). Third, the trade channel of global integration has been, concomitantly, supported by the migration channel with the competitive edge of human resources in knowledge-based services. The rising importance of the human channel, which operates directly through remittances and indirectly through trade in goods and services, in strengthening India's global integration is reflected in the widening gap between exports and imports of goods and services and current account receipts and payments as percentage of GDP, which increased from about 2 per cent in 1990-91 to around 7 per cent during 2008-09. Fourth, the economy became more open to external capital flows as the gross capital account-GDP ratio witnessed a more than three-fold increase during the same period. Fifth, higher capital account openness also strengthened the integration of domestic markets with global markets, which was reflected in the stronger correlations of domestic interest rates, equity and commodity prices with their global counterparts; these developments also facilitated the role of expectations in transmitting global shocks to the domestic economy. Sixth, even in commodity-producing sectors, global integration came through prices and not necessarily through physical trade in commodities, as global price movements have an important expectation impact on domestic prices. Finally, greater synchronisation of the domestic business cycles with the global cycles implied that the external shocks could have a greater and more rapid impact on the domestic economy (Table 5.1 and Chart V.2).

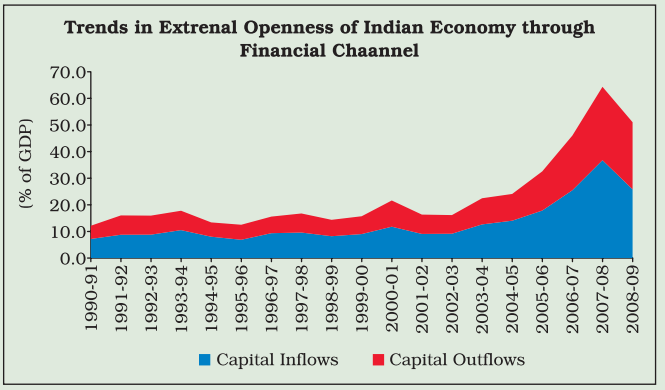
Table 5.1: Openness Indicators of Indian Economy

(Per cent)

Year	Exports plus Imports of Goods/ GDP	Exports plus Imports of Goods and Services/ GDP	Current Receipts plus Current Payments/ GDP	Gross Capital Inflows plus Gross Capital Outflows/ GDP	Current Receipts and Gross Capital Inflows plus Current Payments and Gross Capital Outflows/GDP	Net Capital Inflows/ GDP	GDP (US$ billion)
1	2	3	4	5	6	7	8
1950s	12.5	14.1	15.0	2.3	17.3	0.4	26
1960s	8.8	10.0	10.9	4.6	15.5	1.8	48
1970s	10.0	11.3	12.7	4.2	16.9	0.6	99
1980s	12.7	15.2	17.2	5.4	22.6	1.6	234
1990s	18.8	22.9	26.7	15.1	41.8	2.2	345
2000s	29.3	39.0	45.0	32.7	77.7	3.4	756
1990-91	14.6	17.2	19.4	12.1	31.5	2.2	318
1995-96	21.3	25.5	29.7	12.4	42.1	1.1	356
1996-97	21.4	25.1	29.8	15.5	45.3	3.1	388
1997-98	21.1	25.4	30.0	16.7	46.7	2.4	411
1998-99	19.7	25.5	29.8	14.4	44.2	2.0	416
1999-00	20.6	26.7	31.2	15.7	46.8	2.3	451
2000-01	22.5	29.2	34.4	21.6	56.0	1.9	460
2001-02	21.1	27.6	33.4	16.3	49.7	1.8	478
2002-03	23.3	30.8	36.5	16.1	52.6	2.1	507
2003-04	24.4	31.7	37.6	22.5	60.1	2.8	599
2004-05	29.1	39.3	44.5	24.1	68.6	4.0	701
2005-06	32.4	43.8	49.4	32.6	82.0	3.1	809
2006-07	34.9	47.8	54.2	46.0	100.2	4.9	916
2007-08	36.2	48.4	55.2	64.8	120.0	9.2	1,128
2008-09	40.5	53.7	60.9	51.4	112.3	0.8	1,139

Chart V.2: External Openness of Indian Economy



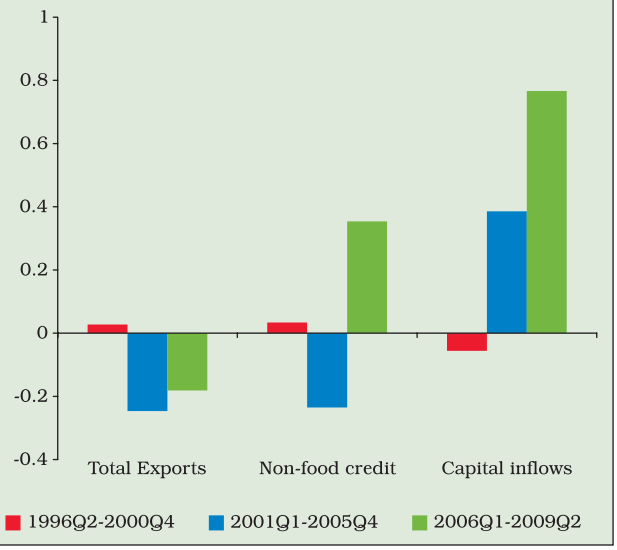


5.14 The increasing liberalisation of capital account enabled the financial channel to foster the global integration of the Indian economy as manifested in the rising share of capital flows to the GDP (Chart V.2). In fact, India's financial integration with the world has been as deep as India's trade globalisation, if not deeper (Subbarao, 2009). The deceleration in the growth of the Indian economy on account of the current global slowdown is also testimony to the increased global integration of the India during recent years.

5.15 In India, it appears that all four channels of transmission (trade, financial, commodity prices and expectation channels) operated and adversely affected real activities during the recent global crisis; however, the strengths of different channels of transmission varied. The analysis of the trend in the cyclical synchronisation shows that the financial channel of transmission was more pronounced during recent periods, reflecting the strengthening of the global integration of the Indian economy through increasing financial flows (Chart V.3). A vector autoregression (VAR) model was estimated with GDP growth, total exports (goods & services), non-food credit (NFC), net capital flows, call money rate, and Bombay Stock Exchange (Sensex) from 1996 to 2009 to ascertain the strength of trade and financial channels. The Cholesky variance decomposition suggests that about 50 per cent of variation in GDP is explained by financial variables, *viz*., bank credit, capital inflows, call rate, and the Sensex, while exports of goods and services explains about 9 per cent of the variation. This implies that financial channels have assumed a more dominant role in transmitting the effects of global developments in the Indian economy during recent periods.

5.16 The relative strengths of various channels of transmission through which the crisis was transmitted to India have been highlighted in several fora. It was felt that the financial channel was more pronounced due to increasing

Chart V.3: Cyclical synchronisation of GDP with Exports, Bank Credit and Capital Flows (Correlation coefficient)



globalisation in the recent period. The increase in trade and liberalisation of the capital account have led to higher global integration of the Indian economy which, in turn, also made India vulnerable to global shocks. Empirically also, it has been established that the financial channels have assumed a more dominant role in transmitting the effects of global developments to the Indian economy during the recent periods. In the next section, the transmission of the current global crisis to the financial markets of India is examined.

II. IMPACT OF GLOBAL CRISIS ON FINANCIAL MARKETS

5.17 India's financial markets – equity market, money market, forex market and credit market – experienced the knock-on effects of the global financial crisis. The equity markets and forex markets came under pressure because of the reversal of capital flows as part of the global deleveraging process. With the reversal of capital flows and drying up of external sources of funds, corporates shifted to domestic bank credit. This substitution of overseas financing by domestic financing brought both money markets and credit markets under pressure. The global liquidity spiral increased volatility in the financial markets, and restoring orderly conditions in the financial markets became critical to contain the spread of contagion to other sectors of the economy (Chakrabarty, 2009). In response to the crisis, the Reserve Bank and the Government reacted swiftly and took both conventional and unconventional measures aimed at stabilising various market segments. Broadly, these measures included reduction in liquidity adjustment facility (LAF) interest rates, infusion of large amounts of forex and domestic liquidity, lending to non-bank financial institutions through the banking channel, encouraging the inflow of foreign capital through increasing interest rate ceilings on NRI deposits, and easing norms pertaining to external commercial borrowing (ECBs). In this section, the impact of the crisis on various financial market segments in India and policy responses to contain the damage and restore normalcy have been analysed.

Foreign Exchange Market

5.18 Prior to the 1990s, the Indian foreign exchange market was highly regulated with restrictions on transactions, participants and use of instruments. The period since the early 1990s has witnessed a wide range of regulatory and institutional reforms resulting in substantial development of the rupee exchange market as it is observed today. Market participants have become sophisticated and acquired reasonable expertise in using various instruments and managing risks. The foreign exchange market in India today is equipped with several derivative instruments. These derivative instruments have been cautiously introduced as part of the reforms process in a phased manner, both for product diversity and, more importantly, as a risk management tool. As a result, trading volumes in the Indian foreign exchange market have grown significantly over the past few years. The daily average turnover has seen an almost ten-fold rise during the 10-year period from 1997-98 to 2007-08, from US$ 5 billion to US$ 48 billion. The pick-up has been particularly sharp from 2003-04 onwards, when there was a massive surge in capital inflows. Reflecting these trends, the share of India in global foreign exchange market turnover trebled from 0.3 per cent in April 2004 to 0.9 per cent in April 2007.

5.19 With the increasing global integration, efficiency in the foreign exchange market has improved as evident from the low bid-ask spreads. It was found that the spread is almost flat and very low. In India, the normal spot market quote has a spread of 0.25 paisa to 1 paise while swap quotes are available at a 1 to 2 paise spread. Thus, the foreign exchange market has evolved over time as a deep, liquid and efficient market as against a highly regulated market prior to the 1990s.

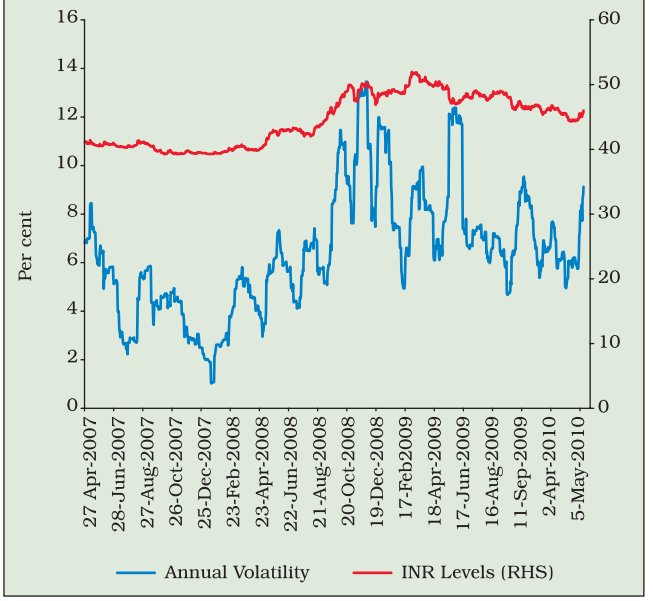
5.20 In recent years, external sector developments in India have been marked by strong

capital flows, which had led to an appreciating tendency in the exchange rate of the Indian rupee up to 2007-08. The Indian approach has been guided by the broad principles of careful monitoring and management of exchange rates with flexibility, without a fixed target or a pre-announced target or a band, coupled with the ability to intervene if and when necessary, while allowing the underlying demand and supply conditions to determine the exchange rate movements over a period in an orderly way. Subject to this predominant objective, the exchange rate policy is guided by the need to reduce excess volatility, prevent the emergence of speculative activities, help maintain an adequate level of reserves, and develop an orderly foreign exchange market. This approach has served well in maintaining orderly market conditions.

5.21 There was a sudden change in the external environment following the Lehman Brothers' failure in mid-September 2008. The global financial crisis and deleveraging led to reversal and/ or modulation of capital flows, particularly foreign institutional investor flows, ECBs and trade credit (Gopinath, 2009). Large withdrawals of funds from the equity markets by the foreign institutional investors (FIIs) reflecting the credit squeeze and global deleveraging resulted in large capital outflows during September-October 2008, with concomitant pressures in the foreign exchange market across the globe including India (Chart V.4).

5.22 The cascading effect of the global financial crisis on the domestic foreign exchange market was felt through the dollar liquidity shocks emanating from the lower level of net capital flow and contracting exports. The impact of these factors has resulted in a significant fall in turnover in the foreign exchange market since October 2008. This decline was spread across the merchant and inter bank segments of the forex market. The pressure on the foreign exchange market was also visible in the falling share of the spot market in the total turnover (Table 5.2). At the same time, the share of the forward and swap markets in total turnover increased, possibly reflecting the rising tendency of hedging the

Chart V.4: Trends in Exchange Rates (USD-INR)



underlying exposure in the foreign exchange market, which could have been driven by high volatility and uncertainty prevailing in the international financial markets.

5.23 After Lehman's bankruptcy, the rupee depreciated sharply, breaching the level of Rs.50 per US dollar on October 27, 2008. The Reserve Bank scaled up its intervention operations during the month of October 2008. Despite significant easing of crude oil prices and inflationary pressures in the second half of the year, declining exports and continued capital outflows led by global deleveraging process and the sustained strength of the US dollar against other major currencies continued to exert downward pressure on the rupee. With the spot exchange rates moving in a wide range, the volatility of the exchange rates increased during this period (Table 5.3). However, with the return of some stability in international financial markets and the relatively better growth performance of the Indian economy, there has been a revival in foreign investment flows, especially FII investments since the beginning of 2009-10. As compared with depreciation of 21.5 per cent during 2008-09, the rupee appreciated by around 13 per cent in 2009-10. During the current year so far upto June 11, 2010, the rupee

Table 5.2: Transactions in Foreign Exchange Market

Period	Average Daily Turnover in Forex Market (US$ billion)	Average Daily Share of Spot Market in Total Turnover (per cent)	Average Daily Share of Forward & Swap Market in Total Turnover (per cent)	RBI's Net Foreign Currency Sales (-)/ Purchases (+) (US$ million)	Movements in Average Exchange Rate (Rs. Per US$) Depreciation (-)/ Appreciation (+)	Average Exchange Rate (Rs. Per US$) range (Low-High)	Average 3-month Forward Premia (per cent)
1	2	3	4	5	6	7	8
2000-05	7.7	47	53	20,848@	-6.9	5.7	3.3
2005-06	17.5	51	49	8,143	1.5	3.0	1.6
2006-07	25.8	52	48	26,824	2.2	3.8	2.14
2007-08	47.9	50	50	78,203	12.5	3.9	2.16
2008-09	47.6	45	55	-34,922	-12.4	-12.2	3.47
2009-10	40.7	50	40		-3.2	5.6	2.91
April-08	52.9	49	51	4,325	0.8	0.6	2.68
May-08	45.3	48	52	148	-5.0	2.6	2.45
June-08	51.1	46	54	5,229	-1.6	0.7	3.69
Jul-08	50.6	47	53	-6,320	0.0	1.4	6.04
Aug-08	54.2	46	54	1,210	-0.2	2.2	4.71
Sept-08	62.5	46	54	-3,784	-5.8	2.7	2.35
Oct-08	51.0	46	54	-18,666	-6.4	3.2	1.13
Nov-08	42.3	43	57	-3,101	-0.7	3.3	4.20
Dec-08	46.4	40	60	-318	0.8	3.5	4.59
Jan-09	37.0	44	56	-29	-0.4	0.8	3.10
Feb-09	33.8	44	56	230	-0.9	2.1	2.68
Mar-09	43.1	42	58	3,388	-3.8	1.9	3.99
Apr-09	36.4	42	58	-2,487	2.3	1.0	3.34
May-09	46.5	42	58	-1,437	3.2	2.7	3.42
Jun-09	43.1	48	52	1,044	1.6	2.1	3.29
Jul-09	39.8	48	52	-55	-1.5	1.6	2.57
Aug-09	37.1	50	50	181	0.3	1.4	2.80
Sept-09	37.9	53	47	80	-0.2	1.1	2.66
Oct-09	40.0	53	47	75	3.7	2.0	2.93
Nov-09	37.8	54	46	-36	0.3	1.1	2.46
Dec-09	37.4	51	49		-0.1	0.6	2.51
Jan-10	43.5	54	46		1.5	1.3	2.93
Feb-10	45.8	53	47		-0.8	0.8	2.78
Mar-10	43.4	51	49		1.8	1.1	3.28
Apr-10	48.4	53	47		2.2	0.4	3.43

@: Figures pertain to 2004-05.

depreciated by 3.6 per cent against US dollar over end-March 2010. Though there has been some recovery in the forex turnover during 2009-10, it has not yet picked up to the pre-crisis levels.

Table 5.3: Movement of Indian Rupee

	US Dollar					Euro				
	Average	High	Low	Variation*(%)	Volatility# (%)	Average	High	Low	Variation*(%)	Volatility (%)
1	2	3	4	5	6	7	8	9	10	11
2007:Q2	41.23	40.46	43.15	6.65	0.50	55.60	54.34	57.78	6.34	0.49
2007:Q3	40.53	39.71	41.58	4.18	0.39	55.70	54.95	56.27	2.40	0.39
2007:Q4	39.46	39.26	39.84	1.48	0.26	57.21	55.51	59.19	6.63	0.54
2008:Q1	39.82	39.27	40.77	3.82	0.32	59.73	57.27	64.48	12.59	0.73
2008:Q2	41.66	39.89	43.16	8.20	0.44	65.06	62.24	68.09	9.39	0.71
2008:Q3	43.78	41.90	46.94	12.03	0.67	65.87	62.80	68.87	9.66	0.96
2008:Q4	48.76	46.91	50.53	7.72	1.07	64.30	60.57	69.15	14.16	1.34
2009:Q1	49.77	48.37	52.09	7.69	0.64	65.00	62.11	69.20	11.40	0.95
2009:Q2	48.79	46.84	50.54	7.90	0.73	66.35	64.46	68.51	6.29	0.83
2009:Q3	48.42	47.55	49.42	3.93	0.48	69.23	67.29	71.02	5.54	0.39
2009-10:Q4	46.64	45.90	47.87	4.29	0.50	69.20	66.76	70.03	4.90	0.41
2009-10:Q1	45.93	44.94	46.81	4.16	0.39	63.63	60.48	66.82	10.47	0.50

*: Maximum variation calculated as the percentage change between the lowest and highest level of the exchange rates during the quarter.
#: Volatility is calculated taking the standard deviation of the rupee-dollar exchange rate changes.

5.24 The volatility in exchange rate, measured in terms of the difference between high and low remained elevated since July 2008 but subsided somewhat from the beginning of 2009-10. Further, the volatility of the rupee-US dollar returns estimated using a GARCH (1,1) process[1] distinctly indicates two different phases in the forex volatility in the Indian market. In the first phase (during August 2007 to September 2008) the volatility was low compared with the volatility witnessed during September 2008 to December 2008 (Chart V.5).

5.25 With a view to maintaining orderly conditions in the foreign exchange market, the Reserve Bank announced in mid-September 2008 that it would continue to sell foreign exchange (US dollar) through agent banks to augment supply in the domestic foreign exchange market or intervene directly to meet any demand-supply gaps. Despite the intervention by the Reserve Bank, the rupee depreciated in October, 2008 (Chart V.6).

5.26 Several measures were undertaken by the Reserve Bank to ease the forex liquidity situation. A rupee-dollar swap facility for Indian banks was introduced with effect from November 7, 2008 to give the Indian banks comfort in managing their short-term foreign funding requirements. For funding the swaps, banks were also allowed to borrow under the LAF for the corresponding tenor at the prevailing repo rate. The forex swap facility, which was originally available till June 30, 2009, was extended up to March 31, 2010; however, this was discontinued in October 2009. The Reserve Bank also continued with Special Market Operations (SMO) which were instituted in June 2008 to meet the forex requirements of public sector oil marketing companies (OMCs), taking into account the then prevailing extraordinary situation in the money and foreign exchange markets; these operations were largely (Rupee) liquidity neutral. Finally, measures to ease forex liquidity also included those aimed at encouraging capital inflows, such as an upward adjustment of the interest rate ceiling on foreign currency deposits by non-resident Indians, substantially relaxing the ECB regime for corporates, and allowing non-banking financial companies and housing finance companies to access foreign borrowing (Box V.2).

Chart V.5: Volatility and Rate in India's Forex Market

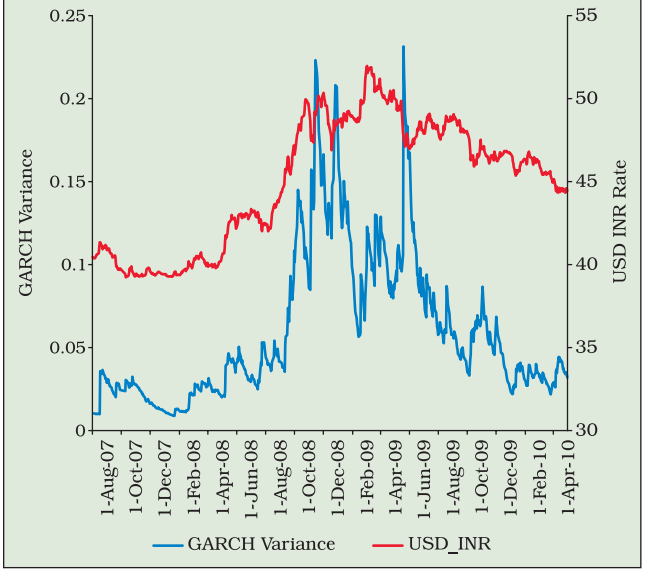
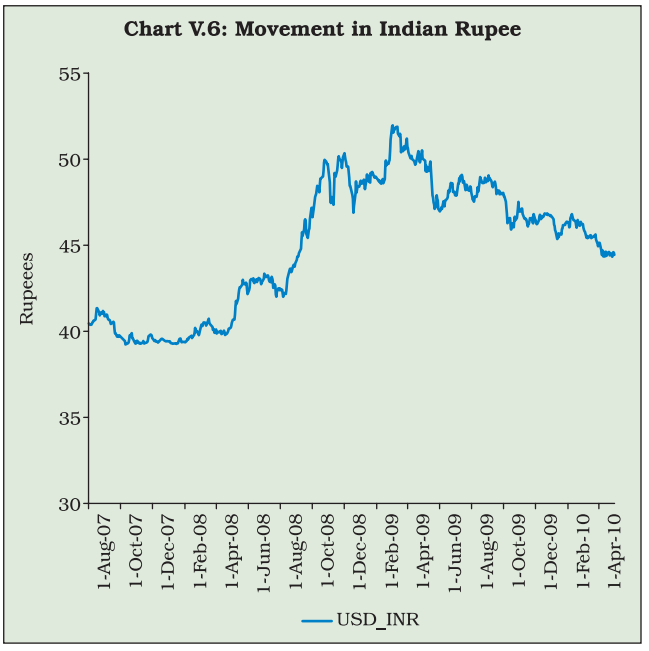


Chart V.6: Movement in Indian Rupee



[1] The choice of the GARCH (1,1) model is based on its attribute of parsimony and its capacity to outperform most other models (White, 2000; Hansen, 2001). The details of the dummy variables and the specifications of the dummy variables are reported in the Annex. The coefficient of the dummy variable, introduced to verify the apparent break in the GARCH volatility equation, was found to be positive and statically significant at the 1 per cent level, confirming the validity of such a break.

Box V.2
Policy Measures to Augment Forex Liquidity

- Interest rate ceilings on FCNR (B) and NR(E)RA deposits were increased by 175 basis points each from September 16, 2008 providing more flexibility to Indian banks to mobilise higher foreign exchange resources.
- The constraints on external commercial borrowings were eased through relaxing various conditions, *viz*., (i) enhancing all-in-cost ceilings for ECBs of average maturity periods of three to five years and over five years to 300 basis points above LIBOR and 500 basis points above LIBOR, respectively; subsequently, the requirement of all-in-cost ceilings under the approval route was dispensed with until December 2009; (ii) permitting ECBs up to US$ 500 million per borrower per financial year for rupee/foreign currency expenditure for permissible end-uses under the automatic route; (iii) the definition of infrastructure sector for availing ECB was expanded to include the mining, exploration and refinery sectors; (iv) payment for obtaining license/permit for 3G spectrum by telecom companies was classified as eligible end-use for the purpose of ECB; (v) dispensing with the requirement of minimum average maturity period of 7 years for ECB of more than US$ 100 million for rupee capital expenditure in the infrastructure sector; (vi) permitting borrowers to keep their ECB proceeds offshore or keep it with the overseas branches/ subsidiaries of Indian banks abroad or to remit these funds to India for credit to their rupee accounts with AD category-I banks in India, pending utilisation for permissible end-uses; (vii) allowing NBFCs exclusively involved in financing of the infrastructure sector to avail of ECBs under the approval route from multilateral/ regional financial institutions and government-owned development financial institutions for on-lending to borrowers in the infrastructure sector, subject to compliance with certain conditions; and enabling housing finance companies registered with the national housing bank (NHB) to access ECBs subject to RBI approval and compliance to regulations laid down by NHB.
- Access to short-term trade credit was facilitated by increasing the all-in-cost ceiling to 6-month LIBOR plus 200 basis points for less than three years' tenor. Furthermore, systemically important NBFCs not allowed hitherto were permitted to raise short-term foreign borrowings.
- Interest rate ceiling on export credit in foreign currency was increased to LIBOR plus 350 basis points subject to banks not levying any other charges.
- Authorised Dealer (AD) category-I banks were allowed to borrow funds from their head office, overseas branches and correspondents and overdrafts in nostro accounts up to a limit of 50 per cent of their unimpaired Tier 1 capital as at the close of the previous quarter or US$ 10 million, whichever was higher, as against the earlier limit of 25 per cent.
- Indian companies were encouraged to prematurely buy back their FCCBs under the approval or automatic route, at prevailing discounts rates, subject to compliance with certain stipulated conditions. Extension of FCCBs was also permitted at the current all-in-cost for the relative maturity.

5.27 In the Indian context, even though the utilisation of the forex swap facility was limited, the feedback from market participants and anecdotal evidence suggest that the facility had achieved the desired objective in providing comfort and confidence to the banks at a time when international money markets were frozen. An exercise was undertaken to test the effectiveness of the *forex swap* facility. The results do not indicate any significant relation between the differenced USD-INR series and the forex-swap amounts (low $\bar{R}^2$ and insignificant coefficients)[2]. However, in the case of

[2]

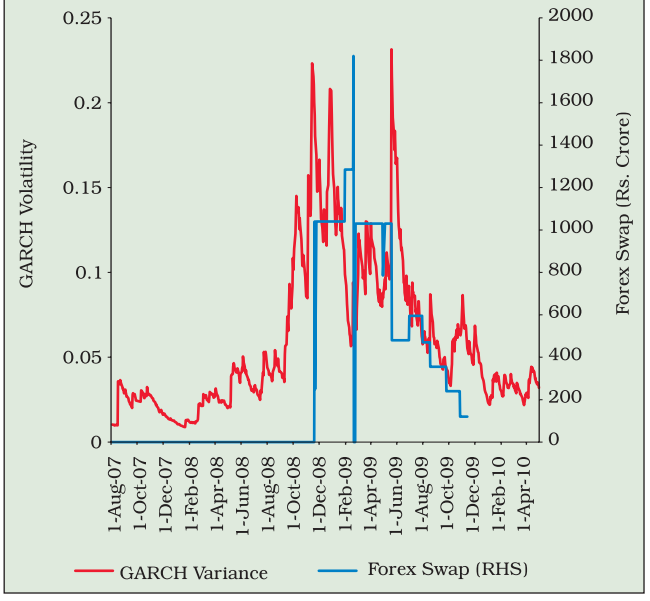
	Differenced USD-INR[2]		USD-INR Volatility	
Variable	Coefficient	Prob.	Coefficient	Prob.
C	0.027	0.072	8.49e-05	0.000
DUMMY	-0.005	0.933	-0.00014	0.120
Dependent Var (t-1)	0.145	0.001	0.97202	0.000
Forex Swap (000 cr)	-0.033	0.578	0.00020	0.053
R-squared	0.03		0.95	
Durbin-Watson stat	1.97		1.77	

Dummy variable takes value 1 since November 14, 2008, otherwise zero.

volatility, the *dummy variable* has a negative coefficient and the *forex swap* has a positive sign indicating (a) the decline in volatility after the introduction of forex swap and (b) the use of the swap window by banks during high volatility periods. In due course, the outstanding under the forex swap facility, declined to Rs. 240 crore at end-September 2009 from its peak of Rs.1,820 crore on February 19, 2009, indicating considerable improvement of forex liquidity conditions for Indian banks (Chart V.7). Taking into account the prevailing forex liquidity conditions, the forex swap facility was discontinued by the Reserve Bank from October 27, 2009.

5.28 In sum, with the help of the Reserve Bank's actions in the foreign exchange market, the pressure eased since December 2008 as liquidity conditions in the foreign exchange market returned to normalcy. The rupee generally appreciated against the US dollar during 2009-10 on the back of significant turnaround in FII inflows, continued inflows under FDI and NRI deposits, better-than-expected macroeconomic performance in 2009-10 and weakening of the US dollar in the international markets. The volatility in the foreign exchange market declined after the introduction of the forex swap facility. Additionally, the outcome of the general elections, which generated expectations of political stability, buoyed market sentiment and contributed towards the strengthening of the rupee, especially from the second half of May 2009.

Chart V.7: Forex Swap Facility and USD-INR Volatility

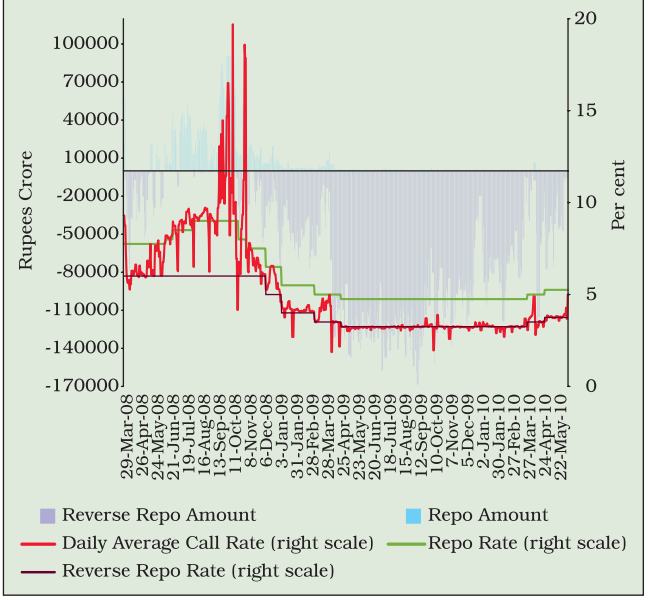


Money Market

5.29 Since the early 1990s, the Indian money market has undergone a significant transformation in terms of instruments, participants and technological infrastructure. Various reform measures have resulted in a relatively deep, liquid and vibrant money market. Along with the shifts in the operating procedures of monetary policy, the liquidity management operations of the Reserve Bank have also been fine-tuned to enhance the effectiveness of monetary policy signalling. Various segments of the money market have been developed in line with shifts in policy emphasis. The call money market was transformed into a pure inter-bank market, while other money market instruments, such as market repo and collateralised borrowing and lending obligation (CBLO), were developed to provide avenues to non-banks for managing their short-term liquidity mismatches. Policy initiatives by the Reserve Bank in terms of widening of market-based instruments and shortening of maturities of various instruments have not only helped in promoting market integration but also enabled better liquidity management and transmission of policy signals by the Reserve Bank. Following the recommendations of the Technical Group on Money Market (2005), the Reserve Bank's focus on the money market has been on encouraging the growth of the collateralised market, developing a rupee yield curve and providing avenues for better risk management by market participants.

5.30 The money market was orderly during the first half of 2008-09, with call rates remaining generally within the informal corridor of reverse repo and repo rates (Chart V.8). The call money rates edged up in tandem with the hikes in LAF repo rates in stages till August 2008, reflecting monetary policy tightening on inflation concerns and hovered around the upper bound of the

Chart V.8: Liquidity Adjustment Facility and the Call Rate



corridor during the second quarter (up to mid-September 2008). In mid-September 2008, the failure of Lehman Brothers and a few other global financial institutions led to the freezing of money market activities in major financial centres; and Indian markets were also indirectly affected. In response to the crisis, the Reserve Bank provided substantial dollar liquidity to curb excessive volatility in the foreign exchange market, which had a tightening impact on rupee liquidity. Such operations by the Reserve Bank in the foreign exchange market along with transient local factors such as build-up in government balances following quarterly advance tax payments adversely impacted domestic liquidity conditions and the call money rate moved above the repo rate till the end of October 2008.

5.31 With the increasing uncertainty in global markets, the volatility in the call market also increased significantly during mid-September 2008. The volatility estimated by the GARCH(1,1) model indicates large increase in volatility in interbank rates during the second half of 2008-09 (Chart V.9). The apparent break in volatility was confirmed by the sign and statistical significance of the dummy variable of the augmented GARCH volatility equation.[3] However, it may be mentioned that some

[3] The GARCH volatility equation (Equation 2) was augmented to include a dummy variable. The augmented set of information used for estimating GARCH volatility is as follows:

$R_t = \alpha_o + \alpha_1 R_{t-1} + \epsilon_t$ ……..(1); where $\epsilon_t / \Phi_{t-1} \sim N(0, h_t)$

$h_t = \beta_o + \beta_1 \epsilon^2_{t-1} + \beta_2 h_{t-1} + \lambda * D_f$ …….(2)

where R_t is the dependent variable signifying the financial variable (*e.g.,* weighted average call rate), h_t is the conditional volatility of the weighted average call rate/spread augmented by D_f - a dummy variable which takes the value 1 on a particular regime 0, otherwise. D_f is created to capture the effect of changes in regimes. Three dummies were considered as Prelude (August 07-August 08), Problem (September 08- December 08) and Recovery (January 09 to October 09). The dummy variables, Problem and Recovery, are introduced in the variance equation to evaluate the regime shift. The estimated results using the augmented GARCH model are as under:

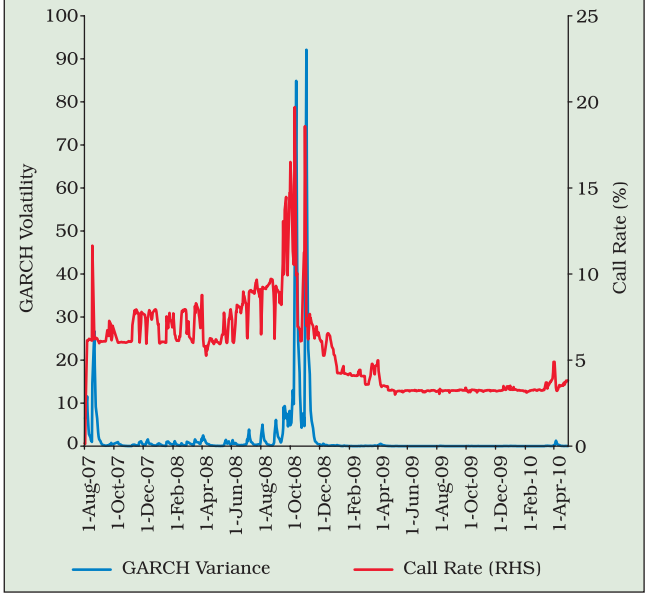
Equation	Call Rate		Benchmark G-sec		Difference USD-INR	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Constant	-	-	0.06	0.05	0.01	0.34
Dependent Variable (t-1)	0.98	0.00	0.99	0.00	0.16	0.00
Variance Equation						
C	0.59	0.00	0.00	0.00	0.01	0.00
RESID(-1)^2	0.61	0.00	0.09	0.00	0.21	0.00
GARCH(-1)	0.19	0.00	0.91	0.00	0.30	0.05
PROBLEM	0.39	0.00	0.00063	0.03	0.06	0.01
RECOVERY	-0.58	0.00	0.00003	0.48	0.04	0.00
R-Square	0.79		0.99		0.02	
D - W Stat	2.62		1.70		1.99	

The dummy variable for the perilude is not included to avoid dummy variable trap in the presence of a constant term.
For USDINR, the differenced series was considered, as the series was found to be difference stationary for the time period under consideration.

i) The constant term is excluded for call as the model with constant term was found to be unstable.

ii) The coefficient of 0.98 encouraged evaluation of stationary property of the series. The Call rate was found to be stationary on the basis of ADF test statistics for the period under consideration (August 2007 - October 2009).
When returns volatility was used as the dependent variable(s) the result generally supported the above findings.

Chart V.9: Call Rate Volatility



of the increase in this volatility could be due to domestic factors (*e.g.,* quarterly advance tax outflow from the banking system and festive season currency demand during October - November) (Chart V.9).

5.32 With receding inflationary pressures and accentuating global crisis, the Reserve Bank swiftly and comprehensively switched to an expansionary regime from mid-October 2008 and announced a series of measures including a cumulative 400 basis points cut in CRR, a 100 basis point cut in statutory liquidity ratio (SLR) and 425 basis points (and 275 basis points) cuts in the repo (and reverse repo) rates, respectively, to augment domestic liquidity. Following the reversal of capital flows and increase in the liquidity needs of the economy, the Reserve Bank also started unwinding of the outstanding market stabilisation scheme (MSS) balances, resulting in a steady release of liquidity. After September 2008, the issue of Treasury Bills under the MSS was suspended. With effect from November 2008, the Reserve Bank also started buyback of dated securities earlier issued under MSS to augment its efforts to hasten the pace of liquidity creation. The buyback was conducted through auctions and largely dovetailed with the normal market borrowing programme of the central government.

5.33 The measures initiated by the Reserve Bank augmented liquidity, and the weighted average call money rate declined and mostly remained within the LAF corridor from November 3, 2008 onwards. Moreover, volumes in the money market have also grown from January 2009 (Table 5.4), which suggests that there has not been any adverse perception of counterparty risk; consequently, the interbank money market functioned normally in India, in contrast to those of certain advanced economies. The average daily net outstanding liquidity injection under LAF, which had increased to around Rs.43,000-46,000 crore during September and October 2008, also declined sharply thereafter and turned into net absorption from early December 2008, reflecting the impact of these measures.

5.34 Liquidity conditions eased even further during 2009-10, mainly on account of a decline in central government cash balances, MSS unwinding and auction-based purchases under open market operation (OMO) (discussed later in the chapter)[4]. Following the easing of liquidity conditions and the reduction in policy rates, the call money rates declined further and hovered around the lower bound of the LAF corridor during 2009-10.

5.35 Collateralised segments now dominate activity in the money market with a share of over 75 per cent of money market operations. The CBLO and market repo volumes also picked up substantially in the last quarter of 2008-09, largely reflecting the easing of liquidity conditions and enhanced lending capacity of mutual funds. The money market rates, which started hardening from January 2008 and peaked in September 2008, have been on the downward trajectory since October

[4] On review of the liquidity conditions, it was decided on May 5, 2009 that only one Liquidity Adjustment Facility (LAF) would be conducted daily with effect from May 6, 2009 (Wednesday) and that the second LAF would be conducted only on reporting Fridays. SLAF was reintroduced on a daily basis with effect from May 28, 2010 till July 2, 2010.

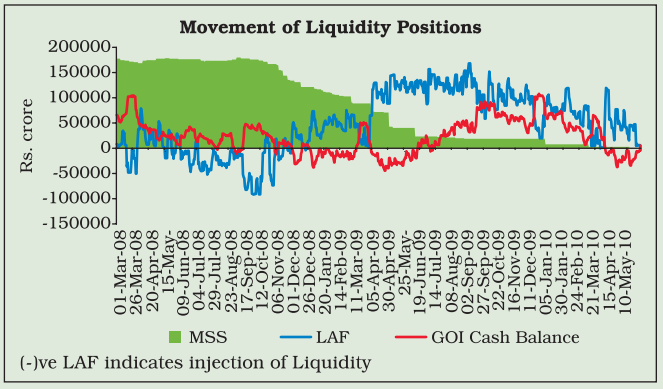
Table 5.4: Activity in Money Market Segments

Month	Average Volume (One Leg) (Rs. crore)					Term Money Market (Rs. crore)	Commercial Paper		Certificates of Deposit	
	Call	Market repo	CBLO	Total	Money Market rate (Per cent)*		Out-standing (Rs. crore)	WADR (%)	Out-standing (Rs. crore)	WADR (%)
1	2	3	4	5	6	7	8	9	10	11
2006-07	**10,863**	**8,419**	**16,195**	**35,477**	**6.57**	**506**	**21,329**	**8.08**	**64,821**	**8.24**
2007-08	**10,697**	**13,684**	**27,813**	**52,194**	**5.48**	**352**	**33,813**	**9.20**	**1,17,186**	**8.94**
2008-09	**11,218**	**14,330**	**30,776**	**56,323**	**6.43**	**397**	**47,183**	**10.54**	**1,62,574**	**9.31**
Apr-08	9,758	14,966	38,828	63,552	5.31	374	37,584	8.85	1,50,865	8.49
May-08	9,740	14,729	36,326	60,795	6.29	420	42,032	9.02	1,56,780	8.95
Jun-08	10,854	11,262	35,774	57,890	7.35	253	46,847	10.03	1,63,143	9.16
Jul-08	12,368	8,591	23,669	44,628	8.09	226	51,569	10.95	1,64,892	10.23
Aug-08	11,704	10,454	22,110	44,268	8.65	501	55,036	11.48	1,71,966	10.98
Sep-08	11,690	10,654	20,547	42,891	9.26	335	52,038	12.28	1,75,522	11.56
Oct-08	14,497	9,591	16,818	40,906	8.66	345	48,442	14.17	1,58,562	10.0
Nov-08	10,906	15,191	24,379	50,476	6.58	319	44,487	12.42	1,51,493	10.36
Dec-08	10,820	16,943	32,261	60,024	5.37	415	40,391	10.7	1,51,214	8.85
Jan-09	9,248	18,053	31,794	59,095	3.99	454	51,668	9.48	1,64,979	7.33
Feb-09	11,121	19,929	38,484	69,534	3.89	669	52,560	8.93	1,75,057	6.73
Mar-09	11,909	21,593	48,319	81,821	3.76	451	44,171	9.79	1,92,867	7.53
Apr-09	10,910	20,545	43,958	75,413	2.41	332	52,881	6.29	2,10,954	6.48
May-09	9,518	22,449	48,505	80,472	2.34	338	60,740	5.75	2,18,437	6.20
Jun-09	8,960	21,694	53,553	84,207	2.69	335	68,721	5	2,21,491	4.90
Jul-09	7,197	20,254	46,501	73,952	2.83	389	79,582	4.71	2,40,395	4.96
Aug-09	7,569	23,305	57,099	87,973	2.62	461	83,026	5.05	2,32,522	4.91
Sep-09	8,059	27,978	62,388	98,425	2.73	381	79,228	5.04	216,691	5.3
Oct-09	7,888	23,444	58,313	89,645	2.70	225	98,835	5.06	2,27,227	4.70
Nov-09	6,758	22,529	54,875	84,162	2.87	191	1,03,915	5.17	2,45,101	4.86
Dec-09	6,651	20,500	55,338	82,489	2.91	289	90,305	5.4	2,48,440	4.92
Jan-10	6,411	14,565	50,571	71,547	2.97	404	91,564	4.80	2,82,284	5.65
Feb-10	6,809	19,821	63,645	90,275	2.95	151	97,000	4.99	3,09,390	6.15
Mar-10	8,812	19,150	60,006	87,968	3.22	393	76,056	6.29	3,41,054	6.07
Apr-10	8,187	20,319	50,891	79,397	3.03	345	98,769	5.37	3,36,807	5.56
May-10	8,393	17,610	42,274	68,277	3.72	338	1,00,364	5.51	3,40,343	5.17

*: Weighted average rate of call, market repo and CBLO.

2008 reflecting various liquidity-inducing measures undertaken by the Reserve Bank (Chart V.10). Further, with the significant easing of liquidity conditions, the rate in the collateralised segments generally remained below the lower bound of the LAF corridor during 2009-10.

Chart V.10: Liquidity Position and Money Market Rate



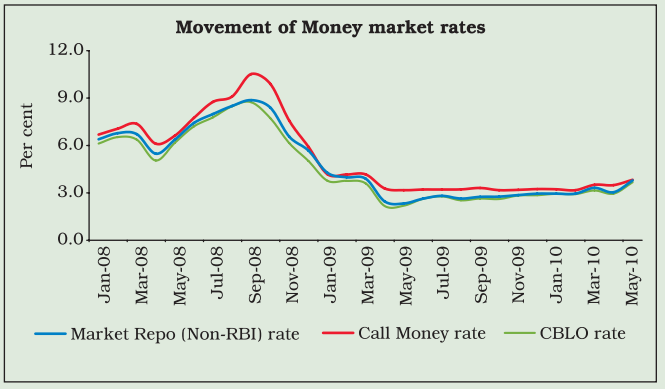
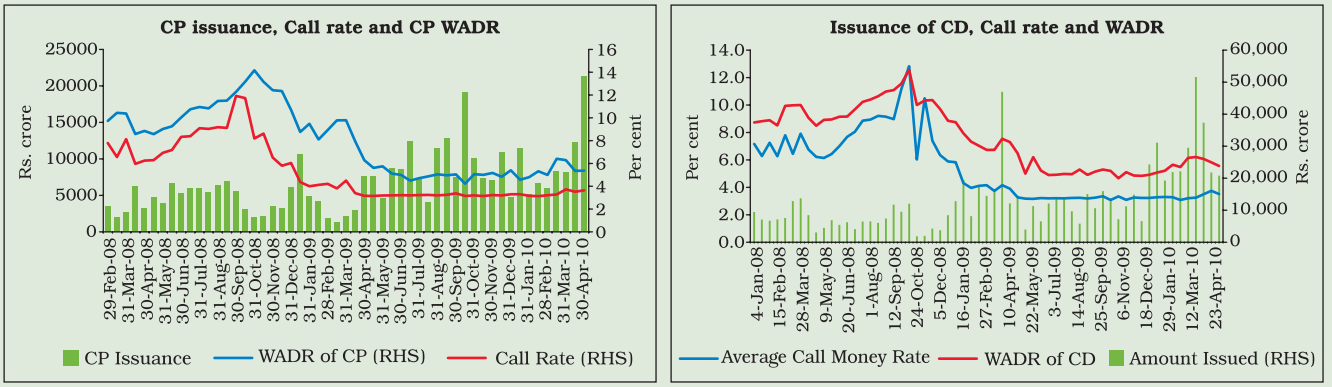


Chart V.11: CP and CD Issuances



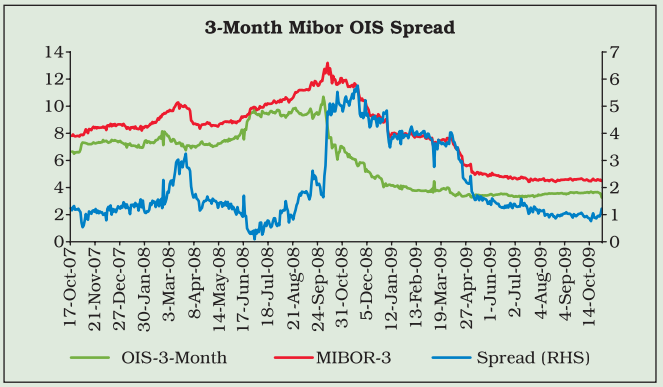
5.36 The indirect impact of the crisis also got reflected in the Certificate of Deposits (CDs) and Commercial Paper (CP) markets. In both the markets, the outstanding amounts declined and the weighted average discount rate (WADR) rose during September-October 2008. A few cases of default by issuers (in meeting the redemptions) were also reported by Issuing and Paying Agents (IPAs) in the CP market. Subsequently, the liquidity conditions eased and the outstanding amount of CP and CDs picked up (Chart V.11). The WADR in the CP and CD markets have generally declined till December 2009 in line with the other money market rates.

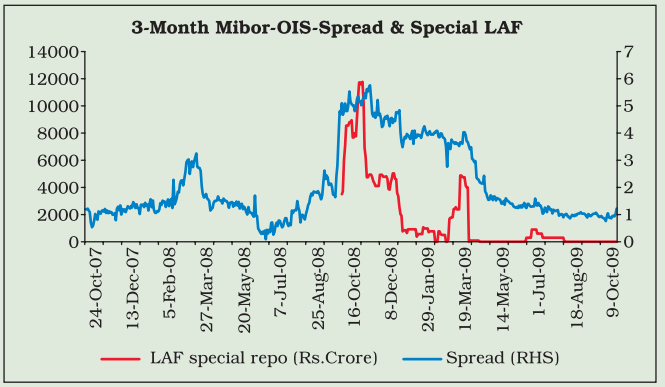
Term Repo Facility

5.37 Dwindling foreign funding and the slump in the domestic capital market exacerbated pressures on some segments of the Indian financial system, such as mutual funds and NBFCs. Facing large redemption pressures, the mutual funds started conserving their liquidity which, in turn, affected other sections of the market, particularly NBFCs that had been dependent on mutual funds for their funding needs. The Reserve Bank, acting swiftly, introduced a term repo facility (a 14-day special repo facility for a notified amount of Rs.20,000 crore) with effect from October 15, 2008 to address such liquidity shortages. Banks were allowed temporary use of SLR securities for collateral purposes by an additional 0.5 per cent of net demand and time liabilities (NDTL). Subsequently, this facility was expanded to enable banks to meet the funding needs of NBFCs and housing finance companies (HFCs). At the same time, the notified amount was increased to Rs.60,000 crore and the relaxation in the maintenance of the SLR was enhanced up to 1.5 per cent of their NDTL from November 2008. In view of its effectiveness, the term lending facility was further extended up to March 31, 2010. A special refinance facility was also introduced on November 1, 2008 to provide funding to SCBs up to 1 per cent of their NDTL at the repo rate to enable banks to meet the liquidity demands. (Also see Section III of this chapter).

5.38 An exercise was undertaken to empirically evaluate the effect of term repo on funding liquidity stress in the Indian financial market during the crisis period. Following, Frank and Hesse (2009) study, 3-month MIBOR-OIS spread was calculated to provide a proxy for the liquidity stress in the Indian markets. The MIBOR-OIS spread increased considerably from end-September 2008 (Chart V.12), which could indicate hoarding of funding in order to cover further contingent liabilities following asset price declines, subsequent marking-to-market of securities and forced liquidations. However, following the introduction of the term repo facility, the MIBOR-OIS spread declined gradually, indicating the easing of financial stress in the financial markets. It may be mentioned that the amount under term repo facility was higher during the periods of high spread, and gradually declined with time in line with the declining spread.

Chart V.12: Money Market Spreads





5.39 The effectiveness of the term repo facility on the MIBOR /OIS volatility was empirically investigated using the MIBOR / OIS volatility (standard deviation of a 5-day moving window) as the dependent variable and dummy variable for term repo (which took value 1 post-October 14, 2008, otherwise 0) and term repo amounts as independent variables. The lagged value of the dependent variable (i.e. volatility) was also included as independent variable. In both regressions, the dummy variables had negative sign and the coefficients of dummy variables were significant at conventional levels[5]. The negative sign of the dummy variables (for term repo facility) indicated that the term repo facility was effective in containing liquidity stress in the Indian economy during the crisis period. Taking into account the prevailing liquidity conditions and declining spreads, the term repo facility was discontinued by the Reserve Bank from October 27, 2009.

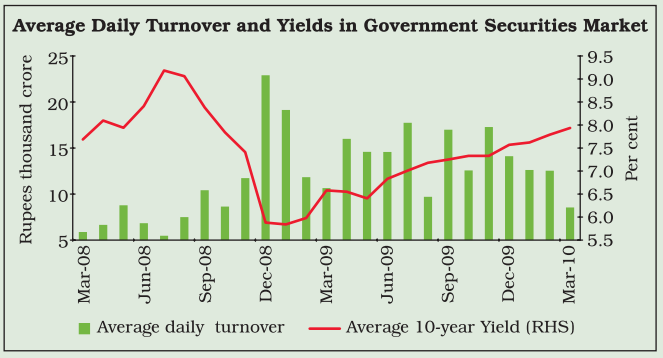
Liquidity Injection and the Reserve Bank's Balance Sheet

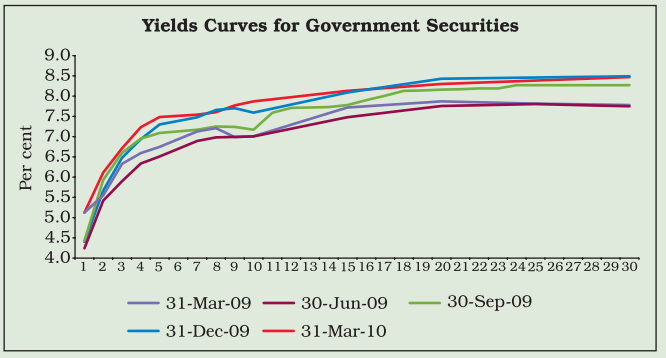
5.40 With large capital outflows during the third quarter of 2008, the net foreign exchange assets (NFA) came under pressure. The Reserve Bank responded by injecting liquidity in the system through conventional OMO, provision of liquidity through repos and term repos under LAF, unwinding of MSS balances and CRR reduction. The unwinding of MSS balances not only created scope for adequate liquidity expansion by the Reserve Bank without expanding its balance sheet in any significant measure, but the timing of the unwinding could also be modulated in such a way that the large borrowing programme of the government was managed smoothly without exerting undue market stress.

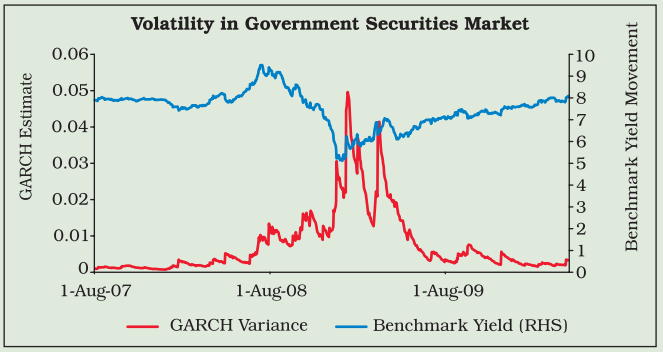
5.41 Thus, the Reserve Bank addressed the financial stress faced by non-banks/banks indirectly through the banking channel and without compromising either the eligible counterparties or the asset quality of its balance sheet, which was in contrast to the approach adopted by the central banks of some of the advanced countries. By synchronising the liquidity management operations with those of exchange rate management and non-disruptive internal debt management operations, the Reserve Bank of India ensured that appropriate

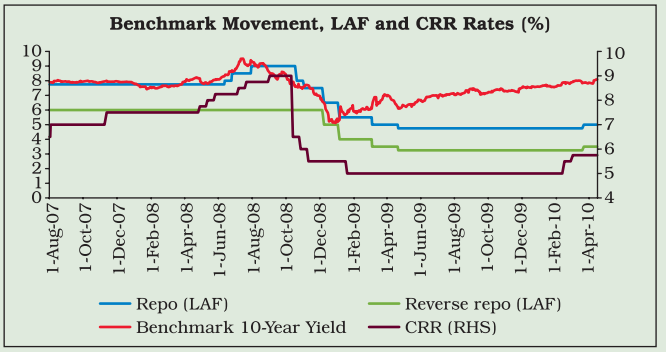
[5] $MIBORV_t = 0.02 - 0.004\ DUMMY_t + 0.83\ MIBORV_{t-1} + 0.002\ TERMREPO_t$
(0.0) (0.05) (0.00) (0.08)
R^2=0.71 DW=1.39
$OISV_t = 0.02 - 0.01\ DUMMY_t + 0.89\ OISV_{t-1} + 0.001\ TERMREPO_t$
(0.0) (0.05) (0.00) (0.35)
R^2=0.82 DW = 1.49
MIBORV= Mibor volatility.
OISV= OIS volatility
Figures in parentheses indicate P-values. Sample period October 2007 - October 2009.

Chart V.13: Developments in Government Securities Market









liquidity was maintained in the system, consistent with the objective of price and financial stability (Mohanty, 2009). The cumulative impact of the various liquidity measures put in place since mid-September 2008 augmented actual/potential liquidity in the system on the aggregate by Rs.5,61,000 crore up to September 2009. (Also see section on Policy Responses towards the end of this chapter). The term repo facility was effective in containing the liquidity stress in the Indian economy during the crisis period.

Government Securities Market

5.42 The government securities market in India has evolved over the years. Recognising the need for a well-developed government securities market, the Reserve Bank, in coordination with the government, initiated a series of measures from the early 1990s to deregulate the market of administered price and quantity controls. Consequently, the government securities market has witnessed significant transformation in various dimensions, *viz*., market-based price discovery, widening of the investor base, the introduction of new instruments, establishment of primary dealers, and implementation of an electronic trading and settlement infrastructure. The switchover to an auction-based system of issuance of government securities in the early 1990s was a major step. This, in turn, led to consistent increases in the size of the market in tandem with the growth in market borrowings of both the central and state governments.

5.43 The operationalisation of the Clearing Corporation of India Ltd. (CCIL) has ensured guaranteed settlement of trades and has, therefore, imparted considerable stability to the government securities market. The operation of a system of market intermediaries in the form of primary dealers (PDs) has facilitated the Reserve Bank's smooth withdrawal from the primary market from April 1, 2006 as provided in the Fiscal Responsibility and Budget Management (FRBM) Act. Reflecting the effectiveness of various measures initiated to develop the market, turnover in the secondary market has increased manifold over the years.

5.44 The impact of the global financial crisis led India to implement extraordinary measures, both on the fiscal and monetary fronts, to stimulate domestic demand. The fiscal consolidation norms set earlier under the Fiscal Responsibility and Budget Management (FRBM) Act have been justifiably suspended for the time being, with the assurance that the government will revert to it as early as feasible. As a result, there were sharp increases in both the borrowings of the central and state governments during 2008-09 over their respective budget estimates.

5.45 The primary market yields of Treasury Bills across all maturities hardened up to August 2008 and softened thereafter, reflecting the interest rate cycle coupled with improvement in liquidity conditions from October 2008. During March 2009, however, the yields hardened from their levels in January and February 2009 due to increased market borrowings by both the central and the state governments and quarterly advance tax outflows. (Chart V.13).

5.46 The movement in the 10-year yield since April 2008 can be categorised into three broad phases (Chart V.14). During the first phase, *i.e.,* April to mid-July 2008, the 10-year yield hardened on heightened inflationary expectations and reached a high of 9.51 per cent on July 15, 2008. During the second phase (mid-July to end-December 2008), the 10-year yield generally eased, following the reduction in inflationary pressures in tandem with the softening of crude oil prices, easing of domestic liquidity conditions and decline in domestic policy rates in response to the indirect impact of the global financial turmoil (from mid-September 2008) and monetary policy easing in the US (Table 5.5). During the third phase (since January 2009), the 10-year yield generally hardened (barring some brief interludes in February and April), notwithstanding the continued prevalence of easy liquidity conditions and further reduction in the domestic policy rates in January 2009

Chart V.14: Movement in benchmark yields (1Y, 5 Y and 10 Y) during 2007-09

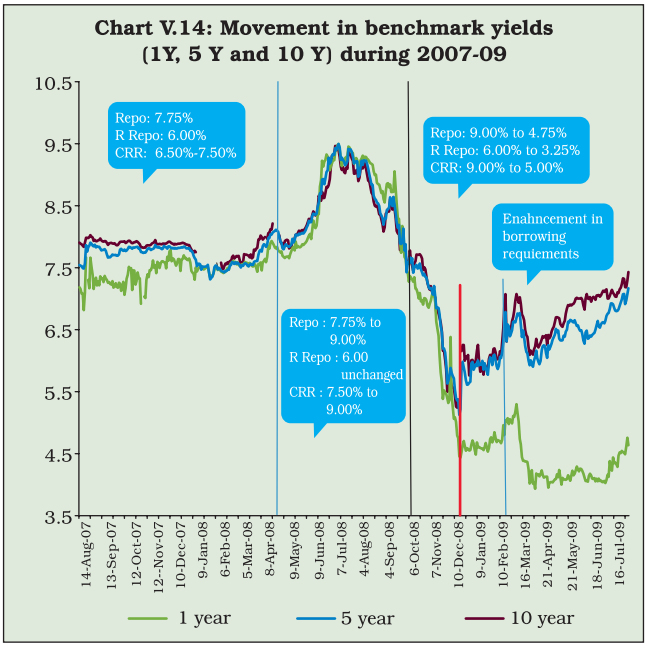


Table 5.5: Transactions in Government Securities Market

Period	Average Turnover in Govt. Securities (Rs. crore)	Average 10-Year Yield@ (per cent)	Average Implicit Yield at Minimum Cut-off Price (364 days) (per cent)	Average Bid-Cover Ratio (364 days) (per cent)
1	2	3	4	5
2006-07	4,863	7.78	7.01	2.45
2007-08	8,104	7.91	7.42	3.21
2008-09	10,879	7.54	7.15	3.47
2009-10	13,939	7.24	4.38	3.64
April-08	6,657	8.10	7.53	2.36
May-08	8,780	8.04	7.61	3.05
June-08	6,835	8.43	7.93	2.80
Jul-08	5,474	9.18	9.39	2.70
Aug-08	7,498	9.06	9.24	4.35
Sept-08	10,418	8.45	8.83	3.57
Oct-08	8,641	7.85	7.92	4.00
Nov-08	11,732	7.41	7.23	4.33
Dec-08	22,903	5.55	5.07	5.14
Jan-09	19,136	5.84	4.64	4.80
Feb-09	11,831	5.98	4.62	2.62
Mar-09	10,644	6.59	5.25	1.44
Apr-09	15,997	6.55	4.07	5.07
May-09	14,585	6.41	3.58	3.14
Jun-09	14,575	6.83	3.99	2.86
Jul-09	17,739	7.01	3.76	3.90
Aug-09	9,699	7.18	4.25	3.76
Sept-09	16,988	7.25	4.47	4.05
Oct-09	12,567	7.33	4.57	2.86
Nov-09	17,281	7.33	4.49	3.36
Dec-09	14,110	7.57	4.63	4.10
Jan-10	12,614	7.62	4.67	4.61
Feb-10	12,535	7.79	4.95	2.49
Mar-10	8,544	7.94	5.13	3.48

and March 2009. This was largely on account of the worsening of market sentiments following the upsurge in the government's market borrowing programme for 2008-09 as well as the large market borrowing requirement of the government for 2009-10.

5.47 Like forex and money markets, the volatility of the 10-year benchmark G-sec movement increased from September 2008 (see Chart V.14). The change in the volatility has been found to be statistically significant at conventional levels. Market borrowings of the Government of India increased sharply during the last quarter of 2008-09 to finance the additional expenditure by way of two supplementary demands for grants to support various stimulus packages. For more effective liquidity management and to ensure that the market borrowing programme of the government was conducted in a non-disruptive manner, the scope of the open market operations (OMO) was widened with effect from February 19, 2009 by including purchases of government securities through an auction-based mechanism in addition to purchases through the Negotiated Dealing System – Order Matching (NDS-OM) segment. The Reserve Bank, as against its intention to purchase government securities amounting to Rs.80,000 crore under the OMO programme for the first half of 2009-10, purchased securities amounting to Rs.57,487 crore up to end-September 2009, through the auction route. Furthermore, the Memorandum of Understanding (MoU) on the MSS was amended on February 26, 2009 to permit the transfer of the sequestered liquidity from the MSS cash account to the normal cash account of the government.

5.48 In sum, the Reserve Bank successfully managed the government market borrowing programme during the crisis year, 2008-09, and 2009-10, without creating any disruptive pressures on the government securities market. The Reserve Bank employed a combination of measures involving monetary easing and the use of innovative debt management tools such as synchronising the Market Stabilisation Scheme (MSS) buyback auctions and open market purchases with the government's normal market borrowings and de-sequestering of MSS balances. By appropriately timing the release of liquidity to the financial system to coincide with the auctions of government securities, the Reserve Bank ensured a relatively smooth conduct of the government's market borrowing programme, resulting in a decline in the cost of borrowings during 2008-09 for the first time in the past five years. Reflecting the continued need for fiscal stimulus in 2009-10 which led to large borrowing requirements, the Reserve Bank continued with an active debt management strategy so as to mitigate pressures on interest rates and avert possible crowding out of private sector demand for credit.

Capital Markets and Asset Prices

5.49 The Indian equity market has witnessed a significant improvement since the reform process began in the early 1990s. The equity market in India is now comparable with international markets. The changes in regulatory and governance framework have increased investors confidence. There has been a visible improvement in trading and settlement infrastructure, risk management systems and levels of transparency. These improvements have reduced transaction costs and led to improvements in depth and liquidity

5.50 Before the onset of the sub-prime crisis in the US in August 2007, capital markets across advanced and emerging market economies had witnessed a strong rally. The mounting losses of large financial institutions on account of the sub-prime crisis, however, intercepted the rally and capital markets started sliding in most of the advanced economies. Confidence in many large financial institutions was severely shattered by the sub-prime mortgage losses and the share prices of these institutions, especially investment banks, crumbled drastically from the later part of 2007. Subsequently, capital markets of emerging market economies also started decelerating, primarily on account of large pullouts by foreign institutional investors (FIIs).

5.51 Although Indian banks/ financial institutions had no significant exposure to the US sub-prime

market, Indian capital markets caught the global downswings in January 2008, largely driven by selling pressures by FIIs. Besides pullouts by FIIs, turmoil in international financial markets also weakened domestic sentiments and amplified the downturn in Indian capital markets. Major events involving losses of mortgage companies and international commercial/ investments banks continued to spike the stress in capital markets across advanced and emerging market economies during 2008-09. Indian stock markets also responded to these major global events, reflecting the increased financial integration of the Indian economy.

Primary Markets

5.52 The primary segment of the capital market, which remained buoyant in the years before the recent crisis, subdued significantly during 2008-09 (Table 5.6). The slump in the primary market during the second half of 2008-09 was driven by heightened volatility and uncertainty in the financial markets, slowdown in growth and incumbent demand for investment and dampened sentiment due to depressed secondary markets.

Table 5.6: New Capital Issues by Non-Government Public Ltd. Companies

Month	Equity Shares		ADRs/ GDRs	
	No. of Issues	Amount (Rs. crore)	No. of Issues	Amount (Rs. crore)
1	2	3	4	5
April-08	2	439	4	2,151
May-08	4	307	3	1,901
June-08	9	1,285	1	3
Jul-08	5	262	1	30
Aug-08	5	368	1	567
Sept-08	7	9,700	0	0
Oct-08	3	129	2	35
Nov-08	2	148	0	0
Dec-08	3	1,370	0	0
Jan-09	0	0	0	0
Feb-09	1	24	0	0
Mar-09	4	640	1	102
Apr-09	0	0	1	167
May-09	1	9	0	0
Jun-09	4	227	1	48
Jul-09	3	3,179	1	48
Aug-09	4	366	4	4,618
Sept-09	12	2,853	1	7,763
Oct-09	4	2,023	1	446
Nov-9	3	878	2	1,774
Dec-09	5	3,586	2	299
Jan-10	8	2,101	4	349
Feb-10	8	5,274	0	0
Mar-10	15	4,803	1	455

5.53 The number of initial public offerings (IPOs) in the private sector plummeted significantly during the second half of 2008-09. Similarly, resources mobilised through ADRs/GDRs declined sharply in the second half of 2008-09. The private placements market that had been a major alternative source of funding for Indian corporates in the recent past also contracted in 2008-09. The primary market activities, however, revived since June 2009 and picked up sharply during the last quarter of 2009-10 as indicated by IPOs.

Secondary markets

5.54 The global crisis had a pronounced effect on financial markets in general and stock markets in particular through a rapid decline in stock prices and the market capitalisation of listed companies, leading to adverse consequences of the wealth effect on macroeconomic aggregates. Over the past two decades, stock markets had witnessed rapid growth due to globalisation, reform and advancement in information technology. The bulk of this expansion came from EMEs in the Asia-Pacific region and, as a result, market capitalisation of stock exchanges as a percentage to GDP in the low- and middle-income countries had almost converged with high-income countries during recent periods (Table 5.7). This rapid expansion of market capitalisation also provided adequate lubricant to the finance channels to transmit shocks across the equity markets, with stock markets emerging as key channels during the financial crisis.

5.55 The market capitalisation of stock exchanges in regions such as East Asia, including China, and South Asia, including India, which experienced high economic growth during 2003-2007, surpassed the high-income OECD countries. With the global crisis, the market capitalisation of stock exchanges in East Asia and the Pacific region in 2008 fell by more than 50 per cent, comparable to the position one and a half

Table 5.7 : Market Capitalisation of Stock Exchanges: Region-wise

(per cent to GDP)

Year	East Asia & Pacific	High income	High income: OECD	Euro area	Latin America & Caribbean	Low & middle income	Lower middle income	Middle income	South Asia	Upper middle income	World
1	2	3	4	5	6	7	8	9	10	11	12
1991	16.4	57.0	56.7	22.5	18.9	18.2	11.2	18.5	16.2	22.5	51.5
1993	55.0	62.6	60.5	26.1	31.1	34.0	28.2	34.4	30.3	38.2	58.3
1997	25.5	89.1	88.6	44.8	29.6	29.9	21.7	30.3	26.7	36.8	78.1
1998	30.9	106.1	106.9	63.0	19.5	23.8	23.0	24.0	20.9	24.8	91.3
1999	42.6	134.2	134.2	83.4	32.8	38.9	33.1	39.6	33.5	45.3	118.3
2000	47.1	116.8	117.1	87.0	31.8	35.5	35.3	36.1	26.1	36.7	102.3
2001	42.2	102.0	101.8	68.3	32.5	32.6	30.2	33.0	19.1	35.7	89.4
2002	35.9	81.6	81.0	50.9	25.4	30.1	27.4	30.4	22.2	33.6	72.5
2003	46.7	98.2	96.9	58.3	29.7	39.6	39.0	40.3	39.5	41.7	87.6
2004	40.2	104.6	102.4	61.0	35.6	42.1	37.7	42.9	48.1	48.1	92.6
2005	40.6	110.5	107.1	62.7	40.5	48.6	42.5	49.5	60.2	56.0	97.5
2006	84.9	122.8	120.9	80.7	49.1	71.7	75.7	72.9	76.9	70.3	111.1
2007	158.9	123.5	119.9	85.3	70.8	112.1	140.4	113.5	133.4	86.5	120.7
2008	58.0	62.9	61.8	38.0	31.9	48.9	53.5	49.5	47.0	45.5	59.2

Source: World Development Indicators, World Bank.

decades ago (Table 5.8). Further, the decline was comparable to the OECD countries, which underlines the importance of global integration in transmitting shocks across the markets.

5.56 The reversal of private capital flows to emerging and developing economies was the major factor that contributed to the decline of stock markets in the EMEs. According to the IMF, private

Table 5.8: Market Capitalisation of Stock Markets in Emerging Market Economies

(Per cent to GDP)

Year	Brazil	China	India	Indonesia	Malaysia	Korea	Philippines	Thailand	Mexico	Russia
1	2	3	4	5	6	7	8	9	10	11
1991	10.5	0.5	17.8	5.3	119.3	31.3	25.1	36.4	31.2	0.0
1996	25.8	13.3	31.6	40.0	304.6	24.9	97.4	54.9	32.0	9.5
1997	29.3	21.7	31.3	13.5	93.5	8.9	38.1	15.6	39.0	31.7
1998	19.1	22.7	25.3	23.2	136.6	35.1	54.2	31.2	21.8	7.6
1999	38.8	30.5	41.0	45.8	183.8	88.8	55.3	47.7	32.0	36.9
2000	35.1	48.5	32.2	16.3	124.7	32.2	34.2	24.0	21.5	15.0
2001	33.6	39.5	23.1	14.3	129.3	43.6	58.3	31.5	20.3	24.9
2002	24.6	31.9	25.8	15.3	122.8	43.3	50.8	36.4	15.9	36.0
2003	42.5	41.5	46.6	23.3	152.8	51.2	29.6	85.0	17.5	53.5
2004	49.8	33.1	55.3	28.5	152.3	59.4	33.3	72.3	22.6	45.3
2005	53.8	34.9	68.3	28.5	131.4	85.0	40.6	74.4	28.2	71.8
2006	65.3	91.3	89.5	38.1	150.5	87.8	58.2	71.0	36.7	106.7
2007	102.8	184.1	154.6	49.0	174.4	107.1	71.7	82.9	38.9	116.5
2008	36.6	64.6	53.0	19.2	96.0	53.2	31.2	39.4	21.4	82.2
Growth rate of Stock Market Capitalisation										
2008	-56.8	-61.4	-64.4	-53.3	-41.8	-58.1	-49.4	-47.7	-45.7	–
2009	125.9	89.8	101.9	117.6	51.2	77.3	66.0	71.6	89.2	–

Source: World Development Indicators, World Bank; World Federation of Exchanges.

capital flows to emerging and developing economies declined by 81 per cent in 2008 from the peak in 2007. Though direct investment flows showed stability, there was a sharp decline in other private capital flows comprising portfolio flows, external debt and official assistance.

5.57 The mounting losses of large financial institutions on account of spiralling default in mortgage loans and deteriorating valuations of mortgage-backed and other securities since August 2007 triggered deleveraging by these institutions based in the US and other advanced economies. With increasing deleveraging along with weakening of earnings prospects on the back of the intensifying economic slowdown, the stock markets began decelerating from January 2008 in advanced and emerging market economies. The failure of Lehman Brothers in September 2008, however, led to a sharp jump in counterparty risk that was reflected in a steep rise in spread on credit default swaps (CDS) and, eventually, amplified the pace of decline in stock markets across countries. During the recent crisis, stock market crashes were widespread despite varying macroeconomic fundamentals across countries.

Global Synchronisation

5.58 Indian stock markets also responded, taking their cue from markets in advanced economies, the epicentre of the current global crisis, and started decelerating from their peak on January 8, 2008 (the BSE Sensex was at 20,873), despite relatively robust macroeconomic fundamentals. In fact, of late, the movements in Indian stock markets have been highly synchronised with advanced and emerging market economies. The inter-temporal cyclical synchronisation of Indian stock markets has been estimated with select advanced and emerging market economies and it has gone up significantly with all these countries, barring Japan, during recent periods (Table 5.9). This increasing cyclical synchronisation of Indian stock markets reflects the increasing financial globalisation of the Indian economy over the past few years, which has been largely propelled by large inflows by foreign institutional investors (FIIs).

Table 5.9: Cyclical Synchronisation of Indian Stock Market with Select Countries

Country	2001: M1 to 2005: M12	2006: M1 to 2009: M8
1	2	3
China	0.66	0.76
Singapore	0.64	0.86
Korea	0.48	0.91
Japan	0.63	0.62
USA	0.65	0.87

Source: Data on country-wise Share Prices Index has been taken from IFS, IMF.

5.59 Foreign investors, through their buying and selling activities across countries guided by portfolio diversification objectives, contribute to price co-movement and integration among regional and global stock markets (Dhal, 2009). From this perspective, it is important to analyse the impact of global stock markets on the national stock markets. An empirical analysis confirmed that the regional stock markets in Asia including India, Hong Kong, and Singapore and global markets such as the US, UK, and Japan shared a single long-run co-integrating relationship in terms of stock price indices measured in US dollars rather than the local currencies (Table 5.10). The Indian market held the

Table 5.10: Integration of India's Stock Market with Regional and Global Markets

	Long-run Co-integrating Relation among Stock Price Indices in US dollar				
1	2	3	4	5	6
India	1.0000	1.0000	1.0000	1.0000	1.0000
Hongkong	-1.2407	0	-0.7263	-1.6178	0
	(-5.83)		(-5.35)	(-6.34)	
Singapore	0.4451	-0.0436	0	0.4454	0
	(2.99)	(-0.35)*		(2.50)	
Japan	-0.4353	-0.7451	-0.3645	0	0
	(-3.39)	(-4.40)	(-2.82)		
UK	-3.7438	-3.9411	-3.4277	-3.9663	-5.9019
	(-11.47)	(-9.01)	(-10.81)	(-10.14)	(-11.41)
US	4.5296	4.3599	3.9150	4.7709	6.2101
	(13.17)	(10.01)	(13.32)	(11.48)	(11.57)
TREND	-0.0033	-0.0040	-0.0033	-0.0030	-0.0046
	(-17.92)	(-17.05)	(-17.31)	(-13.69)	(-12.87)
Intercept	-2.2409	-2.5587	-1.7563	-2.5748	-5.6351
Restriction on the coefficients of regional markets: Chi-square statistic (significance)		16.83 (0.00)	7.03 (0.01)	6.26 (0.01)	30.04 (0.00)

* Not significant at 5 per cent level.

Note: 1. Estimate based on the stock price indices in US dollar over natural logarithm scale.
2. Figures in parentheses indicate asymptotic 't' statistic.

Source: Dhal (2009).

key to this integration process. This was evident from the analysis that, excluding India, the other five stock markets did not show a co-integrating relationship. The coefficients of the long-run co-integration vector showed that the impact of the global markets on the Indian stock market was more pronounced than the impact of the regional markets. In terms of forecast error variance decomposition, global and regional markets together accounted for the bulk of variation in the Indian stock market.

Global Developments and Equity Prices

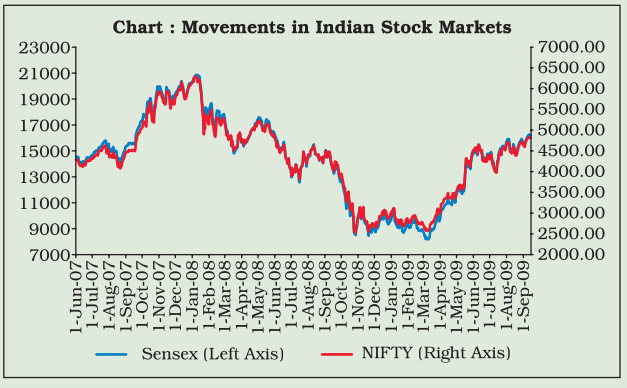
5.60 Foreign institutional investors (FIIs) started withdrawing from Indian stock markets from January 2008 as manifested by their larger net negative investments reflecting global deleveraging. The selling pressure by FIIs in Indian stock markets accentuated during October 2008, following heightened turmoil in international financial markets fuelled by Lehman Brothers' bankruptcy, and stock markets plummeted to a large extent. The Indian stock markets appear to have reacted to all major global events during the current crisis (Box V.3).

5.61 Along with large pullouts by FIIs as part of the deleveraging process and lowering of sentiments due to adverse events in international financial markets, the other impacts on the Indian economy were in the form of collapsing exports, tightening financial conditions and elevated uncertainty in the backdrop of the accentuated economic slowdown unleashed by the global crisis since October 2008. The dampening of the earning prospects of Indian corporates on the back of the real sector effects since the beginning of the third quarter of 2008-09 amplified the setback faced by

Box V.3
Major Global Events and Response of Indian Stock Markets

The current global crisis, which originated with the eruption of the sub-prime crisis in the US in August 2007, deepened with the unfolding of various events connected with financial markets. Some of these events and the response of Indian stock markets are discussed below.

- JP Morgan and Citibank announced huge losses as a result of a sharp fall in asset valuations and other exotic instruments in early March 2008. Furthermore, Bear Stearns was engulfed by a severe liquidity shortage in mid-March 2008 on account of cumulative mounting valuation losses. The US government facilitated the JP Morgan Chase takeover of Bear Stearns on March 16, 2008. The BSE Sensex slipped to 14,809 on March 17, 2008.



- The US government-sponsored mortgage guarantors Fannie Mae and Freddie Mac, which had guaranteed over US$ 12 trillion in US home mortgage loans, had a drastic fall in their asset valuations on July 2008. The BSE Sensex, responding to the spillovers of this event, dipped to 12,576 on July 16, 2008, which was lower by 19.6 per cent from the end-March 2008 level and by 39.8 per cent from the January 8, 2008 peak.

- Lehman Brothers, one of the largest investment banks in USA, filed for bankruptcy protection on September 15, 2008. Another major investment bank, Merrill Lynch, however, was rescued by merging with Bank of America. The Indian stock markets started sliding further and the BSE Sensex dipped to 12,860 on September 30, 2008.

- The US Federal Reserve announced plans for purchases of up to US$ 300 billion of longer-term Treasury securities over a period of six months on March 18, 2009.

- The G-20 issued a communiqué pledging joint efforts by governments to restore confidence and growth, including measures to strengthen the financial system on April 6, 2009. The market has been recovering since the beginning of 2009-10.

the Indian stock markets. All these factors affected the confidence of domestic retail and institutional investors, and stock markets witnessed a continuous slide until March 2009 (Table 5.11).

5.62 The BSE Sensex dipped by about 38 per cent to 12,860 at end-September 2008 from a peak of 20,873 on January 8, 2008, reflecting the initial impact of the crisis. Subsequently, it declined further by about 37 per cent to a new low of 8,160 on March 3, 2009 from the end-September 2008 level. The decline in the BSE Sensex from the peak to the new low was to the extent of 61 per cent. The volatility in Indian stock markets has also increased in sync with global stock markets since the beginning of 2008. The volatility measured in terms of the standard deviation of daily stock market indices (BSE Sensex and Nifty) shot up sharply in January 2008, October 2008, and May 2009, reflecting global events and domestic developments (Table 5.9). This was also confirmed when volatility was measured by GARCH (1,1) (Chart V.15).

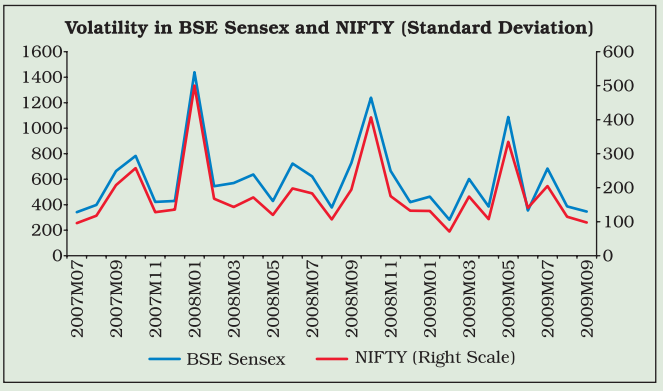
5.63 The sharp fall in the stock markets was also visible in the major indicators. The P/E ratio and price-book value ratio of both the BSE Sensex and Nifty declined significantly during 2008-09 (Table 5.12). The market capitalisation of both the markets, which made rapid strides during the past 2-3 years, also slumped drastically by almost half during 2008-09 over the preceding year.

5.64 During 2009-10, volatilities in the stock markets declined and asset prices recovered from their previous lows across countries. In Indian markets also, FIIs returned with net purchases and retail investors and mutual funds also made a swift

Table 5.11: Trends in BSE and Nifty Indexes

Month	NIFTY	BSE SENSEX	FII Investment (Net) (Rs. crore)	Mutual Funds Investment (Net) (Rs. crore)	IIP (growth in per cent)
1	2	3	4	5	6
Jan-08	5756	19326	-17,227	7,703	6.2
Feb-08	5202	17728	4,883	514	9.5
Mar-08	4770	15838	125	-1,971	5.5
April-08	4902	16291	979	-112	6.2
May-08	5029	16946	-4,672	64	4.4
June-08	4464	14997	-10,578	3,179	5.4
Jul-08	4125	13716	-1,012	1,412	6.4
Aug-08	4417	14722	-7,937	-369	1.7
Sept-08	4207	13943	-2,066	2,292	6.0
Oct-08	3210	10550	-14,249	1,432	0.1
Nov-08	2835	9454	-3,362	-373	2.5
Dec-08	2896	9514	1,319	341	-0.2
Jan-09	2854	9350	-4,250	-864	1.0
Feb-09	2819	9188	-2,690	-1,496	0.2
Mar-09	2802	8995	269	1,477	0.3
Apr-09	3360	10911	7,384	39	1.1
May-09	3958	13046	20,607	2,291	2.1
Jun-09	4436	14782	3,225	839	8.3
Jul-09	4343	14635	11,625	1,826	7.2
Aug-09	4571	15415	4,029	570	10.6
Sept-09	4859	16338	19,939	-2,335	9.3
Oct-09	4994	16826	8,304	-5,194	10.2
Nov-09	4954	16684	5461	-696	12.0
Dec-09	5100	17090	10367	1762	17.7
Jan-10	5156	17260	-1137	-1311	16.3
Feb-10	4840	16184	2114	-697	15.1
Mar-10	5178	17303	20318	-4082	13.9
Apr-10	5295	17679	8416	-1410	17.6
May-10	5053	16845	-9175	99	-

Chart V.15: Volatility in Stock Markets



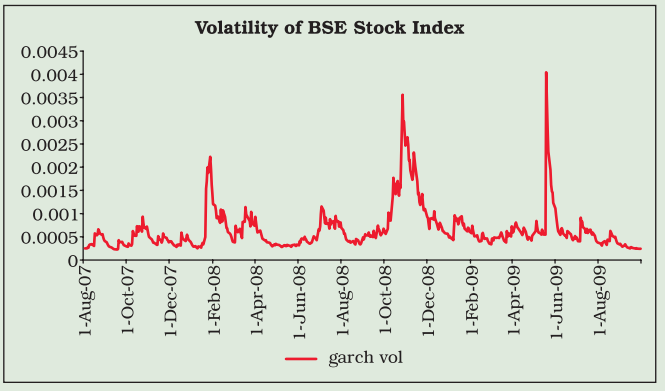


Table 5.12: Stock Market Indicators

Indicator	BSE						NSE					
	2000-01	2006-07	2007-08	2008-09	2009-10	2010-11 (Apr-May)	2000-01	2006-07	2007-08	2008-09	2009-10	2010-11 (Apr-May)
1	2	3	4	5	6	7	8	9	10	11	12	13
1 BSE Sensex / S&P CNX Nifty												
(i) End-period	3,604	13,072	15,644	9,709	17,127	16,945	1,148	3,822	4,735	3,021	5,249	5,086
(ii) Average	4,270	12,278	16,569	12,366	15,585	17,251	1,335	3,572	4,897	3,731	4,658	5,171
2 Coefficient of Variation	8.8	11.1	13.7	24.2	11.9	3.0	7.5	10.4	14.5	23.2	11.3	2.9
3 Price-Earnings Ratio (end-period)*	23.9	20.7	20.1	13.7	21.32	20.40	20.4	19.5	20.6	14.3	22.3	21.3
4 Price-Book Value Ratio (end-period)*	3.6	5.1	5.2	2.7	3.9	3.5	4.2	4.9	5.1	2.5	3.7	3.6
5 Yield* (per cent per annum) (end-period)	1.3	1.3	1.1	1.8	1.10	1.12	1.2	1.3	1.1	1.9	0.94	0.97
6 Market Capitalisation to GDP Ratio (per cent)@	25.8	85.5	113.1	59.0	106.5	87.8	28.9	81.6	107.0	55.4	103.8	85.5

*: Based on 30 scrips included in the BSE Sensex and 50 scrips included in the S&P CNX Nifty.
@: As at end-period.
Source: Bombay Stock Exchange Ltd. (BSE) and National Stock Exchange of India Ltd. (NSE).

reversal with a buying spree from March 2009. The price-earnings and price-book value ratios of both stock markets also surged significantly at the end of March 2010 from end-March 2009, on the back of fast recovery. Similarly, the stock market's capitalisation bounced back and, as the percentage of GDP, reached over 100 per cent at end-March 2010, which is almost the level achieved in end-March 2008. The recovery in the Indian stock markets could be attributed to a number of factors such as reduction in policy rates, the positive results of corporates and banks during 2009-10, political stability after the general elections, and stabilisation of the global economy.

Drivers of Stock Markets

5.65 In the long run, information tends to be symmetric and, hence, stock market movements are anchored to economic fundamentals. Besides the nature of available information, at times herd behaviour among investors spurred by domestic or global factors outplays the fundamentals and dictates movements in the stock markets in the short run. Similarly, other factors such as enabling liquidity, capital flows, and governance greatly influence the course of movements in stock markets. Illustratively, before the recent crisis economies across the world witnessed easing liquidity on account of accommodative monetary policy and large capital flows, and stock markets made rapid strides in advanced and emerging market economies (EMEs). As discussed above, the stock markets have become highly synchronised across countries over the past few years with increasing cross-border capitals flows, especially for FIIs. During the recent crisis also, deleveraging by FIIs along with other factors such as the economic downturn, declining exports, exposure to troubled financial institutions and toxic assets appear to have triggered a significant downturn in stock markets.

5.66 In India too, though foreign direct investment showed stability, the decline of portfolio flows played a crucial role in the decline of stock prices. An empirical analysis within the framework of the VAR model showed that FII flows were Granger-caused by developments in the real economic activity abroad measured by US industrial production growth and the differential between domestic interest rates (call money rate) and foreign interest rates (3-month LIBOR rate) (Table 5.13). The differential interest rates reflect the arbitrage opportunity. Further, a bivariate VAR model revealed that there was a significant Granger causal relationship from FII flows to the Indian stock market. The feedback causality from the BSE index to FII flows was also significant, *albeit* at a 10 per cent level of significance. The variation in FII flows could explain about 35 per cent of the variation in the Indian stock market.

Table 5.13: FII Flows and India's Stock Market: Causal Relationship

Null Hypothesis	Chi-square statistic (level of significance)	Result: Reject / Accept the Null
1	2	3
Real economic growth of the US does not cause FII flows to India	11.59 (0.02)	Reject
FII flows to India do not cause real economic growth of the US	6.79 (0.15)	Accept
Interest rate differential does not cause FII flows to India	7.91 (0.09)	Reject
FII flows to India do not cause interest rate differential	3.01 (0.56)	Accept
Variation in FII flows does not cause variation in BSE Sensitive Index	16.79 (0.00)	Reject
Variation in BSE Sensitive Index does not cause variation in FII flows	9.51(0.09)	Reject

5.67 Another exercise was undertaken to find the drivers of Indian stock markets. In this regard, a general vector autoregression (VAR) framework with monthly data from 2001 to 2009 was estimated with BSE Sensex (BSES), net FII investment (NFIIs), net investment by mutual funds (NMF), money supply (M3) and index of industrial production (IIP). The Cholesky variance decomposition suggests that, in the first period, net investment by FIIs explains about 4 per cent variation in BSES, which increases to about 35 per cent by the end of the 12th period, but descends slowly afterwards. On the other hand, variation in the BSES caused by net investments by mutual funds, IIP and money supply also rises over time and reaches 4 per cent, 6 per cent and 5 per cent, respectively, by the end of the 12th period.

5.68 The Granger Causality estimation between BSES and NFIIs, NMF, IIP and M3 in the VAR framework also suggests unidirectional causality running from NFIIs and M3 to BSES, and BSES to NMF and IIP. This shows that FII investment and money supply do exert significant influence on the movements of stock markets in India; while the relationship is the other way round in the case of investments by mutual funds wherein stock markets cause their variations. On the basis of the above empirics, it can be inferred that FIIs have been driving a large part of the swings in Indian stock markets.

Asset Prices and Real Activity

5.69 Asset prices could affect private consumption demand through three key channels. First, according to the life-cycle hypothesis, as consumption is a function of agents' lifetime resources, changes in the prices of financial (*e.g.*, stock prices) and non-financial (*e.g.*, housing prices) assets can significantly affect consumption. Second, real asset prices also signal expected future income growth. Given that consumption in a period would be affected by agents' expectations about their future income, changes in asset prices may influence current consumption. Third, the availability and cost of external finance to households may depend on the assessment of the lender about their net worth. Since household net worth may undergo changes due to changes in asset prices, fluctuations in expected income may have a significant impact on consumption.

5.70 The impact of asset prices on investment may take place through three channels. First, a decline in asset prices can increase the cost of new capital relative to the existing capital. Second, as asset prices are assumed to contain information about future growth prospects, changes in asset prices would impact current investment activity (Mullins and Wadhwani, 1989). Third, through the credit channel, fluctuations in the net worth of a firm (originating from stock price shocks) impact the financing premium for the firm. Falling asset prices would lead to deterioration in the balance sheets of firms and banks and, hence, lower the lending and raise the cost of capital.

5.71 One of the key elements of the asset price channel that has gained importance is capital flows, which affects the demand for assets and then asset prices. There could also be spillover effects to other segments of markets, such as the housing market.

Large capital inflows may engender high liquidity growth in the economy, which in turn can raise asset prices. Capital inflows can also lead to a sharp rise in asset prices by feeding into the investment and real activity in the economy, which in turn reduces risk perception. An adverse external shock in the form of adverse news or reversal of financial flows affects domestic asset prices in several ways. Given the greater integration of financial markets relative to the goods market, an adverse shock to equity prices in major markets could be swiftly transmitted.

5.72 The macroeconomic impact of the declining stock market was evident in various ways. In India, the share of household savings in equities to their total savings declined. Declining household savings in equities coupled with the decline of portfolio flows and stock prices adversely affected the new issues of capital raised by private companies. Accordingly, the share of new capital issues in gross domestic capital formation fell in 2008-09.

5.73 Understanding the impact of the stock market on real activity in India is important to gauge the impact of global financial shocks on the domestic economy as equity prices affect the domestic economy through both the wealth effect and corporate balance sheets. Using monthly data over April 1994 to July 2009, it was found that the real return on stocks and the growth of industrial production shared a unidirectional causal relationship due to the former significantly Granger-causing the latter (Table 5.14). This causal relationship was derived from the impact of real stock return on industries such as basic goods, capital goods and intermediate goods. These results reflect the role of stock markets in terms of wealth effect on investment activities and thus, the output growth of capital intensive industries such as capital goods and intermediate goods.

5.74 In sum, Indian capital markets were also affected by the current global crisis from January 2008 largely on account of selling pressures by FIIs, besides weakened domestic sentiments on account of turmoil in international financial markets. Indian stock markets responded to the major global events during the crisis period, reflecting the increased financial integration of the Indian economy. The steep decline witnessed from January 2008 to September 2008 was reinforced in the period after Lehman Brothers failed and stock markets reached a new low in March 2009. The deleveraging by FIIs, along with other factors such as the economic downturn, declining exports and weakened sentiments, has driven the significant downturn in stock markets during the current crisis. Declining asset prices also affected real activities such as consumption and investments. The empirical results suggest that FIIs have been driving the Indian stock markets to a large extent.

Table 5.14: Real Stock Return and Industrial Production Growth
Pair-wise Granger Causality Tests

Null Hypothesis:	F-Statistic	P-value
1	2	3
GIIP does not Granger Cause BSER-INF	1.48	0.136
BSER-INF does not Granger Cause GIIP	2.47	0.006
GBG does not Granger Cause BSER-INF	1.85	0.045
BSER-INF does not Granger Cause GBG	2.20	0.014
GKG does not Granger Cause BSER-INF	1.29	0.230
BSER-INF does not Granger Cause GKG	1.80	0.053
GIG does not Granger Cause BSER-INF	0.79	0.660
BSER-INF does not Granger Cause GIG	2.48	0.006
GCG does not Granger Cause BSER-INF	1.18	0.301
BSER-INF does not Granger Cause GCG	1.12	0.346
GCDG does not Granger Cause BSER-INF	1.39	0.176
BSER-INF does not Granger Cause GCDG	0.76	0.690
GCNDG does not Granger Cause BSER-INF	1.20	0.286
BSER-INF does not Granger Cause GCNDG	1.28	0.238

GIIP=growth in IIP, BSER-INF= Real growth in stock prices, GBG= growth of production of basic goods, GKG= growth of production of capital goods, GIG = growth of production of intermediate goods, GCDG= growth of production of consumer durables, GCNDG= growth of production of consumer non-durables.

III. BANKING SECTOR, MUTUAL FUNDS AND NON-BANKING FINANCIAL COMPANIES

5.75 The banking sector in India, as in most of the emerging market economies (EMEs), displayed resilience during the current global financial meltdown. The strength and resilience in the balance sheets of Indian banks was derived from them being well-capitalised and having greater exposure to domestic conventional assets,

unlike advanced countries where the banking sector had extensive exposure to sub-prime mortgage markets (particularly, in the US) and other exotic structured products. Furthermore, the banking sector in India, unlike advanced countries, is dominated by commercial banking and not investment banking.

5.76 The direct effects of the global financial crisis on the Indian banking and financial system were almost negligible due to the limited exposure to riskier assets and derivatives and the relatively low presence of foreign banks (Thorat, 2009). *Prima facie*, Indian banks faced the stress because foreign investors pulled out of the economy and created a liquidity crunch. There was suddenly less money available to borrow or lend. The tightened global liquidity situation in the period immediately following the failure of Lehman Brothers in mid-September 2008, coming as it did on top of a turn in the credit cycle, increased the risk aversion of the financial system and made banks cautious about lending (Subbarao, 2009). At the same time, corporates and retail investors exerted redemption pressures on mutual funds, some of which got transmitted to NBFCs due to their dependence for funds on mutual funds. Thus, despite not being getting a hit on the balance sheets, banks and other financial institutions were impacted by the indirect spillovers of the crisis during 2008-09.

5.77 The capital to risk-weighted assets of Indian banks stood higher than many of the advanced and emerging market economies indicating that Indian banks were comparatively better positioned in terms of capitalisation compared to their peers across countries. All commercial banks met the minimum capital adequacy norm of 9 per cent as at end-March 2009. Similarly, Indian banks were saddled with lower non-performing loans (NPLs) *vis-à-vis* banks in many EMEs and advanced countries in 2008. The rate of return on assets of Indian banks, however, was on the low side compared to banks in most of the EMEs, but higher than those in advanced countries. The proportion of time deposits to total deposits improved during 2008-09 across bank groups, indicating the improved confidence of the public in banks despite the intensified turmoil in international financial markets. The share of liquid assets held by banks in their portfolios, however, declined marginally during 2008-09, except for large banks, for which it remained almost at the previous year's level (Table 5.15).

Table 5.15: Bank Size and Average Operating Performance

(Per cent)

Indicators		Large banks		Big banks		Medium banks		Small banks	
		2008	2009	2008	2009	2008	2009	2008	2009
1		2	3	4	5	6	7	8	9
(i)	No. of banks	9	9	17	17	20	19	16	16
(ii)	Proportion of time deposits to total deposits	62.79	66.29	66.05	68.69	68.51	68.81	67.19	72.51
(iii)	Proportion of liquid assets to total assets	31.30	31.39	32.39	31.94	33.48	32.51	38.13	37.26
(iv)	Proportion of term loans to total loans	55.75	55.61	61.50	61.52	54.96	54.00	42.07	37.36
(v)	Return on advances	8.86	9.40	8.92	9.91	9.52	11.25	8.62	10.50
(vi)	Return on investments	6.66	6.55	6.80	6.56	6.58	6.28	6.50	6.26
(vii)	Cost of deposits	5.33	5.65	5.42	5.74	5.63	5.93	4.15	5.47
(viii)	Proportion of contingent liability to total assets	129.65	86.72	262.03	148.91	331.19	302.81	3325.33	1698.61
(ix)	Interest spread	3.53	3.75	3.50	4.17	3.89	5.32	4.47	5.04
(x)	Proportion of interest income to total income	85.14	85.60	85.19	85.35	83.57	83.98	75.25	73.16
(xi)	Proportion of other income to total income	14.86	14.40	14.81	14.65	16.43	16.02	24.75	26.84
(xii)	Proportion of provision to total loans	1.67	1.73	1.71	2.36	1.66	2.51	4.42	7.92
(xiii)	CRAR	13.12	13.15	11.80	12.18	13.06	13.67	14.93	16.28
(xiv)	NNPA ratio	1.04	1.06	0.78	0.90	0.80	0.92	0.87	1.48

Source: Report on Trend and Progress of Banking in India, 2008-09.

5.78 In terms of size distribution, large banks maintained a much smaller spread than their counterparts in other groups and hence, despite recording much higher interest earnings, received much lower returns on their loan portfolio during 2008-09. Notably, banks across the size-groups were able to realise higher interest rate spreads during 2008-09 compared to 2007-08, possibly on account of deposit rates easing at a faster pace than the rates on loans and advances. The surge in interest spread during the crisis period reflected the augmented confidence of the public in banks on the back of heightened volatility and uncertainty in financial markets. As a safety measure against the erosion of quality assets, all banks made higher provisions (as per cent to total loans); however, provisioning made by small-size banks were the highest during 2008-09. Scheduled commercial banks, as a precautionary measure, cut their operations in off-balance sheet items substantially in 2008-09 over the previous year, marking an exception to the prevailing upward trend.

5.79 The deposit growth of commercial banks decelerated marginally during 2008-09 compared to the previous year; on the other hand, growth in bank credit decelerated at a faster rate than deposits during 2008-09 (Table 5.16). In terms of size, the slowdown in deposit growth was greater in the case of medium and small banks during 2008-09. A similar pattern was reflected in the credit contraction being more pronounced for medium and small banks. The broad pattern of the maturity structure of banking assets/ liabilities suggests a shift from short-term maturity (up to one-year) to medium-term maturity (1-3 years and 3-5 years).

5.80 The growth in borrowings by commercial banks declined sharply during 2008-09, manifesting the liquidity pressures in the financial markets and lower credit off-take. The steep fall in the incremental credit-deposit ratio, emanating from lower credit off-take on the back of the economic slowdown, relieved commercial banks from the pressure for resource mobilisation through borrowings. Investments growth also decelerated marginally during 2008-09. However, prevailing uncertainties induced a degree of risk-averse behaviour; commercial banks parked a higher share of their available resources in terms of net demand and time liabilities (NDTL) in statutory liquidity ratio (SLR) securities.

5.81 The income growth rate in 2008-09 was much lower than that in 2007-08. However, such

Table 5.16: Growth of Balance Sheet of Scheduled Commercial Banks-Bank Group-wise

(Per cent)

Item	Public Sector Banks			Old Private Sector Banks			New Private Sector Banks			Foreign Banks			All SCBs		
	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Capital	0.7	5.2	3.6	4.4	1.8	8.2	5.6	14.6	-3.1	45.4	71.4	16.3	17.3	35.2	10.2
2. Reserve & Surplus	20.0	31.3	20.4	11.6	47.1	14.6	17.4	97.9	9.1	30.6	34.7	25.8	20.0	45.3	17.7
3. Deposits	22.9	23.1	26.9	6.0	19.8	20.3	38.8	23.1	5.4	31.5	26.8	12.0	24.6	23.1	22.4
4. Borrowings	5.7	28.4	1.2	22.3	8.0	22.6	42.8	26.3	7.1	33.0	14.1	20.3	19.6	24.5	6.8
5. Other Liabilities & Provisions	16.3	25.6	21.3	16.1	21.6	8.1	51.1	17.3	12.8	72.4	65.5	57.8	28.1	29.0	15.4
Total Liabilities / Assets	21.1	23.8	24.6	7.1	21.2	19.3	38.7	27.5	6.7	37.6	32.7	22.8	24.2	25.0	21.2
1. Cash & Balances with RBI	26.1	61.5	-2.4	25.9	74.4	-14.6	93.7	74.2	-20.7	49.8	81.2	-28.9	35.2	65.4	-8.0
2. Balances with Banks & Money at Call & Short Notice	26.8	-32.6	106.5	5.8	-24.2	47.1	91.9	-33.7	27.8	41.9	- 25.1	66.8	35.9	- 33.1	82.0
3. Investments	4.9	20.3	26.6	-3.6	23.9	33.7	26.4	31.3	4.3	36.4	38.4	31.8	9.7	23.8	23.1
4. Loans & Advances	30.2	24.8	25.7	12.0	20. 2	15.1	39.9	26.4	9.9	29.5	27.5	2.7	30.6	25.0	21.2
5. Fixed Assets	37.7	42.6	17.2	-5.6	26.1	8.0	4.2	15.9	1.2	24.4	32.3	19.4	25.0	35.2	14.1
6. Other Assets	7.1	31.0	2.0	0.7	-1.7	28.2	33.9	28.3	19.8	72.9	67.0	68.1	22.5	38.2	25.0

Source : Balance sheets of respective banks.

deceleration in income growth was somewhat offset by a decline in expenditure growth in 2008-09. The reduction in both income and expenditure growth was partly explained by the decline in overall interest rates during the latter half of the year.

5.82 To analyse the direct impact of the slowdowm on credit deceleration and other banking indicators, banks were classified into four different credit growth classes (Table 5.17). The banks which recorded negative deposit growth and a resource squeeze during 2008-09 witnessed a significant fall in their credit growth. Indeed, these banks had higher non-performing loans as well. Interestingly, these banks had a significantly lower proportion of time deposits in their deposit portfolio. The financial crisis, thus, seems to have had a greater adverse impact on banks that had fewer core deposits. During the time of distress, the stable deposit buffer played an important role in withstanding the liquidity squeeze. Banks with a significant decline in credit growth in 2008-09 witnessed a steep fall in their off-balance sheet exposure. In contrast, banks witnessing high credit growth (of over 20 per cent) expanded their off-balance sheet exposure even further during the economic slowdown. Higher credit growth was also backed by higher equity growth and provided a capital buffer in the wake of increased default risk from credit extension.

Sectoral Credit Growth

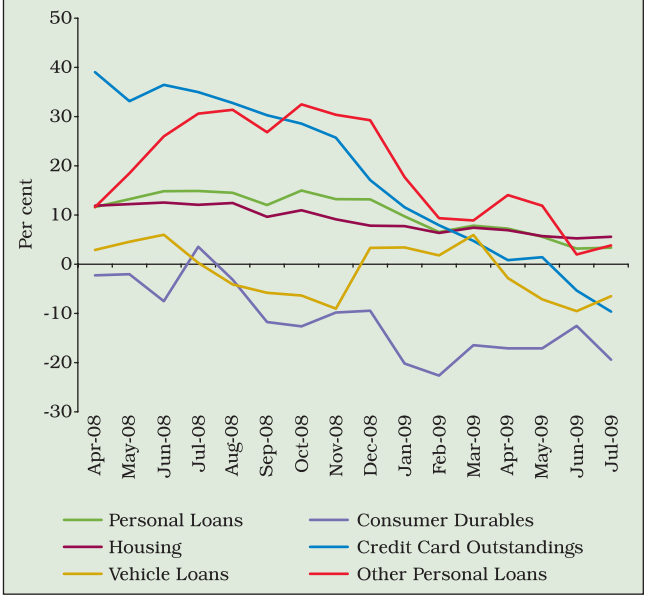
5.83 The impact of liquidity easing and prudential measures is reflected in lower credit growth for the year ended June 2009. Though there was a slowdown in credit off-take from October 2008, the credit growth during the period October 2008 to June 2009 clocked an annualised growth rate of 8.9 per cent. Credit growth during during this period was higher for sectors such as infrastructure, real estate, NBFCs, SMEs, and agriculture and certain industries like iron and steel. The credit to medium and large companies declined more sharply than to small industries. However, the personal loan category was more adversely affected than other loans (Chart V.16 and Table 5.18).

Table 5.17: Credit Growth and Financial Performance: 2008-09

Credit growth		Less than 0 per cent	0-10 per cent	10-20 per cent	More than 20 per cent
1		2	3	4	5
(i)	No. of banks	11	5	17	28
(ii)	Proportion of time deposits to total deposits	63.6	72.6	70.4	70.5
(iii)	Proportion of liquid assets to total assets	39.6	33.8	33.0	31.2
(iv)	Proportion of term loans to total loans	44.2	53.5	51.2	55.2
(v)	Return on advances	11.8	11.9	10.4	9.6
(vi)	Return on investments	6.6	6.3	6.3	6.4
(vii)	Cost of deposits	5.0	6.5	5.9	5.8
(viii)	Proportion of contingent liability to total assets	2377.6	291.1	226.9	170.6
(ix)	Interest spread	6.8	5.4	4.5	3.9
(x)	Proportion of interest income to total income	65.2	81.5	85.9	85.8
(xi)	Proportion of other income to total income	34.8	18.5	14.1	14.2
(xii)	Proportion of provision to total loans	11.8	3.2	2.2	1.7
(xiii)	CRAR	15.9	15.9	13.3	13.1
(xiv)	NNPA ratio	1.5	1.4	0.9	1.0
(xv)	Deposits growth	-3.4	3.1	18.8	28.9
(xvi)	Contingent liability growth	-29.4	-10.2	-11.2	20.0
(xvii)	Investments growth	30.4	24.6	27.7	31.2
(xviii)	Advances growth	-10.5	5.0	15.2	30.9
(xix)	Equity growth	23.5	22.3	30.6	33.5
(xx)	Liquidity growth	18.9	10.2	17.7	23.0

Source: Report on Trend and Progress of Banking in India, 2008-09.

Chart V.16: Growth Trend in Sectoral Bank Credit



Pro-cyclical behaviour of banks

5.84 It is argued in the recent literature that Basel II may contribute to pro-cyclical behaviour by banks. Pro-cyclicality is defined as easy credit in good times and tighter credit in bad times when borrowers need credit the most. In particular, this could happen with the internal rating based (IRB) approach where credit risk is a function of debtor's income, which presumably moves with the business cycle. Pro-cyclical behaviour existed in banks prior to Basel II, but there is a concern that this behaviour will be more dramatic under Basel II. In particular, the financial crisis has generalised the concern about the pro-cyclicality embedded in the financial system and, more specifically, in institutional and regulatory aspects such as accounting rules, trading and risk-management rules, and bank capital requirements. All recent reviews of the challenges for the immediate reform of financial regulation stress the need to make the financial system less pro-cyclical (Brunnermeier *et al.*, 2009; FSF, 2009; Repullo and Suarez, 2009) (Chart V.17).

5.85 The impact of the crisis on India, as on many EMEs, spilled over from the real sector to the financial sector. Industry and businesses, especially the small and medium enterprise (SME) sector, had to grapple with a host of problems, such as delays in payment of bills from overseas buyers as also domestic buyers affected by the global slowdown; increase in stocks of finished goods; fall in the value of inventories, especially raw material which, in many cases, were acquired at higher prices such as metal and crude oil-based products; slowing of capacity expansion due to a fall in investment demand; and demand compression for employment-intensive industries, such as gems and jewellery, construction and allied activities, textiles, auto and auto

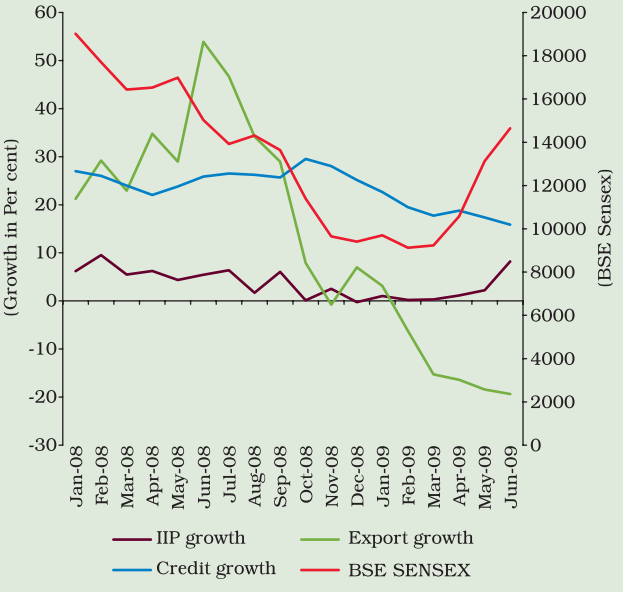
Table 5.18: Growth in Sectoral Bank Credit

(Per cent)

	Agriculture	Small-Scale Industries	Industry (Medium and Large)	Wholesale Trade (other than Food Procurement)	Non-food Gross Bank Credit
1	2	3	4	5	6
2000-05	18.8	5.2	20.9	10.1	17.5
2005-06	37.6	22.9	28.6	22.0	40.5
2006-07	33.7	29.2	27.0	26.3	28.2
2007-08	19.5	12.6	23.1	11.2	22.3
2008-09	23.0	27.4	22.8	20.9	18.1
2008-09:H1	-0.1	8.8	14.2	12.1	8.4
2008-09:H2	23.1	17.0	7.6	7.9	8.8
2009-10:H1	-0.5	9.3	8.2	11.2	3.5

Source: Report on Trend and Progress of Banking in India, various issues.

Chart V.17: Trends in Credit Growth and Economic Activity



Box V.4
Regulatory Measures

- Provisioning requirements for all types of standard assets (for residential housing loans beyond Rs.20 lakh, standard advances in the commercial real estate sector, personal loans including outstanding credit card receivables, loans and advances qualifying as capital market exposure and non-deposit taking systemically important NBFCs) was reduced to a uniform level of 0.40 per cent, except in the case of direct advances to the agricultural and SME sectors which shall continue to attract provisioning of 0.25 per cent, as hitherto.
- Risk weights on banks' exposures to certain sectors were revised downward, which had been increased counter-cyclically earlier. However, risk weights in the case of asset financing companies (AFCs) were not changed, which continues to be governed by the credit rating of the AFCs, except for claims that attract a risk weight of 150 per cent under the new capital adequacy framework, reduced to a level of 100 per cent.
- As one-time measures and for a limited period, prudential regulations for restricted account were modified for applications received up to March 31, 2009 and restructured packages implemented within 120 days of application or by June 30, 2009, whichever was earlier. The modification in regulations for restructuring were effected to preserve the economic and productive value of assets, which were otherwise viable. The modifications permitted restructured accounts to be treated as standard assets, provided they were standard on the eve of the crisis, *i.e.,* September 1, 2008, even if they turned non-performing at the time of restructuring.

components and other export-oriented industries. Hotels and airlines, apart from IT, also witnessed a fall in demand due to the global downturn. Major economic activities such as growth in the index of industrial production (IIP) turned negative and continued at sub-zero levels for more than two quarters in 2008-09, exports continued to contract in the second half, and capital market activities dwindled significantly. The slowdown in all the economic activities spilled over to the financial market and bank credit growth fell sharply. During the slowdown, when it was even more necessary to maintain credit flow to productive sectors, credit was hard to come by. Therefore, the pro-cyclical behaviour by banks became more evident during the crisis.

5.86 Recognising that the unexpected and swift turn of events could lead to a spiralling downturn, the Reserve Bank took a series of regulatory measures in addition to providing liquidity and special refinance (Box V.4 and see next section on Policy Responses). Since 2005-06, in the context of high growth in bank credit to certain sectors, the Reserve Bank had raised in stages the risk weights and provisioning requirements for standard assets for these sectors. In November 2008, as a countercyclical measure, the additional risk weights and provisions were withdrawn and restored to their previous levels.

5.87 The prudential regulations for restructured accounts were modified, as a one-time measure and for a limited period in view of the extraordinary external factors, to preserve the economic and productive value of assets which were otherwise viable. The modified regulations were in operation for applications for re-structuring received up to March 31, 2009 and restructured packages implemented within 120 days of receipt of application or by June 30, 2009, whichever was earlier. Banks were, therefore, required to take swift action for detecting weaknesses and putting in place the re-structured packages in order to avail of the benefits in asset classification under the modified prudential regulations (Box V.4).

5.88 The role of banks in the financial system in solving asymmetric information problems in credit markets laid the foundation of the credit channel of monetary policy. As money supply goes up, bank deposits and reserves increase, which in turn increases the quantity of bank loans. On the other hand, a contraction in deposit resources affects aggregate demand by shifting the supply schedule to the left in the bank loan market. In this context, Kashyap and Stein (2000) showed that with cross-sectional differences in bank-lending response to policy shocks, the impact of monetary policy on lending behaviour is stronger for banks with less liquid balance sheets (Box V.5).

Box V.5
Balance Sheet Effect of Monetary Policy

In order to examine cross-sectional differences of bank-lending response to policy shocks, the Kashyap and Stein (2000) model is followed[6]. The model explicitly assumes a homogeneous reaction of the loan demand which is crucial for the identification of monetary policy effects on loan supply. Until recently, bank loans were the main source of finance in India, even for large firms, and thus the assumption seems reasonable. In order to allow for asymmetric responses of bank loans to changes in economic activity and in the inflation rate, interaction terms with individual bank characteristics are also included in the model. Besides, the use of first differences presumably ensures the stationarity of the variables.

The asymmetric effects of monetary policy are captured by significant coefficients for the interaction terms. Because of its cross-sectional nature, the model can exploit both aspects of the data. With respect to time, the interaction effect captures the degree to which lending is liquidity-constrained during the periods of tight or loose money. On the other hand, one can look at the sensitivity of lending volume to monetary policy for a particular bank in the sense that this sensitivity is greater for banks with weaker balance sheets, which is captured by both liquidity and size. The structure of the model with a lagged dependent variable in (1) clearly demands an estimation procedure suitable for dynamic panel data. In this connection, the standard procedure in the literature during the last decade or so has been the GMM technique due to Arelleno and Bond (1991) and the same has been used here. A similar approach was followed by Pandit *et al.*(2006).

The dataset consists of a balanced panel of a total of 1314 balance sheets (observations) spread over 18 months from January 1998 to June 2009 of all scheduled commercial banks, excluding regional rural banks (RRBs). These data are collected from the statutory returns, called Section 42(2) returns, designed to estimate reserve requirements and submitted to the Reserve Bank of India by every bank on a fortnightly basis[7]. Besides deposit resources, the returns report a wealth of information on most of the balance sheet indicators including cash, interbank transactions, investments, and domestic lending classified by various categories.

The results[8] show that the direct impact of changes on the repo rate is negative and significant when size as well as

[6] The regression model is specified as follows:

$$\Delta \log(L_{it}) = \sum_{j=1}^{m} \alpha_j \Delta \log(L_{it-j}) + \sum_{j=1}^{m} \mu_j \Delta M_{t-j} + \sum_{j=1}^{m} \pi_j \Delta GDP_{t-j} + \sum_{j=1}^{m} \beta_j \Delta INFL_{t-j}$$
$$+ B_{it-1}\left(\eta + \partial TIME_t + \sum_{j=1}^{m} \phi_j \Delta M_{t-j} + \sum_{j=1}^{m} \gamma_j \Delta GDP_{t-j} + \sum_{j=1}^{m} \delta_j \Delta INFL_{t-j} \right) + \varepsilon_{it} \quad \ldots\ldots (1)$$

where i = 1, ...,N, t = 1, ..., T and Δ is the difference operator. N denotes the number of banks, T denotes the length of the time series and m is the number of lags. Lit is the amount of loans extended by bank i in period t, Mt is the monetary policy instrument (in our case, it is the cash reserve ratio or repo rate). Δ GDPt is the growth rate of the economic activity indicator, captured by the log of monthly index of industrial production. Δ INFLt is the first difference of the monthly inflation rate. Individual bank characteristics are denoted by Bit. Two bank characteristics (Bit) are considered, namely, size, measured in terms of deposits and liquidity, measured in terms of liquid assets like cash, call money, net assets with other banks and investments in government securities of the i-th bank at time point t. TIMEt is a time dummy.

[7] Till 1985, these data were reported on a weekly basis on Fridays and subsequently they are being reported fortnightly. However, banks file a special return in the same format on the last Friday of every month, if that is not a reporting Friday. Thus, comparability of data is maintained over monthly frequency also.

[8] **Parameter Estimates- Arelleno Bond Dynamic Panel Regression**

Balance sheet variable: Liquidity

D.Loan	Coefficient		SE (Robust)	D.Loan	Coefficient		SE (Robust)
Loan				Inflation			
LD.	0.484	*	0.128	D1.	0.093	*	0.022
L2D.	0.037		0.025	LD.	0.014		0.070
L3D.	0.056		0.047	Liquidity*Repo			
Liquidity				D1.	-0.016	**	0.005
D1.	0.021		0.310	LD.	0.006		0.009
LD.	0.498	**	0.199	Liquidity*IIP			
L2D.	-0.009		0.035	D1.	-0.020		0.059
Repo				LD.	-0.058		0.052
D1.	0.110		0.088	Liquidity*Inflation			
LD.	-0.093	*	0.016	D1.	-0.001		0.001
IIP				LD.	-0.001		0.004
D1.	0.508		1.091	Constant	0.009	*	0.002
LD.	1.326		0.651				

Balance sheet variable: Size (deposits)

D.Loan	Coefficient		SE (Robust)	D.Loan	Coefficient		SE (Robust)
Loan				Inflation			
LD.	0.767	*	0.117	D1.	0.078	**	0.023
L2D.	0.042	***	0.024	LD.	0.006		0.066
L3D.	0.019		0.041	Deposits*Repo			
Deposits				D1.	-0.019	**	0.005
D1.	0.370		0.283	LD.	-0.006		0.009
LD.	0.574	**	0.254	Deposits*IIP			
L2D.	0.009		0.040	D1.	-0.026		0.061
Repo				LD.	-0.085		0.053
D1.	-0.165		0.096	Deposits*Inflation			
LD.	-0.111	*	0.017	D1.	-0.001		0.001
IIP				LD.	0.000		0.003
D1.	0.836		1.171	Constant	0.001		0.003
LD.	1.665	***	0.813				

(...Concld.)

liquidity are considered as balance sheet strength. *Prima facie*, there is clear evidence that policy rate changes have a direct impact with a lag of at least one month on bank loans and, therefore, at least for the average bank, we may not reject the hypothesis that the bank lending channel of monetary policy transmission works well through repo rate change. The coefficient of economic activity is positive, as expected, while the coefficient for inflation is negative. Both coefficients are significant. The impact of liquidity is positive and significant, implying that banks with more liquid assets also lend more. Furthermore, the interaction coefficient of repo with liquidity also turned out to be significant and negative. That is, the impact of monetary policy on lending behaviour is stronger for banks with less liquid balance sheets. In the absence of any substitute for deposit resources, more liquid banks could relatively easily protect their loan portfolios by simply drawing down on their large buffer stock of securities. On the other hand, less liquid banks cut loans significantly in response to a contractionary monetary policy. Following Kashyap and Stein (1995), the relative hypothesis that was also tested. In other words, the effect of bank size on transmission of monetary policy was tested to ascertain whether the lending of large banks is less sensitive to monetary shocks than those of small banks. One expects that large banks have easier access to alternative finance, which would make their lending less dependent on monetary policy changes. Accordingly, the interaction effect is found to be negative and significant, suggesting that small banks do tend to feel the pressure of increased policy rates and respond by reducing their loan disbursement.

Industrial Activity Effect on Bank Lending

5.89 In order to examine the impact of the economic slowdown and the interaction of liquidity on bank credit, a panel vector auto-regression (PVAR) approach was attempted. At the bank level, the variables considered were loans, deposits and liquidity (as defined earlier) and for macro-economic and monetary developments IIP, inflation and CRR were used[9]. The dataset consists of a balanced panel of a total of 1314 balance sheets (observations) spread over 18 months from January 1998 to June 2009 of all scheduled commercial banks, excluding regional rural banks (RRBs). Estimated parameters[10] based on the short-run equation show that decline in IIP is significantly associated with fall in credit demand. While higher inflation leads to an increase in loan demand, increase in CRR is associated with contraction in loan supply.

Interest Rate Movement

5.90 The reduction in the Reserve Bank's policy rates and the easy liquidity conditions were expected to moderate interest rates. Irrespective of ownership, Indian commercial banks have reduced their deposit and lending rates. The decline in lending rates, however, comes with a lag due to the old contractual structure of assets and liabilities. The interest rates offered by public sector banks on deposits of all maturities showed

[9] All variables are in logarithm terms except CRR and inflation. Variables are in first difference.

[10] Parameter estimates – Panel VAR are as under:

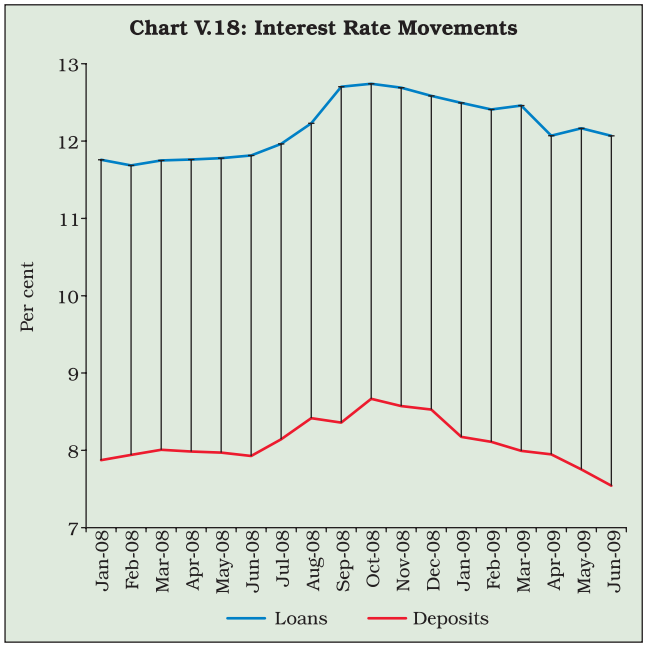
D.Loan	Coefficient	Standard error	t-statistic
LD.Deposits	0.0075	0.0784	0.0957
LD.Loan	0.0305	0.0323	0.9437
LD.Liquidity	0.0244	0.0209	1.1703
LD.IIP	-0.1751	0.0509	-3.4380
LD.Inflation	-0.0100	0.0027	-3.7359
LD.CRR	-0.0072	0.0028	-2.6014
L2D.Deposits	-0.0064	0.0733	-0.0877
L2D.Loan	-0.0083	0.0260	-0.3201
L2D.Liqudity	0.0134	0.0208	0.6428
L2D.IIP	-0.1717	0.0407	-4.2193
L2D.Inflation	0.0068	0.0020	3.3870
L2D.CRR	-0.0162	0.0049	-3.3093

Note: L - lag operator and D – difference operator.

moderate easing after October 2008. Further, a decline could be seen in the deposit rates of all maturities of private sector banks and foreign banks after December 2008. The benchmark prime lending rate (BPLR) of public sector and private sector banks too showed a decline from October 2008. However, the BPLR of foreign banks showed considerable rigidity. Further, actual lending rates on non-export credit and terms loans above Rs.2 lakh eased for public sector banks, but in the case of private sector banks and foreign banks, the rates somewhat firmed up between September 2008 and December 2008, notwithstanding the fall in policy rates and inflation, and declined between December 2008 and June 2009. Initial estimates based on the data submitted by selected banks indicate that Indian banks maintained a steady spread of more than 4 per cent during the pre- and post-crisis periods (Chart V.18).

5.91 During the first quarter of 2009-10, the decline in deposit rates was greater than that in lending rates. Thus, the lower cost of deposits was not fully passed on to borrowers and banks continued to enjoy a higher spread, manifesting a higher allocative inefficiency even during a soft interest regime.

Chart V.18: Interest Rate Movements

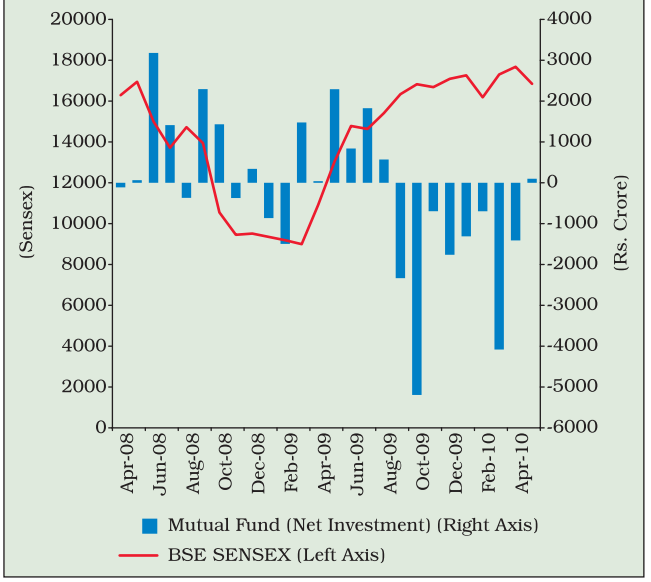


Mutual Funds

5.92 Some segments of the financial system, particularly non-banking entities came under severe liquidity pressures due to reduced foreign funding and the lacklustre domestic capital market. The capital flow reversals and drying up of funding from external markets for banks and corporates also created liquidity pressure on mutual funds during 2008-09. A substantial proportion of collections of mutual funds reflected bulk funds from the corporate sector under money market schemes, partly reflecting tax and other regulatory arbitrage. In the wake of credit tightening, corporates which had been parking funds substantially with mutual funds withdrew their investments from mutual funds to supplement their resources for investments. The stock market reversals exerted redemption pressure on mutual funds from retail investors too. With increasing redemption pressure from all sides and heightened uncertainty rendering it difficult for mutual funds to mobilise resources from alternate sources, the mutual funds were compelled to sell off their positions in the stock markets. While the mutual funds promised immediate redemption, their assets were relatively illiquid. Maturity mismatches between the assets and liabilities of mutual funds further aggravated the problems.

5.93 The growth of gross mobilisation by mutual funds fell sharply during 2008-09. The net mobilisation of resources by mutual funds in India declined by 118 per cent in 2008-09 as against an increase of 64 per cent in the previous year. It may be noted that the steep fall in stock prices and net resources mobilised by mutual funds have been intertwined since January 2008, reflecting the redemption pressures on mutual funds (Chart V.19 and Table 5.19). The assets held by mutual funds at the end of March 2009 declined by 17 per cent over the end of March 2008 due to large redemptions and negative valuations stemming from substantial corrections in equity prices.

Chart V.19: BSE Sensex and Net Investment by Mutual Funds



5.94 The liquidity stress emanating from the stock market reversals and heightened uncertainty varied across the categories of mutual funds. Private sector mutual funds, followed by UTI, were affected the most. The net resources mobilised by private sector mutual funds turned hugely negative during 2008-09 as a result of the steep rise in redemptions by both retail and corporate investors. On the other hand, public sector mutual funds were able to withstand the redemption pressure and

Table 5.19: Resource Mobilisation by Mutual Funds

(Rs. thousand crore)

	Gross Mobilisation	Redemptions	Net Inflows	Assets at the end of Period
1	2	3	4	5
2000-01	93.0	83.8	9.1	90.6
2001-02	164.5	157.3	7.2	100.6
2002-03	314.7	310.5	4.2	109.3
2003-04	590.2	543.4	46.8	139.6
2004-05	839.7	837.5	2.2	149.6
2005-06	1,098.1	1,045.4	52.8	231.9
2006-07	1,938.5	1,844.5	94.0	326.3
2007-08	4,464.4	4,310.6	153.8	505.2
2008-09	5,426.4	5,454.7	-28.3	417.3
2009-10	10,019	9,935.9	83.1	614.0
2010-11 (Apr-May)	1,874.3	1,751.3	123.0	743.1

Table 5.20: Sector-wise Net Resources Mobilised by Mutual Funds

(Rs. crore)

Year	UTI	Public Sector	Private Sector
1	2	3	4
2000-01	9,850	-1,045	323
2001-02	13,050	1,409	-7,284
2002-03	12,069	1,561	-9,434
2003-04	42,545	2,597	1,667
2004-05	7,600	-2,677	-2,722
2005-06	42,977	6,379	3,424
2006-07	79,038	7,621	7,326
2007-08	1,33,304	10,677	9,820
2008-09	-3,659	9,380	-34,018
2009-10	15,753	12,499	54,928
2010-11 (Apr-May)	7,162	11,397	1,04,437

mobilised fresh resources during 2008-09 which continued in 2009-10 (Table 5.20).

5.95 The Reserve Bank responded swiftly to address the liquidity stress faced by the mutual funds. A term repo facility for an amount of Rs.60,000 crore under the LAF was introduced to enable banks to ease the liquidity stress faced by mutual funds, NBFCs and housing finance companies (HFCs), with an associated SLR exemption of 1.5 per cent of NDTL. Further, the policy measures initiated by the Reserve Bank and other central banks across countries have enabled the restoration of stability conditions in domestic and international financial markets and the revival of stock markets since the beginning of 2009-10. The revival in the stock markets and ample liquidity in the system buoyed sentiments and provided support to the activities of mutual funds during 2009-10.

Impact on Non-Banking Finance Companies (NBFCs)

5.96 The drying up of liquidity with mutual funds, which have perennially provided resources to other sectors including NBFCs, coupled with tightening foreign funding and domestic liquidity enforced further pressure for funds availability to NBFCs. The total assets of NBFCs (excluding RNBCs) increased marginally during 2008-09 compared to a

substantial rise during 2007-08 (Table 5.21). The growth in the borrowing portfolio of NBFCs, which is their major source of financing, witnessed steep deceleration. The resource mobilisation through public deposits by NBFCs declined at a higher pace during 2008-09 than in the previous year. At the same time, the Reserve Bank tightened the regulatory and soundness norms for NBFCs in order to safeguard financial stability and the interests of depositors.

5.97 On the liabilities side also, the business activities of NBFCs decelerated sharply during 2008-09. The loans & advances extended by them grew at a considerably lower rate in 2008-09 than in 2007-08, reflecting the drying up of resources from various sources due to the global financial crisis. The increase in investments made by NBFCs also fell substantially during 2008-09 compared to the previous year. The liquidity crunch forced NBFCs to cut their exposure to other assets such as hire purchase assets, equipment leasing, and the bill business. The dampening real activities led to a rise in the default of repayments, especially in the case of hire purchase assets and, hence, gross non-performing assets as a percentage of gross advances of NBFCs, which was on a descending trajectory from 2001, increased in 2009 (Table 5.22).

5.98 In view of the funding inter-linkages between NBFCs, mutual funds and commercial banks, when the contagion from the global financial crisis created selling pressures in the stock markets

Table 5.21: Consolidated Balance Sheet of NBFCs-D

(Amount in Rs. crore)

Item	As at end-March		Variation			
			2007-08		2008-09	
	2007-08	2008-09 P	Absolute	Per cent	Absolute	Per cent
1	2	3	4	5	6	7
Liabilities						
1. Paid-up Capital	3,266	3,508	998	44.0	242	7.4
	(4.4)	(4.6)				
2. Reserves & Surplus	8,695	9,337	2,834	48.4	642	7.4
	(11.7)	(12.4)				
3. Public Deposit	2,042	1,941	-35	-1.7	-101	-4.9
	(2.7)	(2.6)				
4. Borrowings	50,577	55,289	18,125	55.9	4,712	9.3
	(67.8)	(73.2)				
5. Other Liabilities	9,982	5,441	4,087	69.3	-4,541	-45.5
	(13.4)	(7.2)				
Liabilities/Assets	**74,562**	**75,516**	**26,008**	**53.6**	**954**	**1.3**
Assets						
1. Investments	11,210	14,813	3,798	51.2	3,603	32.1
	(15.0)	(19.6)				
i) Approved Securities @	7,146	9,230	2,859	66.7	2,084	29.2
ii) Other Investments	4,064	5,583	939	30.0	1,519	37.4
	(5.5)	(7.4)				
2. Loan & Advances	18,823	21,073	7,764	70.2	2,250	12.0
	(25.2)	(27.9)				
3. Hire Purchase Assets	33,525	35,647	7,303	27.9	2,122	6.3
	(45.0)	(47.2)				
4. Equipment Leasing Assets	1,048	585	-317	-23.2	-463	-44.2
	(1.4)	(0.8)				
5. Bill Business	12	23	5	71.4	11	91.7
	(0.0)	(0.0)				
6. Other Assets	9,944	3,375	7,456	299.7	-6,569	-66.1
	(13.3)	(4.5)				

NBFCs-D: Refers to deposit taking NBFCs. P : Provisional.
@ : SLR Asset comprises 'Approved Securities' and 'unencumbered term deposits' in Scheduled Commercial Banks.
Note: Figures in parentheses are percentage shares in respective total.
Source: Report on Trend and Progress of Banking in India, 2008-09.

Table 5.22: NPA Ratios of NBFCs-D

(Per cent)

End-March	Gross NPAs to Gross Advances	Net NPAs to Net Advances
1	2	3
2001	11.5	5.6
2002	10.6	3.9
2003	8.8	2.7
2004	8.2	2.4
2005	5.7	2.5
2006	3.6	0.5
2007	2.2	0.2
2008	2.1	0*
2009 P	2.7	0*

P : Provisional.
* : Provision exceeds NPA.
Source: Report on Trend and Progress of Banking in India 2008-09.

in India, the liquidity needs of the financial system as a whole had to be addressed by the Reserve Bank (Chakrabarty, 2009). The Reserve Bank announced a series of measures to provide respite to the financially stressed NBFCs during 2008-09 (Box V.6). In the case of NBFCs, in view of their need to raise capital, they were allowed to issue perpetual debt instruments qualifying for capital. They were also allowed further time of one year to comply with the increased Capital to Risk-Weighted Asset Ratio (CRAR) stipulation of 15 per cent as against the existing requirement of 12 per cent. Risk weight on banks' exposures to NBFCs, which had been increased earlier, was brought down. NBFCs also benefited from the refinance facility provided to the Small Industries Development Bank of India (SIDBI) by the Reserve Bank to ease the liquidity constraint.

5.99 In sum, the financial performance of NBFCs deteriorated during 2008-09 compared with the previous year on account of exacerbated liquidity stress that eventually subdued fund-

Box V.6
Policy Measures to Address Financial Stress Faced by NBFCs

- Non-banking finance companies – non-deposit taking & systematically important (NBFCs-ND-SI) – were permitted, as a temporary measure, to raise short-term foreign currency borrowings under the approval route subject to fulfilment of certain conditions. While the resources raised were to be used only for refinancing short-term liabilities and not for the creation of fresh assets, it was also advised that the maturity of such borrowing should not exceed three years and the maximum amount should not exceed 50 per cent of the NOF or US$ 10 million (or its equivalent), whichever was higher. Eleven companies were granted permission under the facility to borrow funds to the tune of US$ 834.95 million + foreign currency equivalent of Rs 1,566.38 crore (not availed of), out of which seven have borrowed so far to the extent of US$ 645.58 million.
- Banks were permitted, on a temporary basis, to avail of liquidity support under the LAF window through relaxation in the maintenance of SLR up to 1.5 per cent of their NDTL, exclusively for meeting the funding requirements of NBFCs and mutual funds.
- The risk weight on banks' exposure to NBFCs-ND-SI was reduced to 100 per cent from 125 per cent irrespective of credit rating, while exposure to AFCs which attracted risk weight of 150 per cent was also reduced to 100 per cent.
- NBFCs-ND-SI were permitted to augment their capital funds by issue of Perpetual Debt Instruments. The amount of PDI raised by NBFCs-ND-SI would not be treated as 'public deposit' within the meaning of Reserve Bank directives.
- Deferred the proposed increase in the CRAR to be maintained by NBFCs-ND-SI to 12 per cent and subsequently to 15 per cent by one year, *i.e.,* 12 per cent by March 31, 2010 and 15 per cent by March 31, 2011.
- Provided direct lending facility as a Lender of Last Resort (LOLR) where RBI lends to NBFCs-ND-SI against their rated CPs through an SPV by subscribing to its bonds. The facility was operationalised in January 2009 through an SPV called 'IDBI SASF Trust' to provide liquidity support against investment-grade paper of NBFCs, subject to their fulfilling certain conditions. It was designed as an LOLR facility to facilitate an orderly downsizing of the balance sheets of financially-sound NBFCs that faced short-term temporary liquidity requirements. The facility has been availed of by only one NBFC so far, which has drawn Rs.1,040 crore under the scheme and there is no outstanding balance as of date. The Government of India had extended the facility to be available for any paper issued till September 30, 2009 and the SPV would cease to make fresh purchases after December 31, 2009 and would recover all dues by March 31, 2010.

based activities (Table 5.23). The growth in the fund-based income of NBFCs decelerated sharply, while the deceleration in the growth of fee-based income was moderate during 2008-09. At the same time, growth in expenditure incurred by NBFCs also decelerated during 2008-09, but the rate of deceleration was not as steep as that in income. The escalated cost-to-income ratio of NBFCs during 2008-09 over the preceding year also reflected the sharp deceleration in the growth of income.

Table 5.23: Financial Performance of NBFCs-D

(Amount in Rs. crore)

Indicator	As at end-March		Percentage Variation	
	2008	2009 P	2007-08	2008-09
1	2	3	4	5
A. Income (i+ii)	10,038	11,799	75.5	17.5
(i) Fund-Based	9,832	11,498	75.9	16.9
	(98.0)	(97.0)		
(ii) Fee-Based	206	301	57.4	46.0
	(2.0)	(3.0)		
B. Expenditure (i+ii+iii)	6,913	8,742	43.1	26.5
(i) Financial	4,525	5,641	63.7	24.7
	(60.0)	(66.0)		
of which				
Interest Payment	226	211	-55.5	-6.6
	(6.0)	(2.3)		
(ii) Operating	2,178	2,369	72.7	8.8
	(30.5)	(27.6)		
(iii) Others	210	732	-73.9	248.6
	(3.4)	(4.1)		
C. Tax Provisions	**1,213**	**1,002**	**215.1**	**-17.4**
D. Operating Profit (PBT)	**3,125**	**3,057**	**251.1**	**-2.2**
E. Net Profit (PAT)	**1,912**	**2,055**	**279.4**	**7.5**
F. Total Assets	**74,562**	**75,516**	**53.6**	**1.3**
G. Financial Ratios (as percentage to Total Assets)				
i) Income	13.5	15.6		
ii) Fund-Based Income	97.9	15.2		
iii) Fee-Based Income	0.3	0.4		
iv) Expenditure	9.3	11.6		
v) Financial Expenditure	6.1	7.5		
vi) Operating Expenditure	2.9	3.1		
vii) Tax Provision	1.6	1.3		
viii) Net Profit	2.6	2.7		
H. Cost-to-Income Ratio	**68.9**	**74.1**		

P : Provisional.
Note: Figures in parentheses are percentages to respective total.
Source: Annual Returns.

Financial Stress

5.100 As discussed earlier in this section, EMEs felt stress in their financial markets, especially equity, foreign exchange, and sovereign debt markets in the last quarter of 2008. Exchange rates came under severe pressure, leading to depreciation and depletion of foreign exchange reserves, while equity markets witnessed a large exodus of equity and debt funds, triggering sharp downward movements in stock prices from September 2008. There was a strong link between financial stress in advanced and emerging economies, with crises tending to occur at the same time on both sides (World Economic Outlook, IMF, April 2009).

5.101 In fact, the transmission of stress tends to be stronger and more direct in an economy that is financially well-linked to advanced economies. Sometimes, common global factors spill over rapidly across economies which are financially integrated, and financial stress moves in tandem among them. The common factors could be, *inter alia,* global shocks such as heightened risk aversion, a shift in market sentiments and the failure of large financial institutions that have a presence across the countries. The role of such common factors has increasingly become discernible in most of the EMEs, including India, over the past several years as these economies became increasingly integrated. Accordingly, financial stress travelled to Indian financial markets almost contemporaneously from advanced economies, especially from the third quarter of 2008-09.

5.102 Against the above background, an attempt has been made to quantify and analyse the evolving financial stress in India. Financial stress may be defined as the uncertainty and changing expectations of loss in financial markets. Financial stress for an economy may be felt in different sectors simultaneously. There are many indicators for different sectors of the economy which exhibit the occurrence in that particular sector (Table 5.24). Financial Stress Indicator

Table 5.24: Monthly Financial Stress Indicators[11]

Month	beta	cd-y91	EMP	usd_ garch_ sd	Inv_ yield	cp-y91	stock_ yoy_ calb	garch_ bse_ sd
1	2	3	4	5	6	7	8	9
Jan-07	2.5	1.6	-0.7	0.5	0.7	1.8	56.3	2.1
Feb-07	2.8	3.2	-3.1	0.6	0.9	2.8	70.5	3.5
Mar-07	2.8	3.7	4.1	0.6	0.9	3.8	80.0	4.2
Apr-07	2.6	4.4	-6.1	0.6	2.1	5.3	75.8	2.7
May-07	2.5	5.9	-3.2	1.2	4.0	6.4	57.4	2.2
Jun-07	2.4	2.6	-3.3	0.6	2.0	3.3	54.2	4.0
Jul-07	2.3	1.3	-3.5	0.7	1.1	0.5	48.2	3.8
Aug-07	2.0	1.8	4.1	0.6	1.4	2.6	61.5	1.9
Sep-07	2.1	1.1	-2.3	0.7	0.6	1.9	52.4	2.8
Oct-07	1.8	1.0	-3.2	0.7	0.5	2.3	34.7	4.4
Nov-07	1.9	1.6	0.0	0.7	1.0	3.1	46.6	3.8
Dec-07	1.9	1.8	0.5	0.7	0.7	3.0	37.5	2.0
Jan-08	2.0	1.6	-2.5	0.7	0.8	4.0	66.5	3.4
Feb-08	2.0	2.7	0.4	0.8	1.4	2.6	52.8	5.2
Mar-08	2.0	2.5	0.5	0.9	1.2	4.2	68.4	3.6
Apr-08	1.9	1.7	-1.2	0.9	1.0	1.7	65.9	1.7
May-08	2.0	0.9	3.4	1.0	0.6	0.9	78.9	4.4
Jun-08	2.3	0.6	2.2	1.6	0.5	1.6	98.7	4.9
Jul-08	2.4	0.7	1.8	0.9	0.1	1.9	96.6	3.7
Aug-08	2.5	1.4	1.9	0.9	0.0	3.2	94.6	3.0
Sep-08	2.4	3.1	5.6	1.0	0.5	4.9	114.2	4.3
Oct-08	2.1	5.9	7.6	1.8	0.7	7.7	143.4	4.7
Nov-08	1.9	4.8	-0.6	1.4	0.7	7.1	144.5	5.5
Dec-08	1.8	5.5	-1.9	0.9	1.2	7.8	144.1	4.6
Jan-09	1.5	4.7	0.4	0.8	1.4	5.9	136.3	3.3
Feb-09	1.3	4.0	0.7	0.8	1.6	4.2	139.4	4.5
Mar-09	1.4	3.9	2.2	0.9	2.4	5.2	128.5	5.0
Apr-09	1.2	4.4	-1.2	1.4	2.7	4.2	125.0	3.5
May-09	1.4	2.4	-2.7	1.4	3.6	3.4	100.9	3.3
Jun-09	1.6	2.7	-0.7	0.9	3.9	4.2	86.1	5.6
Jul-09	1.8	2.8	0.4	0.7	4.0	3.0	85.3	4.9
Aug-09	1.9	2.7	-0.4	1.0	4.2	3.1	85.4	1.5
Sep-09	2.0	1.9	0.3	0.8	4.5	3.1	62.6	3.7
Oct-09	2.0	2.0	-2.0	0.8	4.6	2.7	29.0	5.5
Nov-09	2.1	2.2	0.0	1.3	4.7	2.8	9.6	3.7
Dec-09	2.1	1.9	0.8	0.9	4.5	3.3	16.5	0.3
Jan-10	2.2	1.8	0.0	0.9	4.2	1.8	10.5	4.4
Feb-10	2.3	1.8	1.1	1.0	4.3	2.2	14.2	5.0
Mar-10	2.3	1.3	-0.1	1.0	3.5	2.4	18.5	2.0
Apr-10	2.4	2.2	-1.0	1.1	2.8	2.3	40.4	1.8

(FSI) combines these different indicators into a unified indicator and provides a measure of the current degree of stress in the financial system.

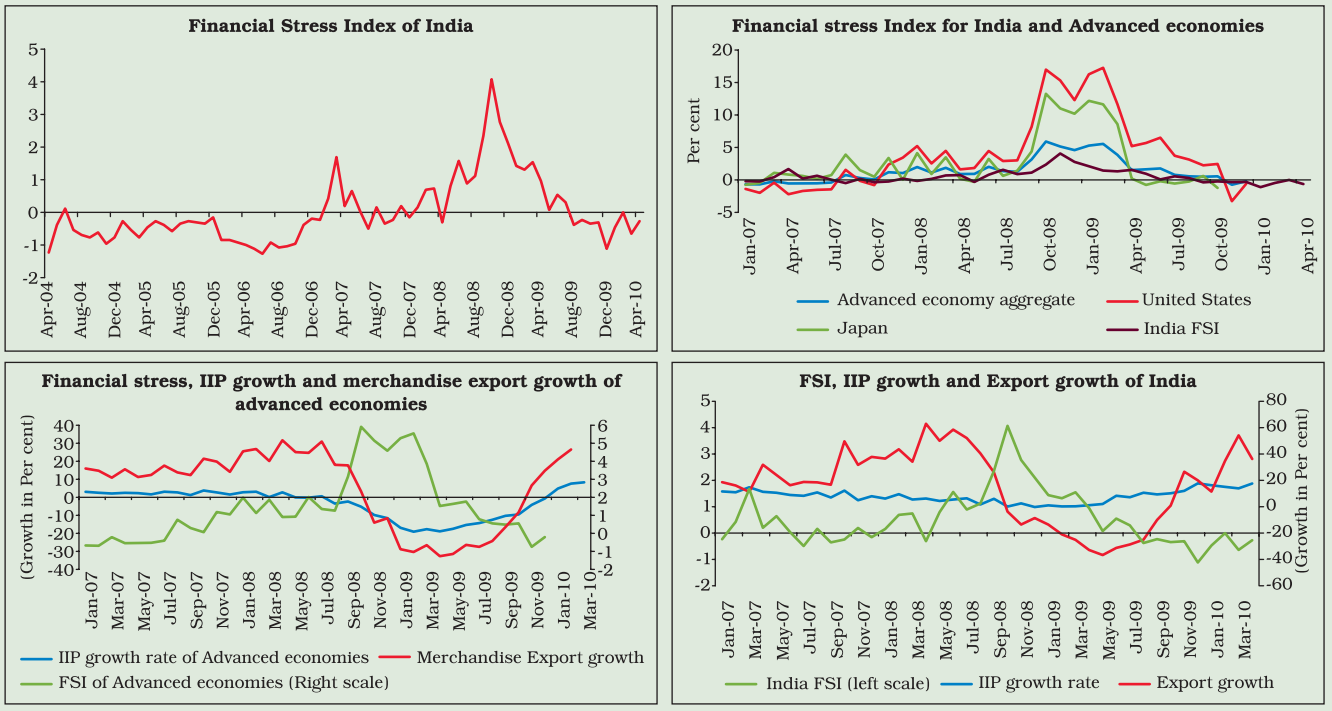
5.103 The FSI increased significantly in the third quarter of 2008-09 as manifested in the steep rise in the FSI during September and October 2008. In fact, the FSI for India witnessed an upward movement from August 2007, following the unravelling of the sub-prime crisis, and peaked in October 2008, reflecting the deepening turmoil in international financial markets subsequent to the failure of Lehman Brothers in September 2008. But swift and calibrated policy measures, both monetary and fiscal, have eased the financial stress in Indian financial markets since November 2008 and since then the FSI has been on a downward trajectory (Chart V.20).

5.104 It has been observed that all major advanced economies simultaneously experienced a sudden rise in financial stress in the month of August 2008 which continued till November 2008 and receded thereafter. The FSI for India exhibited synchronised movements with that of the US, Western Europe, Japan and aggregate advanced economies (Figures V.20 & V.21). This either shows that financial stress in India and other advanced countries is driven by a common factor or that transmission of stress to Indian markets from advanced markets is contemporaneous.

5.105 To sum up, this section analysed the impact of the global financial crisis on Indian financial institutions, such as banks, mutual funds and non-banking financial companies. As their international exposures in complex financial products was very

[11] **beta** = cov(r,m)/var(m), calculated monthly over a rolling 1-year time horizon, where r = year-over-year percentage change in the Bank Total price Index (*e.g.,* BANKEX) and m = year-over-year percentage change in the general stock index (*e.g.,* SENSEX).
cd-y91= Certificate of deposits (CD) spread over Treasury bill rate.
Exchange Market Pressure Index (EMP): EMP is constructed based on the weighted average of change in the exchange rate, foreign exchange reserve and interest rate (EMP=(ex-mean(ex)/sd(ex) – (res-mean(res)/sd(res) + ((int-mean(int)/sd(int)), where ex=change in exchange rate (INR-USD), res=change in foreign exchange reserve, int=change in short-term interest rate (Mumbai Inter-Bank Offer Rate – MIBOR). sd=standard deviation.
usd_garch_sd: Garch (1,1) volatility of INR-USD exchange rate.
Inv_yield (Inverted yield curve): The average of 5- and 10-year Government of India benchmark bond yields minus the 91-day Treasury bill rate.
cp-y91: Commercial paper spread: 90-day's commercial paper rate minus 91-day Treasury bill rate.
stock_yoy_calb: Monthly year-on-year return of BSE SENSEX Stock Price Index.
garch_bse_sd: Garch(1,1) volatility of BSE SENSEX

Chart V.20: Financial Stress Indicators



limited, the Indian banking sector did not feel the heat in the first round. However, with the financial crisis deepening and beginning to spread across countries, especially after the fall of Lehman Brothers in September 2008, Indian financial institutions along with several other EMEs started to face the challenges of the recent financial crisis in a manner that was somewhat different from their counterparts in advanced economies. The knock-on effects of the global financial crisis were felt first through the equity markets, which eventually spread to other segments of the financial market, *viz.*, the money market and the foreign exchange market. The tightening of liquidity conditions in the domestic market and drying of resources available from international markets along with capital flow reversals imposed new challenges for financial institutions in financing the productive needs of the economy. As the impact of the crisis through the trade channel threatened to jeopardise the Indian growth story, the Reserve Bank initiated a spate of liquidity-easing and confidence-building measures to ensure that banks and mutual funds got ample resources to be able to meet the demand for credit from Indian corporates. In contrast to the loss of confidence that the banking system in advanced economies faced, Indian banking system continued to command the confidence of the public as was evident in the continued deposit growth.

5.106 The analysis of the balance sheets of the scheduled commercial banks amply illustrates how Indian banks made adjustments to take up the emerging challenges in their business operations. The behaviour of large banks stood distinctly different from those of medium and small banks. The Indian banking sector also displayed maturity in going slow with their off-balance sheet activities. The policy measures were able to contain the spread of the liquidity problems to other segments of the financial system and restore normalcy at a fast pace. The financial stress index, when analysed in the Indian case, demonstrates a steep rise in September and October 2008 and displays synchronised movements with those of the US, Western Europe, Japan and aggregate advanced economies. This underscores the high interconnectedness of financial systems globally

and almost instantaneous spread of stress conditions across nations. This could be the biggest challenge to the decoupling theory.

IV. POLICY RESPONSES

5.107 Before the intensification of the global financial meltdown from September 2008, both monetary and fiscal policy measures in India were guided by an overriding intention to contain spiralling inflationary expectations that were largely driven by international commodity prices. Monetary policy was striving to dampen demand-side pressures through monetary tightening. At the same time, fiscal policy was attempting to ease supply-side constraints with a slew of measures, such as slashing excise duties and custom duties and encouraging imports of necessary goods, among others.

5.108 India's policy response to the crisis was aimed at containing the contagion from the outside – to keep the domestic money and credit markets functioning normally and see that the liquidity stress did not trigger solvency cascades. In particular, three objectives were pursued with respect to the financial sector: first, to maintain a comfortable rupee liquidity position; second, to augment foreign exchange liquidity; and third, to maintain a policy framework that would keep credit delivery on track so as to arrest the moderation in growth. Besides challenges thrown by the global financial meltdown, the policy responses also involved the challenge of balancing short-term mitigation and medium-term sustainability (the tyranny of the short-term!). This section delineates various policy responses undertaken in India against the backdrop of the global financial crisis. The measures to meet the above objectives came in several policy packages from the Government of India and the Reserve Bank of India starting in mid-September 2008. These measures were, on some occasions, in response to unanticipated global developments and, at other times, in anticipation of the impact of potential global developments on the Indian markets.

Fiscal Policy Response

5.109 The unprecedented global developments in the second half of 2008-09 forced the government to adopt an expansionary fiscal stance to cushion the economy from the effects of the global crisis. This shift in the fiscal policy stance was in line with the international trend to minimise the adverse effects of the global crisis and also consistent with mainstream views that in situations of deep and prolonged economic downturn, as in the present context, fiscal policy could play a leading role in stabilisation. Although financial markets in India experienced heightened volatilities in sync with international developments generating collateral damages, the banking system remained strong and well-capitalised. The stress tests conducted on Indian banks suggest that it can withstand significant shocks arising from large potential changes in credit quality, interest rate and liquidity conditions. Therefore, the fiscal policy in India did not have to extend support to the banking sector in the form of capitalisation/ financial bailout, which was rampant in most advanced economies. Thus, the fiscal response has been highly weighted towards containing the economic slowdown by raising aggregate demand through discretionary fiscal policy. The depth and extraordinary impact of this crisis, however, clearly indicated the need for counter-cyclical public spending and, accordingly, the central government invoked the emergency provisions of the FRBM Act to seek relaxation from fiscal targets and launched fiscal stimulus packages in December 2008 and January 2009 (Subbarao, 2009).

5.110 The fiscal policy measures undertaken in the form of three fiscal stimulus packages during the second half of 2008-09 constituted tax cuts, encouraging investment on infrastructure and increased expenditure on both investment and consumption, with the latter accounting for the major share. The expansionary fiscal stance continued in the Union Budget for 2009-10, which was presented against the backdrop of moderation of growth in the economy and signs of stabilisation

in the global economy. The allocation for crucial sectors such as infrastructure, education and health, rural employment and empowerment of disadvantaged sections of the population was enhanced significantly during the Union Budget 2009-10. Indeed, the Union Budget for 2009-10 went a step further and proposed to address important challenges in the short and medium term, *viz.*, revive the economy to attain a growth of 9.0 per cent per annum at the earliest; deepen and broaden the agenda for inclusive development; re-energise the government; and improve delivery mechanisms. Notably, the fiscal policy for 2009-10 also reiterated the importance of reverting to the path of fiscal consolidation at the earliest and as soon as the negative effects of the global crisis on the Indian economy have been overcome. In order to attain medium-term sustainability, the fiscal policy also recognised the importance of institutional reforms encompassing all aspects of the Budget such as subsidies, taxes, expenditure and disinvestment.

5.111 Additional expenditure amounting to 3.0 per cent of GDP was provided through three supplementary demands for grants during October-December 2008 and February 2009. Of the expenditure measures, revenue expenditure constituted around 84 per cent and the remainder accounted for the capital component (RBI Annual Report, 2008-09). On the whole, the fiscal stimulus measures appear to have given more emphasis to support consumption demand rather than investment demand. The fiscal deficit increased to 6.0 per cent of GDP in 2008-09 from 2.7 per cent of GDP in 2007-08 (Box V.7).

5.112 It may be mentioned that the cyclical downturn, which was already underway, was reinforced by the unfolding of the recent global crisis, especially during the second half of 2008-09, with the effect of subdued financial intermediation and a sharp fall in consumer and business confidence. Therefore, the role of fiscal policy in the current context may be different from previous episodes of normal business downturns. Thus, the efficacy of the counter-cyclical fiscal policy in containing the slowdown and reviving the economy during 2008-09 and 2009-10 needs to be judged differently than normal cyclical downturns in the past in India. During normal economic situations or economic cycles in a country like India, the fiscal policy response to boost growth may endanger the sustainability of the fiscal deficit and become detrimental to growth in the medium to long run. It was observed that growth based on a large fiscal deficit during the 1980s led to the unsustainable twin deficits in India.

5.113 Given that the recent slowdown was characterised by a sharp fall in private sector demand due to loss of confidence as well as a slowdown in exports, it was expected that the rise in government expenditure could provide the required temporary fillip to the falling aggregate demand. Monetary policy was accomodetive; when combined with the increased appetite for government securities by financial institutions, it was felt that interest rates may not increase substantially. Therefore, discretionary fiscal stimulus was supposed to have different implications from those in the past.

5.114 Fiscal policy in India appears to have attained the desired objective of constraining the slowdown in the economy to a large extent during 2008-09. The contribution of government consumption to the incremental GDP at market prices made a large jump from about 8 per cent in the first half to 80 per cent during the second half of 2008-09 (Chart V.21). This large increase in government consumption, coupled with additional expenditure especially on infrastructure undertaken by the government, possibly revived the green shoots in the economy and growth rebounded since the beginning of 2009-10 (see Chapter 6). From the above evidence it could be construed that, in the absence of fiscal stimulus, the slowdown in growth could have been much more severe during 2008-09.

Exit Strategy

5.115 The fiscal stimulus measures have largely achieved the objective of containing the economic

Box V.7
Fiscal Policy Responses against the Backdrop of the Global Financial Crisis

Union Budget : 2008-09

Tax cuts

Excise

- The three major *ad valorem* rates of Central Excise duty, *viz*., 14 per cent, 12 per cent and 8 per cent applicable to non-petroleum products were reduced by 4 percentage points each to 10 per cent, 8 per cent and 4 per cent, respectively. The *ad valorem* component in the composite rates (specific and *ad valorem* rates) on cars, other than small cars, was reduced from 24 per cent to 20 per cent.
- The tax rate on cement was also reduced. The rate of duty on cotton textiles and textile articles was reduced from 4 per cent to nil.
- General reduction in excise duty rates by 4 percentage points with effect from December 7, 2008 was extended beyond March 31, 2009. The general central excise duty rate was reduced to 8 per cent from 10 per cent. The rate of central excise duty on bulk cement was reduced from 10 per cent or Rs.290 PMT, whichever is higher, to 8 per cent of Rs.230 PMT, whichever is higher.

Service Tax

- Refund of service tax paid by exporters on 18 taxable services attributable to export of goods was extended to services provided by a clearing and forwarding agent to exporters also.
- The threshold limit for refund of service tax paid by exporters on foreign commission agent services was enhanced from 2 per cent of FOB value to 10 per cent of FOB value of export of goods.
- Service tax on taxable services was reduced from 12 per cent to 10 per cent.

Customs

- Naphtha imported for generation of electric energy was fully exempted from basic customs duty.
- The export duty of 8 per cent on iron ore fines was withdrawn, while the rate of export duty on iron ore lumps was reduced from 15 per cent to 5 per cent *ad valorem.*
- Additional funds of Rs 1,100 crore will be provided to ensure full refund of Terminal Excise duty/CST.
- As pre- and post-shipment export credit for labour-intensive exports, *i.e.*, textiles (including handlooms, carpets and handicrafts), leather, gems and jewellery, marine products and the SME sector were extended, an interest subvention of 2 per cent up to March 31, 2009 subject to a minimum rate of interest of 7 per cent .

Expenditure

- To mainly finance schemes/plans announced in the Budget for 2008-09, supplementary demand for grants amounting to gross expenditure of Rs.2,37,286 crore with net cash outgo of Rs.1,05,613 crore was provided in October 2008.
- A second supplementary demand for grants of Rs. 55,605 crore with net cash outgo of Rs. 42,480 crore was sanctioned in December 2008.
- The third and final supplementary demand for grants with a net cash outgo of Rs.10,765 crore was approved in February 2009. The tranche of grants also included an additional expenditure of Rs. 4,60,952 crore of a technical nature, mainly comprising appropriation on account of repayment of debt.
- Two fiscal packages each amounting to Rs. 20,000 crore were also announced following the impact of the global financial crisis on the Indian economy during 2008-09.

Industry

- In the textile sector, an additional allocation of Rs.1,400 crore was made to clear the entire backlog of the Technology Upgradation Fund (TUF) Scheme.
- All items of handicrafts were included under 'Vishesh Krishi & Gram Udyog Yojana'.

Infrastructure

- India Infrastructure Finance Company Limited (IIFCL) was allowed to raise Rs,10,000 crore through tax-free bonds by March 31, 2009 to refinance bank lending of longer maturity to eligible infrastructure projects, particularly in the highways and port sectors in order to support a Public-Private Partnership programme of Rs.1,00,000 crore.
- IIFCL was authorised to raise an additional Rs.30,000 crore by way of tax-free bonds to fund additional projects of about Rs.75,000 crore in the next 18 months.

State Governments

- The ceiling of fiscal deficit that the states can incur in 2009-10 in terms of the debt consolidation and relief facility was increased by 0.5 per cent to 3.5 per cent of the Gross State Domestic Product for 2008-09.
- State governments were allowed to raise additional market borrowings of 0.5 per cent of their Gross State

(Contd...)

(...Concld.)

Domestic Product (GSDP), amounting to about Rs 30,000 crore, for capital expenditures during 2008-09.

Other Measures

- In order to provide predictability and stability of the regime in the short term for future contracts, the DEPB Scheme was extended till December 31, 2009.
- Duty drawback benefits on items such as knitted fabrics, bicycles, agricultural hand tools and specified categories of yarn were enhanced, effective from September 1, 2008.
- The exemption of naphtha imports for generation of electrical energy from basic customs duty was extended beyond March 31, 2009.
- Necessary changes in Section 10AA of the Income Tax Act were made to remove the anomaly arising in the treatment of assessees having units located both in SEZs and Domestic Tariff Areas (DTA) *vis-à-vis* assessees having units located only within the SEZs.

Union Budget: 2009-10

Tax Cuts

Income

- The threshold limit for exemption for personal income tax was raised by Rs.15,000 to Rs.2,40,000 for senior citizens, while it was raised by Rs.10,000 each for women and all other categories of individual tax payers to Rs.1,90,000 and Rs.1,60,000, respectively.
- An additional deduction of Rs.25,000 was allowed under Section 80 D from the present limit of Rs.75,000 to an individual who pays for maintenance, including medical treatment of a dependant with severe disability.
- The fringe benefit tax (FBT) was abolished.

Excise

- The proposed measures relating to excise rates include: differential rates between the cotton textile sector and the man-made fibre sector; restoration of the erstwhile optional rate of 4 per cent for cotton textiles beyond the fibre stage; restoration of 8 per cent duty on man-made fibre and yarn on a mandatory basis and on stages beyond fibre and yarn at that rate on an optional basis; full exemption of petro-diesel blended with bio-diesel from excise duty; and reduction of basic customs duty on bio-diesel from 7.5 per cent to 2.5 per cent –at par with petro-diesel – in order to encourage the use of this environment-friendly fuel and augment its availability.
- In order to tide over the slowdown in exports, the government extended sunset clauses for one more year, *i.e.*, to 2010-11.
- To incentivise businesses, it was proposed to extend investment-linked tax incentives to the businesses to set up and operate 'cold chain' and warehousing facilities for storing agricultural produce and to lay and operate cross-country natural gas, crude, or petroleum oil pipeline networks for distribution on the common-carrier principle.
- As a measure of relief, it was proposed to extend the period allowed to carry forward the tax credit under MAT from seven years to ten years.
- Excise duty on petrol-driven trucks was reduced from 20 per cent to 8 per cent.

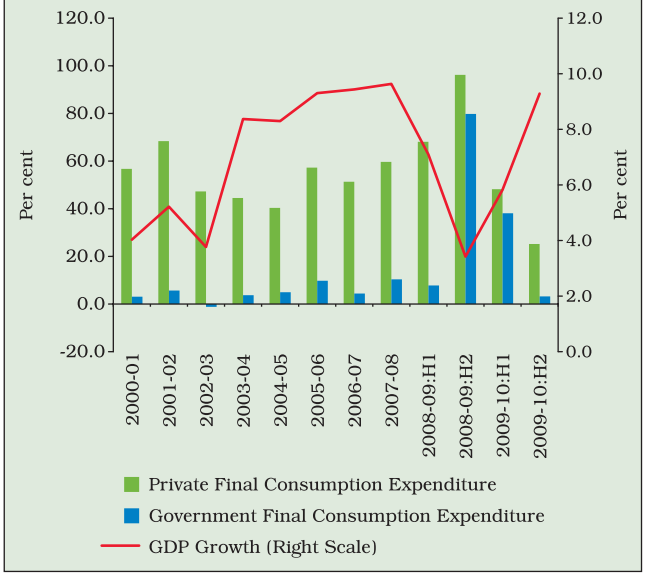
Customs

- The basic customs duty on liquid crystal display (LCD) panels was reduced from 10 per cent to 5 per cent to support indigenous production.
- The accessories, parts and components imported for the manufacture of mobile phones were exempted from countervailing duty (CVD) of 4 per cent for another year.

Expenditure

- The government had taken a conscious decision to increase public expenditure in select sectors in order to continue the momentum of growth, with a focus on intended outcomes.
- The allocation of expenditure on infrastructure, health and education, rural employment and other flagship programmes of the government has been enhanced.
- Keeping in view the critical role of infrastructure in the growth of the economy, the allocation to the national highway development programme and urban infrastructure has been increased considerably during 2009-10.
- The allocation for health and education was increased considerably in the Budget 2009-10. Keeping in view the demographic advantage, the provision for the scheme 'Mission in Education through ICT' was increased substantially. The government also made an allocation to establish a central university in each uncovered state. In order to improve the delivery of public services, the government allocated an amount of Rs.120 crore to the Unique Identification Authority of India.

Chart V.21: Relative Contribution of Government Consumption to GDP Growth



slowdown in the short-term as reflected by growth revival during 2009-10. Thus, fiscal policy, shifting the stance from containing slowdown to recovery management in order to revert back to high growth trajectory, announced a calibrated exit of expansionary stance in the Union Budget 2010-11 with partially rolling back of tax cuts and better expenditure management. The Budget 2010-11 has proposed to bring down revenue deficit (RD) and gross fiscal deficit (GFD) during 2010-11 to 4.0 per cent and 5.5 of GDP, respectively. The Medium Term Fiscal Policy Statement (MTFPS), laying down the fiscal consolidation path in terms of rolling targets, indicates that RD and GFD in 2012-13 will be brought down to 2.7 per cent and 4.1 per cent of GDP, respectively. The Government, accepting in principle the medium-term fiscal consolidation path recommended by Thirteenth Finance Commission (ThFC), has also indicated in the MTFPS to reduce the debt to GDP ratio to 48.2 per cent by 2012-13.

Monetary Policy Response

5.116 The monetary policy response was in terms of easing liquidity into the system through conventional measures such as cutting policy rates [cash reserve ratio (CRR), reverse repo, and statutory liquidity ratio (SLR)] and open market operations, and unconventional measures, *viz.*, opening refinance facilities to SIDBI and EXIM Banks and clawing back prudential norms in regard to provisioning and risk weights. The total amount of actual/potential liquidity injected was Rs.5,85,000 crore (Table 5.25).

5.117 There are, however, some key differences between the actions taken by the Reserve Bank of India and the central banks in many advanced countries. First, in the process of liquidity injection the counterparties involved were banks; even liquidity measures for mutual funds, NBFCs and housing finance companies were largely channelled through the banks. Second, there was no dilution of collateral standards which were largely government securities, unlike the mortgage securities and commercial papers in the advanced economies. Third, despite a large liquidity injection, the Reserve Bank's balance sheet did not show an unusual increase, unlike global trends, because of release of the earlier sterilised liquidity. Fourth, the availability and deployment of multiple instruments facilitated better sequencing of monetary and liquidity measures. Finally, the experience in the use of pro-cyclical provisioning norms and counter-cyclical regulations ahead of the global crisis helped enhance financial stability (Mohanty, 2009).

Table 5.25: Liquidity Injection/ Availability during September 2008 - September 2009

Measure/Facility	Amount (Rs. crore)	% of GDP (2008-09)
1	2	3
1. CRR Reduction	1,60,000	2.9
2. Unwinding/Buyback/De-sequestering of MSS Securities	1,59,044	2.9
3. Open Market Operations (purchases) *	1,04,128	1.9
4. Term Repo Facility	60,000	1.1
5. Increase in Export Credit Refinance	22,328	0.4
6. Special Refinance Facility for SCBs (Non-RRBs)	38,500	0.7
7. Refinance Facility for SIDBI/NHB/EXIM Bank	16,000	0.3
8. Liquidity Facility for NBFCs through SPV **	25,000	0.4
9. **Total (1 to 8)**	**5,85,000**	**10.5**
Memo: Statutory Liquidity Ratio (SLR) Reduction	40,000	0.7

* Includes Rs.57,487 crore of OMO purchases against the proposed OMO purchases of Rs.80, 000 crore during the first half of 2009-10.
** Includes an option of Rs.5,000 crore.

5.118 Wide-ranging initiatives were also taken in the areas of financial inclusion, employment generation in the rural and unorganised sectors, financial literacy and credit counselling. These include strengthening of rural co-operatives and regional rural banks which cater predominantly to the rural areas; liberalisation of the branch licensing policies of RRBs; encouraging multiple channels of lending such as self-help groups (SHGs), micro-finance institutions (MFIs) and adoption of the banking facilitator/banking correspondent (BC) model; simplification of the procedures and processes for lending to agriculture and micro, small and medium enterprises (MSME) sectors; and encouraging the adoption of ICT solutions to not only increase outreach but also to reduce transaction costs (Box V.8).

Box V.8
Monetary Policy Response

Monetary Measures

- The repo rate under liquidity adjustment facility (LAF) has been cut by 425 basis points from 9.00 per cent to 4.75 per cent during October 2008-April 2009.
- The reverse repo rate under LAF has also been reduced by 275 basis points from 6.00 per cent to 3.25 per cent during December 2008-April 2009.
- The effective policy rate has, thus, seen a larger cut of 575 basis points from 9.00 per cent in mid-September 2008 to 3.25 per cent in April 2009.

Domestic Liquidity Measures

- The cash reserve ratio (CRR) was reduced from 9 per cent (September 2008) to 5 per cent by early January 2009, injecting nearly Rs.1,60,000 crore of primary liquidity in the system.
- Reduction in the statutory liquidity ratio (SLR) by one percentage point from 25 to 24 per cent of NDTL was effected from the fortnight beginning November 8, 2008.
- Special refinance facility was introduced for all SCBs (excluding RRBs), enabling them to avail of refinance from the Reserve Bank up to 1.0 per cent of each bank's NDTL as on October 24, 2008 at the LAF repo rate up to a maximum period of 90 days. Banks were encouraged to use this facility to extend finance to micro and small enterprises. This was discontinued in October 2009.
- The term repo facility for an amount of Rs.60,000 crore under the LAF was introduced to enable banks to ease the liquidity stress faced by mutual funds, NBFCs and housing finance companies (HFCs) with associated SLR exemption of 1.5 per cent of NDTL. This facility was available up to September 30, 2009 and was discontinued in October 2009.
- Fresh issuances under MSS were stopped and buyback of existing MSS securities was also used to inject liquidity into the system. Reflecting the various operations, MSS balances declined from Rs.1,75,362 crore at end-May 2008 to around Rs.88,000 crore by end-March 2009 and further to around Rs.19,000 crore by September 2009.
- Extension of the period of entitlement for the first slab of pre-shipment and post-shipment rupee export credit by 90 days each was provided with effect from November 15, 2008 and December 1, 2008, respectively.
- In order to provide liquidity support to the housing, export and MSE sectors, the Reserve Bank provided a refinance facility of Rs.4,000 crore to the NHB, Rs. 5,000 crore to the EXIM Bank and Rs. 7,000 core to the SIDBI up to March 2010.

Exit

- The statutory liquidity ratio (SLR), which was reduced from 25 per cent of demand and time liabilities to 24 per cent, was restored to 25 per cent with effect from November 7, 2009.
- The limit for export credit refinance facility, which was raised to 50 per cent of eligible outstanding export credit, was returned to the pre-crisis level of 15 per cent.
- The cash reserve ratio (CRR) of scheduled banks was increased by 75 basis points from 5.0 per cent to 5.75 per cent of their net demand and time liabilities (NDTL) in two stages; the first stage of increase of 50 basis points was effective the fortnight beginning February 13, 2010, followed by the next stage of increase of 25 basis points effective the fortnight beginning February 27, 2010.
- The cash reserve ratio (CRR) of scheduled banks was enhanced by 25 basis points from 5.75 per cent to 6.0 per cent of their NDTL effective the fortnight beginning April 24, 2010.
- The repo rate under the Liquidity Adjustment Facility (LAF) was raised by 25 basis points from 5.0 per cent to 5.25 per cent with immediate effect on April 10, 2010. An increase of 25 basis points in reverse repo rate from 3.5 per cent to 3.75 per cent was also affected.

5.119 Taken together, the measures put in place by the Reserve Bank and the Government of India since mid-September 2008 have ensured that the Indian financial sector continued to function in an orderly manner. The cumulative amount of primary liquidity potentially available to the financial system through these measures was over US$ 122 billion[12] or about 11 per cent of GDP[13]. This sizeable easing has ensured a comfortable liquidity position starting mid-November 2008 as evidenced by a number of indicators.

5.120 The monetary policy in India, like most other countries, had instituted both conventional measures and unconventional measures to be accommodative for containing the spillovers emanating from the recent global financial crisis. In the backdrop of firming up recovery and risk of rising food prices impinging on inflationary expectations, the monetary policy started its first phase of exiting its accommodative stance with reversing some of the unconventional measures during October 2009 (Box V.8).

V. CONCLUDING OBSERVATIONS

5.121 In the recent period, the financial linkages have become stronger resulting in a higher degree of business cycle co-movement, which has also resulted in faster transmission of shocks across countries. In India, too, trade openness has increased along with the higher capital account openness, which was reflected in greater synchronisation of the domestic business cycles with advanced and emerging market economies. The elevated synchronisation was eventually reflected in larger transmission of global developments to the Indian economy. Further, among the trade and finance channels, the latter has been found to be more dominant in transmitting the effects of global developments to the Indian economy during the recent period.

5.122 The financial markets in India were the first to be impacted, mainly because of the reversal of capital flows as part of the global deleveraging process. The rupee-US dollar depreciated considerably in the second half of 2008-09 and turnover in the forex markets also declined sharply on the back of steep declines in merchandise exports and substantially modulated capital flows. The balance of payments came under pressure which led to a reserve drawdown. A number of measures were initiated to ease the foreign exchange supply situation, partly by assuring greater access to the Reserve Bank's foreign reserves and partly by improving inflows in response to specific measures. Besides actual large-scale intervention sales in the foreign exchange market, the Reserve Bank also opened the forex swap facility for the banks. To ease the demand pressure from oil-importing companies during the high and rising phase of international prices, the Reserve Bank had already started special market operations in the secondary market through commercial banks, involving the direct supply of forex liquidity against the bonds of public sector oil marketing companies. The policy measures that aimed at improving the supply of forex liquidity included permitting banks to borrow from their overseas branches within prudential limits, further relaxing the external commercial borrowing policy, including allowing NBFCs and housing finance companies to borrow in foreign currency, and raising the interest rates on NRI deposits. Notwithstanding the demand pressure in the forex market, in view of depressed international asset prices, corporates were permitted to prematurely buy back their FCCBs at prevailing discounted rates.

5.123 The money market, which remained by and large orderly during the first half of 2008-09, came under liquidity pressure following the failure of

[12] The exchange rate used is the average exchange rate of Rs per US dollar for 2008-09.

[13] The GDP of 2008-09 is used.

Lehman Brothers and a few other global financial institutions, and volatility in the call market increased significantly. With increased volatility in the financial markets during the third quarter of 2008, the Reserve Bank had to ensure an adequate supply of rupee as well as foreign currency liquidity to restore the call money rate within the LAF corridor and also to contain volatility in the exchange rate. The Reserve Bank had to expand the net domestic assets (NDA) to compensate for the decline in reserve money due to the decline in net foreign assets so as to ensure the necessary growth in money supply consistent with the needs of economic growth, besides the provision of ample liquidity to alleviate any fears of liquidity shortage in the Indian markets. The Reserve Bank used all instruments like the LAF, OMO, CRR and MSS to augment liquidity in the system. While dealing with the challenge of expanding the NDA to offset the impact of contracting NFA on reserve money, the unwinding of MSS balances not only created the scope for adequate liquidity expansion by the Reserve Bank without expanding its balance sheet, but the timing of the unwinding could also be modulated in such a way that the large borrowing programme of the government was managed smoothly without exerting any market stress. The monetary operations of the Reserve Bank were significantly different from the experiences of many central banks of the advanced economies, even though the ultimate objective was almost the same, which was to ensure adequate liquidity in the banking system. Thus, the transmission of the Reserve Bank's policies to the money, forex and government securities markets has been effective, thereby ensuring speedy restoration of orderly conditions over a short time span.

5.124 The credit market functioned normally in India as against almost defreezing of this market in many advanced countries. Given the overriding importance of containing the moderation in flow of credit to the private sector for sustaining the growth momentum, counter-cyclical prudential regulations were used to encourage banks to lend. The credit growth of the commercial banks, however, decelerated sharply during 2008-09, especially in the second half, on account of subdued economic activities and banks being extra cautious about viability. The banks, which recorded a negative deposit growth and resource squeeze during 2008-09, ended up witnessing a significant fall in credit growth. Interestingly, these banks had a significant lower proportion of time deposits in their deposit portfolio.

5.125 Like forex and money markets, the volatility of the 10-year benchmark G-sec movement increased from September 2008, reflecting general pressures in the financial markets and a sharp increase in the market borrowings of the Government of India during the last quarter of 2008-09. The global financial crisis also affected India through the asset price channel. Global financial and real shocks to domestic asset prices, particularly stock prices, led to erosion of household wealth and corporate balance sheets in terms of value of their collaterals. Both factors affected household consumption demand and corporate investment. Asset prices shocks also adversely affected exchange rate expectations which led to further uncertainty about external trade. The decline in stock market capitalisation following the financial crisis has been of almost comparable magnitude across OECD countries and EMEs, which underlines the increased severity of the global shocks.

5.126 The stock markets in India, responding to all major international events, started sliding from the peak in January 2008 and touched a new low in March 2009. The long-run co-integration vector showed that the impact of the global markets on Indian stocks was more pronounced than the impact of the regional markets. The global and regional markets together accounted for the bulk of the variation in the Indian stock market. A bi-variate VAR model for India indicates a significant causal relationship from the FII flows to the stock market. The feedback causality from the BSE index to FII flows was also significant, *albeit* less significant.

5.127 Although the banking sector in India was not directly affected by the crisis because of meagre

exposure to sub-prime mortgages and to failed institutions, the liquidity stress in the money and forex markets eventually enhanced credit pressures on banks. Indian banks were also able to weather the slipovers of current global crisis due to their better financial health *vis-à-vis* their peers in EMEs and advanced countries. The macro-prudential dimension of systemic risk assessment has become particularly important in the context of the current global financial crisis. In India, elements of macro-prudential regulation were visible even before the global crisis started, in terms of counter-cyclical use of risk-weights and provisioning norms. Macro-prudential analysis could provide the early warnings for timely identification of systemic risks, while macro-prudential regulation could prevent the emergence of systemic risk in the financial system. The Reserve Bank is in the process of revising guidelines on stress testing and liquidity risk management, taking into account the new guidance issued by Basel Committee on Banking Supevision (BCBS). It is also considering laying down a risk management and capital adequacy framework for bank-sponsored private pools of capital (*e.g.,* private equity funds/ venture capital funds), especially in view of the reputational risk arising from undertaking such activities.

5.128 The estimation of asymmetric effects of monetary policy shocks revealed that changes in policy rates as well as liquidity have a significant positive effect on bank lending and the impact of monetary policy on lending behaviour is stronger for banks with less liquid balance sheets. The falling stock prices and drying up of resources for corporates generated redemption pressure on mutual funds during the second half of 2008-09 and, at the same time, mutual funds were unable to raise funds from alternate sources. NBFCs and mutual funds, given the nature of their sources of funds, also faced a major liquidity shortage. The term-repo facility extended by the Reserve Bank to banks for onward lending to mutual funds, NBFCs and others and the recovery in the stock market at the beginning of 2009-10 provided a respite to these institutions. Indications are clearly visible that pressures on mutual funds have eased and that NBFCs too are making the necessary adjustments to balance their assets and liabilities.

5.129 In sum, all the constituents of the financial sector in India were affected directly or indirectly by the recent global crisis during 2008-09. This is also reflected in the financial stress, which increased significantly in the third quarter of 2008-09 as manifested by the steep rise in the financial stress indicator (FSI). In fact, the FSI for India began rising from August 2007 and peaked in October 2008, reflecting the deepening turmoil in international financial markets subsequent to the failure of Lehman Brothers. The swift and calibrated monetary and fiscal policy measures have eased the financial stress in Indian financial markets greatly since November 2008 and, since then, the FSI has been on the downward trajectory.

6 IMPACT AND POLICY RESPONSES IN INDIA: REAL SECTOR

6.1 This chapter analyses the impact of the global crisis on the real sector of the economy through trade and capital flow channels. The widespread nature of the crisis was evident from the decline in growth rates of real GDP across the spectrum of developed, developing and emerging market economies. As many as 130 countries witnessed a decline of GDP growth in 2008 over 2007 and as many as 166 countries in 2009 over 2008 (World Economic Outlook, IMF, April 2010). The significance of the trade channel during the recent crisis was evident in world trade growth decelerating from 7.3 per cent in 2007 to 2.8 per cent in 2008 and eventually to a negative of 10.7 per cent in 2009.

6.2 Like other EMEs, the early impact of the sub-prime crisis on the real sector of the Indian economy was rather muted as the crisis initially was restricted to turmoil in international financial markets. Following the failure of Lehman Brothers in September 2008, there was a sudden change in the external environment which impacted India adversely through the trade, finance and confidence channels, in line with other EMEs. With the crisis in the advanced economies turning more synchronised globally, the impact became severe in terms of shrinking trade and capital flow reversals during the second half of 2008-09. During this phase, the global financial shocks intensified and graduated into unprecedented worldwide economic slowdown and impacted trade, followed by real sector activities. Against the above backdrop, an assessment of the transmission of the global crisis through the trade and capital flows channels to the real sector as also the ultimate impact on saving, investment and growth has been undertaken in this chapter.

6.3 This chapter is organised as follows. A perspective is given on various channels of transmission of global shock to the real sector in Section I. In Section II, the analysis of the impact emanating from the trade channel is given in detail, while an analysis of the spillovers traversing through the financial channel is given in Section III. The impact of the decline in trade and capital flows reversal on saving, investment and growth is covered in Section IV. Section V contains the concluding observations.

I. TRANSMISSION OF GLOBAL SHOCK TO THE REAL SECTOR

Shift in Composition of Aggregate Demand in India

6.4 Until the global crisis, the Indian economy exhibited remarkable resilience to various adverse external developments, despite the increasing openness of the economy since the 1990s. There were several reasons for this resilience. First, domestic demand played a dominant role in the growth process (Table 6.1). Second, domestic demand was led by private consumption during the first four decades of the independence. Third, a large part of investment demand was supported by domestic savings. Fourth, the services sector, led

Table 6.1: Shift in the Composition of Aggregate Demand in India
(Percentage to GDP at 1999-2000 prices)

	Private Consumption	Government Consumption	Investment	Exports	Imports
1	2	3	4	5	6
1950s	89.0	5.6	12.5	6.1	7.5
1960s	82.9	7.8	16.9	4.0	5.7
1970s	77.6	9.8	19.4	5.7	5.0
1980s	75.9	11.6	20.2	6.5	7.1
1990s	67.6	11.7	23.3	9.3	10.3
2000s	60.7	11.0	29.9	17.6	19.2
2007-08	58.5	10.3	38.2	21.6	26.2
2008-09	59.5	11.5	34.9	24.5	30.7
2009-10 (RE)	58.0	11.6	34.7	19.3	23.8

Source: Central Statistical Organisation, Government of India.

by domestic demand, contributed to the stability of overall economic growth. Fifth, in the financial sector, the banking sector accounted for a major share of the financial intermediation process which did not have significant exposure to international financial markets.

6.5 Unlike the episode of the late 1990s, the recent global crisis led to a change in perspective on the Indian economy. Global developments became important for the economy due to the significant increase in trade and finance openness (Subbarao, 2009; Reddy, 2007 and 2008). The share of exports and imports in the aggregate demand in India has risen sharply during the current decade compared to the 1980s and 1990s; on the other hand, the share of private consumption has fallen during the same period (Table 6.1). As a result of the compositional shift in aggregate demand, the Indian economy has become more vulnerable to external shocks compared to the earlier period. This is clearly visible in the decline in the growth rate of the Indian economy as the recent global crisis gathered momentum with widespread impact across sectors. The growth rate of the Indian economy moderated sharply to 6.7 per cent in 2008-09, declining by 3.0 percentage points from the peak in 2006-07. At the same time, there was also significant moderation in the growth rates of private consumption and investment activities.

Tenability of Decoupling Hypothesis

6.6 Decoupling of an economy entails significant decline in its business cycle synchronisation with that of other countries, meaning that its business cycle moves independent of the business cycle of another economy/group. During the recent global crisis, policymakers and researchers across the globe were debating in the initial phase whether emerging markets economies including India have decoupled from advanced economies. However, as the global financial crisis accentuated and graduated into a full-scale economic slowdown encompassing almost all countries including EMEs, this debate seems to have settled against the decoupling of emerging market economies.

6.7 It has been argued that the decoupling hypothesis runs against the idea that globalisation enhances trade linkages and international financial integration, allowing for a stronger transmission of country-specific shocks across countries and hence, stronger business cycle co-movements (Walti, 2009). Kose, Otrok and Prasad (2008) also mention that greater openness to trade and financial flows should make economies more sensitive to external shocks and increase co-movements in response to global shocks by widening the channels for these shocks to spill over across countries[1]. In contrast, the proponents of the decoupling hypothesis hold that emerging market economies have become increasingly less vulnerable to developments in advanced economies on account of strengthening domestic policy frameworks and achieving stronger domestic demand growth, leading to lower business cycle co-movements with advanced economies.

6.8 Walti (2009) investigated empirically the degree of business cycle synchronisation between emerging market economies and four aggregate groups – all advanced economies, the G7, the United States and the European Union – with annual data from 1980 to 2007. It was concluded that decoupling is largely a myth as business cycle synchronisation has generally not declined over time and certainly not during recent years and, thus, emerging markets have not decoupled from advance economies[2]. Similarly, Rose (2009)

[1] They found that the global factor has become less important for macroeconomic fluctuations in both industrial economies and EMEs during the globalisation period (1985-2005) relative to the pre-globalisation period (1960-1984) and, in contrast, the importance of group-specific factors has increased markedly.

[2] The results do not imply that business cycle synchronicity will remain at its current level permanently, or that synchronicity will necessarily rise further in the future. The synchronicity is not expected to decline as long as the ongoing global recession continues, given the existing evidence showing that business cycles become more synchronised in such time periods (Walti, 2009).

investigated the degree of cross-country synchronisation of business cycles in 64 countries taking annual data from 1974 through 2007 and found that countries across the world seem to be moving more closely over time and not less. It was also argued that the evidence presented as indicative of a divergence in economic performance, referred to as decoupling, is not definitive (Kohn, 2008).

6.9 The increased global integration has rendered the Indian economy's growth movements more correlated with growth movements in the world economy particularly during 2001-2008 compared to the 1980s and 1990s (Table 6.2). It is noteworthy that a large part of increased association between growth in India and world has emanated from emerging and developing economies as reflected by the substantial increase in the correlation compared with advanced economies.

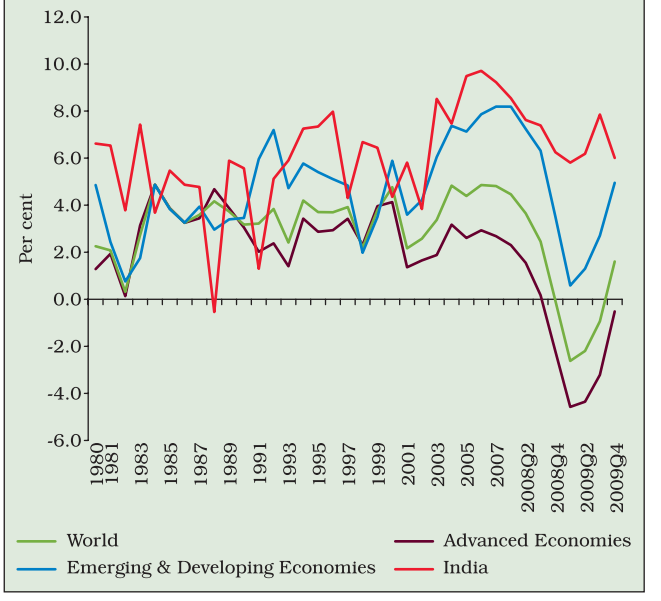
6.10 The increased synchronisation of the Indian economy with the rest of the world was also discernible during the recent global economic slowdown wherein India's growth also decelerated following the global trend despite having unimpaired banking and financial systems unlike some advanced and emerging market economies (Chart VI.1). This intuitively reveals that, in the current context, the decoupling hypothesis may not be tenable in the case of India and other emerging market economies.

Table 6.2: Correlation between Growth of India and the World Economy

Period	World Economy	Advanced Economies	Emerging & Developing Economies
1	2	3	4
1980s	0.43	0.52	-0.02
	(1.4)	(1.7)	(-0.1)
1990s	0.59	0.60	0.51
	(2.1)	(2.1)	(1.7)
2001-2008	0.92	0.71	0.96
	(5.8)	(2.5)	(8.4)

Note: Figures in parentheses indicates t-statistics.
Source: World Economic Outlook, IMF.

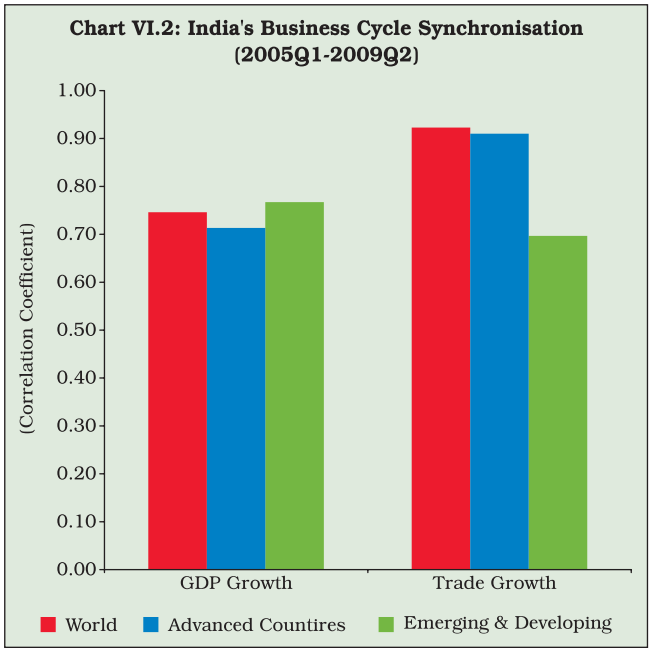
Chart VI.1: Trend in GDP Growth



6.11 The decoupling hypothesis in the case of India has been investigated by estimating synchronisation of its growth in GDP and trade with other countries. It has been found that India was not decoupled from the unfolding financial crisis and recession/ slowdown in the USA and other advanced economies as is evident from its very high degree of business cycle synchronisation in income growth with the world economy, advanced economies and emerging & developing economies during recent periods, ranging from the first quarter of 2005 to the second quarter of 2009 (Chart VI.2). The findings of Walti (2009) also reveal that India has not decoupled with respect to any of the four aggregate groups of advanced economies, *viz.*, all advanced economies, the G-7, the United States and the European Union[3] .

6.12 Further, the decoupling of the Indian economy from advanced economies and emerging market economies has been explored estimating the evolving bilateral business cycle

[3] Overall, none of the emerging markets in the Asia region can be said to have decoupled from advanced economies; for each country, there is always at least one group of advanced economies with respect to which synchronicity has not declined.



synchronisation over the periods with quarterly GDP and consumption data from the second quarter of 1996 to the first quarter of 2009. It is found that business cycle synchronisation (in terms of GDP) of the Indian economy with most of the advanced and emerging market economies has increased over time, in particular during recent periods (2006Q1-2009Q2) (Table 6.3).

Table 6.3 : India's Business Cycle Synchronisation (GDP Growth) with Advanced and Emerging Market Economies (EMEs)

Country	1996Q2-2009Q2	1996Q2-2000Q4	2001Q1-2005Q4	2006Q1-2009Q2
1	2	3	4	5
Argentina	0.6	0.4	0.4	0.8
Canada	0.4	0.1	0.0	0.8
France	0.4	0.0	0.2	0.9
Germany	0.5	-0.1	0.2	0.7
Indonesia	-0.2	-0.6	0.2	0.1
Italy	0.3	-0.5	0.2	0.9
Japan	0.3	-0.5	0.0	0.8
Korea	0.0	-0.4	-0.4	0.6
Malaysia	0.0	-0.4	-0.4	0.7
Russia	0.0	-0.4	0.2	0.8
United Kingdom	0.6	0.2	0.3	0.9
USA	0.4	0.4	0.2	0.3

Table 6.4: India's Business Cycle Synchronisation (Household Consumption) with Advanced and Emerging Market Economies (EMEs)

Country	1996Q2-2009Q2	1996Q2-2000Q4	2001Q1-2005Q4	2006Q1-2009Q2
1	2	3	4	5
Argentina	0.0	-1.0	0.4	-0.8
Canada	-0.2	0.0	0.0	0.1
France	-0.6	0.7	-0.3	-0.8
Germany	-0.2	0.4	-0.2	-0.4
Indonesia	-0.3	0.3	-0.4	-0.4
Italy	0.1	-0.2	0.3	0.4
Japan	0.0	-0.3	0.0	-0.7
Korea	-0.1	0.2	0.0	0.6
Malaysia	-0.3	0.0	-0.1	-0.5
Russia	-0.4	0.5	0.3	-0.8
United Kingdom	-0.2	-0.1	-0.2	0.1
USA	-0.1	-0.3	0.2	0.5

6.13 On the contrary, the movement in business cycle synchronisation of India in terms of consumption with advanced and emerging economies remained mixed as it has increased over time with some countries, particularly the advanced economies, while declined with others (Table 6.4).

6.14 The degree of co-movements of business cycles of different sectors of an economy with other countries may vary primarily depending on their extent of external openness and exposure through various indirect channels. India's industrial sector has been increasingly exposed to the world economy with rising merchandise trade and capital from international financial markets. Therefore, an attempt has been made to analyse the co-movement of industrial cycles with advanced economies in the wake of contagion emanating from the recent global financial crisis and consequent economic slowdown. The results show that industrial cyclical synchronisation of India with advanced countries, which had fallen sharply from 1995-2000 to 2001-2005 except for Germany, improved substantially in recent periods (2006-2009)[4]. During recent periods, India's industrial cycle synchronisation was the highest with

[4] The monthly index of industrial production (IIP) in respect of India and other advanced economies was taken from the IMF from 1995 to 2009 (June) and seasonally adjusted using the US Census Bureau's X12 ARIMA procedure. Then, data was detrended with the usual Hodrick-Prescott filter and correlation coefficients between de-trended IIP between India and advanced economies were estimated.

Germany, followed by Italy and the US. Another noteworthy feature is the significant increase in industrial synchronisation in recent periods (2006-2009) with major advanced countries (Chart VI.3). Thus, the strengthening of synchronisation with advanced countries made it difficult for India's industrial sector to remain unaffected from the spillover effects of the global financial crisis and economic slowdown.

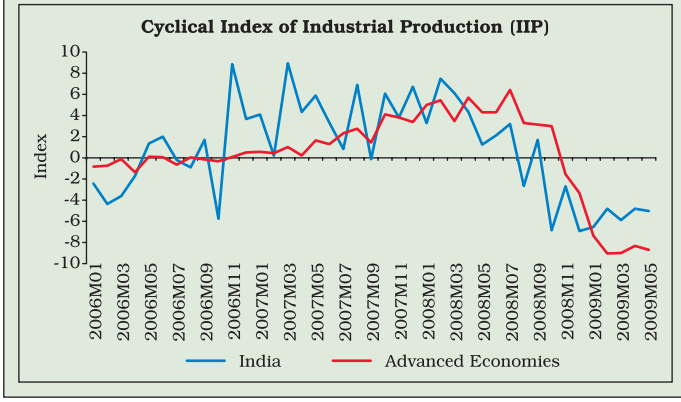
Financial Crisis and Potential Output

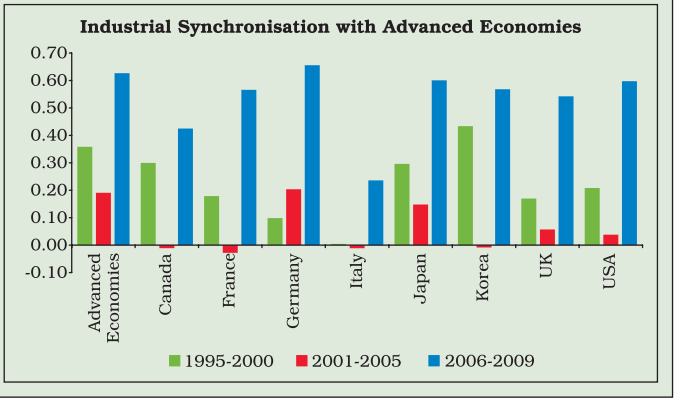
6.15 Besides directly affecting potential output through dampening demand and drying up of funding, a financial crisis can also have an impact through indirect effects as crises usually trigger policy responses to counter the damaging effects emanating from the economic downturn (Reinhart and Rogoff, 2009). Such policy responses target the increase in investment in infrastructure in order to boost potential output; at the same time, they may introduce distortions or encourage excessive risk-taking. Temporary fiscal measures can lead to permanent increases in the size of government expenditure and in debt levels, which in turn will have negative effects on growth (Afonso and Furceri, 2008). Eventually, the nature and design of policy responses would decide the outcome of the potential output during crisis periods and subsequently. Hoj *et al*. (2006) mention that financial crises can also foster the implementation of structural reforms that can, in turn, enhance potential output by moderating political opposition to reforms.

6.16 Using the potential output based on the Hodrick-Prescott method, it is observed that the global shocks seem to have marginally impacted India's trend output growth from the pre-crisis trajectory. It should, however, be emphasised that some of the slowdown in the potential output growth in India was on account of the cyclical slowdown which had already set in before the global crisis started affecting the economy. While in the short run the output path may be impacted by the drop in productivity growth, over the longer horizon, the capital-to-labour ratio and employment growth would determine the loss in potential output. Thus, if an economy witnesses a decline in output relative to its previous trend over the medium term, it could be a decline in potential output but may also represent a persistent decline in aggregate demand.

6.17 It is argued that long-run employment loss may be attributed to the response of labour, capital and factor productivity to the financial crisis (IMF, 2009). If the shocks are significant enough to cause structural unemployment, given the institutional rigidities in the labour markets it may take longer to reach the pre-crisis level of employment, which may drag down productivity in the economy over the medium-term. Second, the crisis may slow down credit expansion and, hence, investment rate through various conduits, such as tighter credit standards, higher borrowing costs, and an adverse impact of asset prices on corporates' balance sheets through reduction in collaterals. Third,

Chart VI.3: Synchronisation of the Industrial Sector





productivity levels may fall due to loss of speed of innovations and reduction in research and development as companies attempt to restructure due to the impact of the crisis. Although it is difficult to quantify the above factors, the impact of the external shocks on investment rate in India may not be as adverse as in the advanced economies (Box VI.1).

Box VI.1
Loss of Potential Growth in India *vis-à-vis* Emerging Market Economies (EMEs)

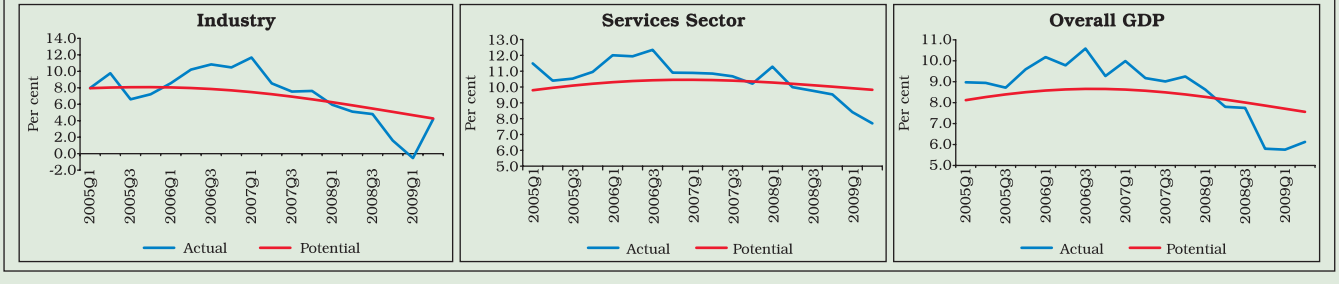
Potential output is generally the optimal level of output that can be achieved within natural and institutional constraints without putting pressure on inflation. Potential output has also been called the "natural gross domestic product" and, if the economy is at its potential, the unemployment rate equals the NAIRU or the natural rate of unemployment. The financial crisis often tends to affect the output of an economy through lowering financial intermediation, consumption and investments, and adversely affecting business sentiments; the extent of damage, however, depends on the severity and duration of the crisis. A recent empirical study on OECD countries over the period 1960 to 2007 by Furceri and Mourougane (2009) concludes that financial crises are estimated to lower potential output by around 1.5 to 2.4 per cent on an average. Similarly, Cerra and Saxena (2008) studied the output behaviour in 190 countries and found large and persistent actual output losses associated with financial crises, with output falling by 7.5 per cent relative to trend over a period of 10 years in the event of a banking crisis. If output loss is temporary, prompt and corrective policy initiatives are able to repair the damage and bring the output to the previous trajectory over a shorter span. On the other hand, in case output loss tends to be permanent, *i.e.,* potential output has a structural break and has shifted to a lower trajectory, policymakers have to strive very hard and it might take longer than expected to shift back to the previous trajectory.

During the recent global crisis, the level of financial intermediation decelerated significantly in India, both in terms of bank credit and dent in equity markets. Second, the unemployment rate also went up, especially in export-oriented sectors, although official estimates are not available. Third, merchandise exports contracted at a rapid pace, possibly rendering a significant part of their capital stock and labour force idle if export-oriented enterprising units failed to shift their focus on domestic markets. Hence, in light of the above, it would be worthwhile to estimate the loss of output growth, temporary or permanent (potential), in the case of India *vis-à-vis* other emerging market economies.

Although, there are various methodologies to estimate potential output, obtaining a reliable measure is fraught with difficulty and, hence, the issue of appropriateness remains unsettled. Nonetheless, the Hodrick-Prescott (HP) filter has been used for deriving a long term "trend" growth using annual as well as quarterly data to assess the loss of output growth during the current crisis. The shift in potential output growth, if any, should be construed preliminary and any inferences from the same need to be made with caveats.

The quarterly estimates of the potential growth based on the HP filter methodology shows that loss in growth, which started from the second quarter of 2008, *albeit* marginal, followed through the subsequent quarters with around 2.0 percentage points in Q4 of 2008 and Q1 of 2009 and 1.4 percentage points during Q2 of 2009. The trends in potential growth suggest that actual growth in industry has almost caught up with the potential level in Q2 of 2009, indicating a temporary loss of growth. In contrast, loss of growth in the services sector continued to widen. Nevertheless, as mentioned above, these results are preliminary and, therefore, should be used with great caution. Since services contribute about 60 per cent to the GDP, the potential growth in GDP seems to be following the trend in the services sector (Chart 1).

Chart 1 : Actual and Potential Growth in India



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The potential growth in India as well as in some of the emerging market economies (EMEs) was also estimated using the HP filter with annual data from 1980 to 2008. Most of the EMEs including India have experienced loss in actual growth when compared with potential growth during 2008, whereas these countries witnessed gains in actual growth in recent years (Table 1). Russia had the highest growth loss followed by China, Argentina, India, Philippines, and Malaysia during 2008.

Table 1: Growth Gap in India vis-à-vis EMEs
(Actual minus Potential)

Country	2001-2005	2006	2007	2008
Argentina	-1.2	2.0	1.1	-1.6
Brazil	-0.4	-0.2	1.1	0.1
China	-0.2	1.2	2.3	-1.9
India	-0.5	1.7	0.8	-1.5
Indonesia	0.7	0.2	0.5	-0.2
Malaysia	-0.4	0.5	1.0	-0.8
Philippines	-0.3	-0.1	1.5	-1.3
Russia	-0.1	-0.1	0.0	-2.8

References:

1. Cerra, V. and S.C. Saxena. 2008. "Growth Dynamics: The Myth of Economic Recovery". *American Economic Review*, 98: 439-457.

2. Furceri, D. and Annabelle Mourougane. 2009. "The Effect of Financial Crises on Potential Output: New Empirical Evidence from OECD Countries". *OECD Economic Department Working Paper* 699.

6.18 The shift in the composition of aggregate demand towards exports during the current decade has made the Indian economy more susceptible to global developments. Again, India's bilateral synchronisation along with business cycle synchronisation with three groups, *viz*., world economy, advanced, and emerging & developing countries, conclusively reflects the strengthening of the co-movement of India's business cycle with the rest of the world and, hence, the decoupling hypothesis is not found to be tenable during the recent global financial crisis. Further, during this crisis, several economies including India suffered loss of potential growth. In the next section, the impact of trade channels on the Indian economy is discussed.

II. IMPACT ON INDIA THROUGH TRADE CHANNEL

Impact through Exports

World Income and Exports

6.19 The outlook for international trade was strongly affected during the crisis and world trade performance weakened considerably from the last quarter of 2008. The rising trend witnessed in the growth of world trade was reversed during the crisis and it fell sharply and traversed to the negative zone from the fourth quarter of 2008. Advanced economies led this sharp deterioration in the initial period; however, the emerging and developing economies also caught the downswing (Table 6.5).

6.20 The contracting external demand from advanced economies on account of falling disposable income and heightened uncertainty spilled over to emerging markets and developing countries, concomitantly manifested in the declining international trade of these countries. India's merchandise trade was also impacted by the falling consumption, particularly in advanced countries, and the slump in trade credit following tightening of international credit market conditions in the aftermath of the collapse of Lehman Brothers in mid-September 2008. The cyclical co-movements between growth in India's exports and external demand (GDP in world and advanced economies) were highly synchronised during the current global crisis (Chart VI.4). This shows that during normal times, other factors besides world income also play a pivotal role in driving the growth in exports, while the impact stemming from world GDP becomes overriding during a crisis.

6.21 In view of India's exports being highly elastic to world income, the effect of the contracting world income was reflected in the overall decline in merchandise exports from the

Table 6.5: World Trade Performance

(Annualised growth in per cent)

	Q1 2007	Q2 2007	Q3 2007	Q4 2007	Q1 2008	Q2 2008	Q3 2008	Q4 2008	Q1 2009	Q2 2009
1	2	3	4	5	6	7	8	9	10	11
Exports										
World	13.9	11.6	14.2	18.8	24.8	27.2	23.1	-6.3	-29.3	-30.8
Advanced Economies	13.4	10.9	13.4	16.0	19.7	22.6	16.6	-11.8	-30.2	-31.5
Emer. & Develop Eco.	15.1	12.9	15.6	24.0	34.7	35.9	34.8	3.5	-28.6	-30.0
Euro Area	16.5	12.3	13.6	16.4	18.3	24.1	15.3	-16.5	-31.1	-34.5
USA	10.8	10.7	12.2	14.2	17.1	19.0	17.1	-4.2	-22.4	-26.9
Imports										
World	14.0	13.1	14.0	19.4	23.3	25.9	23.3	-7.3	-30.6	-33.1
Advanced Economies	11.6	10.1	10.6	16.4	19.5	22.2	19.1	-11.1	-30.7	-34.6
Emer. & Develop. Eco.	16.3	14.2	14.6	17.0	18.8	22.7	14.2	-16.0	-29.7	-34.2
Euro Area	20.3	20.3	21.7	26.5	32.3	34.2	32.1	1.0	-30.5	-29.8
USA	4.1	3.7	3.2	10.3	11.4	14.2	14.3	-9.2	-29.9	-34.7

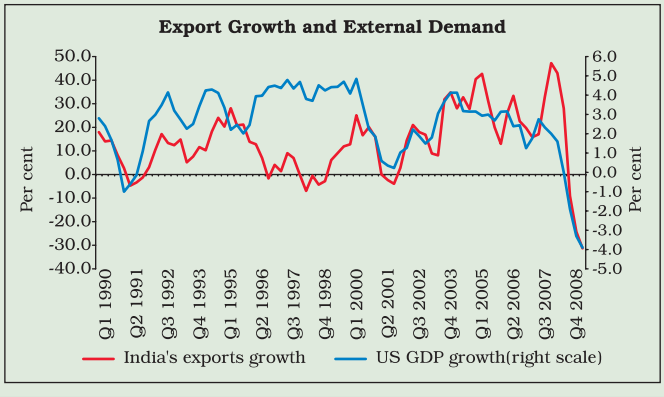
Source: IFS, November 2009, IMF.

third quarter of 2008-09. As per the export demand function estimated by Agarwala (1970), the income and price elasticity coefficients were 0.35 and -0.44, respectively. Another study by RBI (2003) found that short-term and long-term elasticity of demand for India's exports with respect to world GDP growth was at 0.8 and 1.5, respectively. Further, with the latest data, the long-term elasticity of India's exports demand was estimated at 3.7 with respect to world GDP (RBI, 2009). This confirms that with high global growth, the pull factor operating on India's exports could be sizeable. The high income elasticity of exports with respect to world income is reflected across various commodities, with their elasticity improving significantly during the reform period (1993-2008) compared with the 1980s (Table 6.6).

Export and Economic Growth

6.22 As discussed in the previous section, despite the dominant role of domestic demand in shaping the growth path, the role of trade in conditioning the growth process became increasingly important over time, which was also evident from a significant rise in the trade-GDP ratio in the recent period. The direct impact of exports on economic growth could be determined by trade openness and the acceleration in the growth of exports, which in turn could be determined by the elasticity of exports with respect to world income (Box VI.2).

Chart VI.4: Exports and External Demand



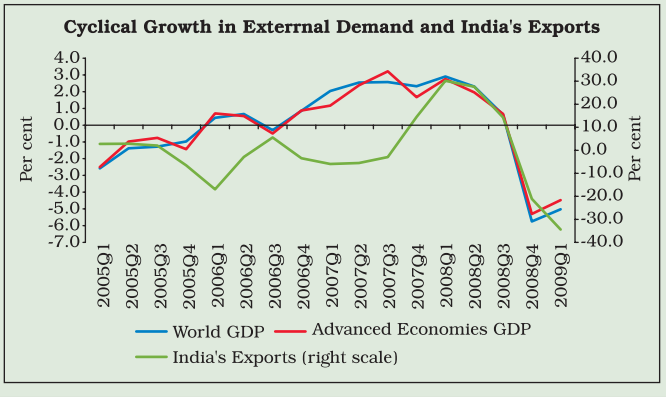


Table 6.6: Elasticity Response of India's Commodity Exports to World Income

Commodity	1980-81 to 2007-08	1993-94 to 2007-08	1980s	Commodity	1980-81 to 2007-08	1993-94 to 2007-08	1980s
1	2	3	4	1	2	3	4
1. Food	2.7	2.0	0.8	19. Textile yarn	0.8	1.7	7.2
2. Cereals	3.9	2.6	3.1	20. Textile (non-cotton)	3.7	1.7	1.4
3. Sugar	0.7	6.7	-10.2	21. Textile materials	4.2	1.0	0.0
4. Coffee	1.1	0.3	1.1	22. Floor coverings	1.8	0.7	2.7
5. Spices	2.0	2.3	0.0	23. Non-metallic minerals	3.4	2.9	3.7
6. Oilseed cake	2.6	0.4	2.7	24. Iron & steel	7.5	3.8	1.2
7. Beverages	1.6	2.0	-2.9	25. Non-ferrous metals	7.7	7.4	5.6
8. Crude material	4.4	5.5	1.2	26. Metals	4.7	4.0	0.4
9. Raw cotton	2.5	8.4	-3.0	27. Machinery	5.3	5.2	2.4
10. Textile fibres	4.2	4.8	5.4	28. Non-electrical machinery	5.2	5.6	2.0
11. Minerals (non-POL)	3.7	3.6	3.2	29. Tele-equipment	6.6	5.5	2.6
12. Iron ore	1.4	2.8	1.6	30. Electrical machinery	5.0	5.9	2.6
13. Ores	4.4	6.0	3.1	31. Transport equipment	5.5	5.8	1.6
14. Fuel	2.2	7.5	1.5	32. Miscellaneous	2.1	2.8	3.0
15. POL	6.1	29.3	9.9	33. Apparel accessories	2.8	1.3	4.0
16. Chemicals	5.3	3.7	3.3	34. Footwear	0.9	2.7	7.6
17. Manufactures	3.3	3.1	1.4	35. Miscellaneous	5.3	4.2	2.8
18. Leather	0.8	0.6	2.8	36. General Index	3.9	3.7	1.2

6.23 Within the framework of growth accounting, the contribution of exports to economic growth was negligible during the first two decades after independence. Though it showed some improvement in the 1970s, this could not be sustained during the 1980s. During the reform

Box VI.2
Exports and Domestic Growth Relationship: The Growth Accounting Approach

The early literature relied on the standard growth accounting approach based on national accounts to measure the contribution of exports to economic growth. According to this approach, from the demand side, the aggregate income or gross domestic product (Y) of an economy comprises domestic demand (D) and external demand such as exports (E): $Y_t = D_t + E_t$

This equation can be transformed into growth rates of Y, D, and E:

$$\frac{\Delta Y_t}{Y_{t-1}} = \frac{\Delta D_t}{D_{t-1}} \frac{D_{t-1}}{Y_{t-1}} + \frac{\Delta E_t}{E_{t-1}} \frac{E_{t-1}}{Y_{t-1}}$$

or

$$g_y = g_D\, w_D + g_E W_E \quad (1)$$

Thus, the growth rate of Y (g_y) can be estimated as the weighted average of growth rates of the domestic and external demand components, g_D and g_E. The weights W_D and W_E are the shares of domestic and external demand in the GDP in the previous year. In order to connect domestic economic growth with global economic developments, the standard export demand function in log-linear form can be used:

$$lnE_t = \alpha + \beta\, lnY_t^f + \theta\, lnP_t \quad (2)$$

where Y_t^f and P_t are world income and relative prices and the parameters β and θ are the income and price elasticity measures of exports with respect to world income and relative price (foreign price relative to domestic price), respectively. Assuming that the relative price of exports remains unchanged; the relationship between growth rates of exports and world income derives from the export demand function as

$$g_E = \beta\, g_W \quad (3)$$

Now from Equations 1 and 3, we can derive that the impact of the global economy on domestic economic growth will be a product of three factors: export elasticity, growth rate of the world economy, and share of exports in the domestic economy. In other words, for every percentage growth rate of world income, the contribution of exports to the domestic economy will be a product of elasticity of exports with respect to world income (propensity of foreigners to demand exports) and the share of exports in the domestic economy (an indicator of trade openness).

Table 6.7: Contribution of Consumption, Investment and Exports to Economic Growth

(Percentage Points)

Period	GDP	Private Consumption	Government Consumption	Investment	Exports
1	2	3	4	5	6
1950s	3.9	3.2	0.2	0.8	0.0
1960s	4.1	2.6	0.6	1.1	0.1
1970s	2.9	2.1	0.5	0.9	0.5
1980s	5.7	3.5	0.8	1.2	0.3
1990s	5.6	3.2	0.7	1.7	1.0
2000s	7.2	3.5	0.4	3.5	2.4
2003-08	9.0	4.0	0.5	5.1	2.7
2008-09	6.7	4.9	1.7	-1.5	4.2
2009-10	7.4	2.4	0.9	2.1	-3.9

Note : The difference between the growth rate of GDP at constant market price and the sum of growth of its components, consumption, Government exependiture, investment and exports is accounted for by imports expansion (contraction).

Source: Central Statistical Organisation, Government of India.

period, the contribution of exports to economic growth increased during the 1990s and more than doubled during the 2000s (Table 6.7).

6.24 In order to further explore the relationship between exports and growth, the Granger causal analysis between GDP growth and exports growth and trade deficit to GDP ratio was undertaken based on annual data during 1950-2008. The Granger Causality results[5] provided two insights: first, the direction of causal relation between exports and GDP growth rates was from the former to the latter but not *vice versa* and, second, the direction of the causal relationship between the trade deficit ratio and economic growth was from the latter to the former, which is attributable to the role of imports demand driven by domestic economic activity. The compositional shift in the exports baskets towards technology-intensive commodities during the past few years, spurred by the prominence of exports in the Indian economy, is reflected in their increased contribution to growth.

Exports and Consumption

6.25 The direct contribution of exports to aggregate demand assumed a critical mass and has become a crucial conduit of the trade channel of transmission. Several domestic and external developments which followed the global crisis contributed to the moderation of private consumption growth (Table 6.8). Apart from the direct impact of exports on aggregate demand and growth, exports could indirectly affect growth through consumption and investment. In India, exports and private consumption demand seem to have displayed a close relationship during the recent period.

6.26 There could be a number of indirect channels through which export demand could affect consumption. First, the manufacturing sector has become export-intensive over the period. The share of manufactured exports in

Table 6.8: Some Determinants of Private Consumption in India

(per cent)

Indicators	2005-06	2006-07	2007-08	2008-09
1	2	3	4	5
(i) Private Consumption	9.0	8.2	9.8	6.8
(ii) Agriculture GDP	5.2	3.7	4.7	1.6
(iii) Loans to Households	52.1	-3.6	-2.1	-4.3
(iv) Personal Loans	40.5	26.8	12.1	10.8
Housing	38.3	24.7	11.6	7.4
Credit cards	41.3	47.7	44.2	6.1
Consumer durables	-20.9	29.3	-4.2	-7.0
(v) CPI Inflation (IW)	4.4	6.7	6.2	9.1
(vi) CPI Inflation (AL)	3.9	7.8	7.5	10.2
(vii) Stock Returns	44.2	48.3	35.0	-25.4
(viii) Remittance Inflows ($)	18.4	23.6	41.1	6.6
(ix) Travel Earnings ($)	17.8	16.2	24.4	-4.0
(x) Global Commodity Prices				
All Commodities	24.3	15.8	21.6	3.8
Food	1.1	12.7	21.8	6.4
Dubai Oil prices	46.6	14.0	27.0	6.2

[5] **Exports and Growth: Causal Relationship**

Causal relationship: Null Hypothesis	F-statistics (probability)	Result
Exports growth did not cause GDP growth	4.90 (0.01)	Reject
GDP growth did not cause Exports growth	1.21 (0.31)	Accept
Trade deficit did not cause GDP growth	0.02 (0.98)	Accept
GDP growth did not cause Trade deficit	4.19 (0.02)	Reject

manufacturing GDP in India has risen from 27.1 per cent in 1990-91 to 52.2 per cent in 2000-01 and further to 72.3 per cent in 2008-09. This significant export-orientation of manufacturing has also exposed the sector to external demand shocks. Furthermore, a large part of manufacturing exports (42 per cent) is accounted for by leather and manufactures, textile and textile products, gems and jewellery and handicrafts, which are employment-intensive, and a major part of exports in these sectors is contributed by small-scale industries (SSIs). Thus, an external demand shock has a larger impact on output and employment in such industries, which has a direct bearing on domestic consumption demand. Furthermore, there are a number of SSIs that are dependent on the supply chain of the manufacturing export firms, which are also indirectly affected by the external demand shocks.

Impact on Exports: Trend, Composition and Direction

6.27 The trade channel of the contagion that intensified in the post-September 2008 phase of the crisis adversely impacted India's merchandise trade, with exports declining with greater intensity and more swiftly than during the recession of the early 2000s, in tandem with the steeper recession in the developed countries (Table 6.9).

6.28 An analysis of the shift in the composition of India's commodity exports reveals some interesting facts. Before the reforms, India's exports were significantly driven by exports of primary agricultural commodities and manufacturing commodities such as textiles, gems and jewellery; while the commodity composition at the global level was shifting to technology-intensive manufacturing commodities such as engineering goods and chemicals. Thus, despite the growth momentum in the 1980s, India's share in world exports declined to about 0.5 per cent.

6.29 The reforms and favourable trade policy brought a shift in the composition of India's commodity exports. Technology-intensive exports comprising engineering goods such as metals, machinery and transport equipment and chemicals, including pharmaceuticals emerged as the leading export sectors for India, signifying the

Table 6.9: India's Trade Performance

Period	Export Growth (%)			Import Growth (%)		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
1	2	3	4	5	6	7
April	31.3	63.0	-32.8	42.1	65.0	-37.2
May	23.2	50.0	-36.2	40.0	39.2	-32.7
June	16.1	58.5	-29.8	39.0	44.6	-21.8
July	18.0	52.1	-25.5	41.0	49.7	-33.2
August	17.4	40.5	-24.1	32.9	64.6	-35.9
September	16.4	26.1	-8.4	5.0	70.9	-34.0
October	47.8	-3.7	2.7	24.7	18.5	-2.7
November	29.4	-13.5	29.6	34.9	6.3	2.7
December	35.0	-8.6	19.9	28.3	-3.3	32.2
January	35.8	-13.6	18.7	58.1	-20.2	34.8
February	43.1	-21.0	31.8	43.6	-27.6	67.3
March	34.1	-25.1	54.1	37.6	-29.6	67.1
First Half	**20.4**	**48.4**	**-26.1**	**33.3**	**55.7**	**-32.5**
Second Half	**37.5**	**-14.3**	**26.1**	**37.9**	**-9.3**	**33.6**
Annual (Apr-Mar)	**28.9**	**13.7**	**-4.7**	**35.4**	**20.8**	**-8.2**

Source : Directorate General of Commercial Intelligence and Statistics (DGCI&S).

Table 6.10: Composition of India's Commodity Exports

(share in per cent)

	1987-91	1992-96	1997-2003	2004-08	2007-08	2008-09
1	2	3	4	5	6	7
1. Primary Products	24.1	21.8	19.1	16.0	16.9	13.7
(i) Agricultural & Allied Products	18.5	17.6	16.1	10.6	11.3	9.5
(ii) Ores & Minerals	2.1	2.0	1.8	3.5	5.6	4.2
2. Manufactured Goods	71.0	75.3	76.7	69.9	63.2	66.5
(i) Leather & Manufactures	7.6	6.3	4.4	2.7	2.2	1.9
(ii) Chemicals & Related Products	8.3	10.7	12.9	14.1	13.0	12.3
(iii) Engineering Goods	11.4	13.4	15.1	21.5	22.9	25.5
Manufactures of metals	*2.3*	*2.8*	*3.3*	*4.1*	*4.3*	*4.1*
Machinery Instruments	*3.6*	*2.9*	*3.5*	*4.9*	*5.6*	*5.9*
Transport equipment	*1.9*	*2.8*	*2.4*	*3.8*	*4.3*	*6.0*
Iron & steel	*0.5*	*1.9*	*2.4*	*3.9*	*3.3*	*3.2*
Electronic goods	*1.5*	*1.5*	*2.2*	*2.3*	*2.1*	*3.7*
(iv) Textiles and Textile Products	23.3	26.0	25.1	15.6	11.9	11.8
(v) Gems & Jewellery	18.4	16.7	16.9	14.6	12.1	15.1
(vi) Handicrafts	1.4	1.4	1.6	0.5	0.3	0.2
3. Petroleum Products	3.0	1.9	2.4	11.5	17.4	14.5
4. Other	1.9	1.0	1.8	2.6	2.5	5.4
Total Exports	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Directorate General of Commercial Intelligence and Statistics (DGCI&S).

rising prominence of exports in India's GDP growth (Table 6.10). Besides a shift towards technology-intensive exports, the exports of petroleum products (which showed spectacular growth) emerged as a major contributor to total exports, reflecting the impact of India becoming the sixth largest refinery in the world.

6.30 During 2008-09, the deceleration was, however, modest in the case of manufacturing goods. As a result, share of non-oil exports as well as manufacturing goods exports in total exports increased by around 8 percentage points during 2008-09 over the past year. In sum, this implies the cost competitiveness of the manufacturing sector on account of enhanced efficiency and productivity. At a more disaggregated level, the major commodities that witnessed a decline in exports during 2008-09 were handicrafts, petroleum products, ores and minerals, and agricultural and allied products. The global crisis, however, had a more pronounce impact on India's exports during 2009-10 (April-October). All sectors including engineering, chemicals, gems and jewellery and petroleum exports witnessed a decline in export growth (Table 6.11).

6.31 The regional direction of India's exports has also experienced significant changes between 2000 and 2008. First, India's exports share in traditional markets such as the EU and North America witnessed a significant decline. Second, there was a structural shift in favour of Latin America, ASEAN, West Asia, North Africa and South Asia. In terms of growth, India's export to developing countries accounted for the largest downturn to (-0.5) per cent during 2008-09 from 33.6 per cent in 2007-08, which was mainly driven by a sharp fall in exports to China. The second largest deceleration in growth of India's exports was to OECD countries during 2008-09. The US led the deceleration in exports to OECD countries during 2008-09; nevertheless, the US continued to be the single largest contributor to India's exports (Table 6.12). The increasing share of India's trade with the above regions could be attributed to factors such as the distance and

Table 6.11: Global Crisis and India's Exports

Commodities	Amount (US$ billion)			Growth (%)			
	2006-07	2007-08	2008-09	2007-08	2008-09	April-October	
						2009-10	2008-09
1	2	3	4	5	6	7	
1. Primary Products	**19.7**	**27.6**	**25.3**	**40.0**	**-8.0**	**-22.7**	**28.5**
(i) Agricultural & Allied Products	12.7	18.4	17.5	45.3	-4.9	-25.5	36.8
(ii) Ores & Minerals	7.0	9.1	7.8	30.2	-14.5	-16.1	12.0
2. Manufactured Goods	**84.9**	**103.0**	**122.8**	**21.3**	**19.6**	**-20.9**	**39.3**
(i) Leather & Manufactures	3.0	3.5	3.6	16.1	1.5	-18.2	13.6
(ii) Chemicals & Related Products	17.3	21.2	22.6	22.3	7.1	-15.8	26.6
(iii) Engineering Goods	29.6	37.4	47.3	26.4	26.5	-28.7	51.2
Manufactures of metals	5.1	7.1	7.6	38.8	7.0	-33.7	25.3
Machinery & Instruments	6.7	9.1	11.0	35.8	19.9	-20.0	37.1
Transport equipment	4.9	7.0	11.1	41.9	58.8	-12.2	80.9
Iron & steel	5.2	5.4	5.8	4.0	6.9	-60.4	46.6
Electronic goods	2.9	3.4	6.8	17.8	102.5	-15.1	134.6
(iv) Textiles	17.4	19.4	20.0	11.8	3.0	-10.5	10.3
(v) Gems & Jewellery	16.0	19.7	27.7	23.2	42.1	-19.8	67.0
(vi) Handicrafts	0.4	0.5	0.3	16.0	-40.8	-38.2	-48.3
3. Petroleum Products	**18.6**	**28.4**	**26.8**	**52.2**	**-5.4**	**-35.8**	**-48.3**
4. Other	**3.2**	**4.0**	**7.7**	**26.4**	**148.9**	**-13.2**	**98.3**
Total Exports	**126.4**	**162.9**	**182.6**	**28.9**	**13.7**	**-23.3**	**39.4**

Source : Directorate General of Commercial Intelligence and Statistics (DGCI&S).

size of the economies as described in the Gravity Model of international trade. The Gravity Model of international trade is increasingly used to derive measures of divergence in expected volumes of trade between trading partners and their actual trade (Box VI.3).

Table 6.12: Geographical Diversification of India's Exports

(share in per cent)

Region/Country	1987-90	1990-95	1995-00	2000-05	2005-08	2007-08	2008-09
1	2	3	4	5	6	7	8
1. Advanced Economies	**57.7**	**58.1**	**56.4**	**48.4**	**40.8**	**39.5**	**37.4**
(i) EU	24.8	27.1	26.4	22.1	21.4	21.2	21.0
UK	6.0	6.4	5.9	4.8	4.3	4.1	3.6
Germany	6.4	7.2	5.5	3.9	3.3	3.1	3.5
Other EU	12.4	13.5	14.9	13.3	13.8	13.9	14.2
(ii) US	17.7	17.4	20.2	19.1	14.0	12.7	11.3
(iii) Other OECD	15.1	13.5	9.9	7.3	5.5	5.6	4.7
2. OPEC	**6.2**	**8.8**	**10.1**	**13.3**	**17.3**	**16.6**	**21.2**
(i) Saudi Arabia	1.6	1.9	1.9	1.8	2.2	2.3	2.7
(ii) UAE	2.2	4.2	5.0	6.9	10.1	9.6	13.1
(iii) Other OPEC	2.4	2.7	3.2	4.6	5.0	4.7	5.4
3. Eastern Europe	**17.5**	**8.3**	**3.6**	**2.6**	**1.3**	**1.1**	**1.1**
4. Developing Countries	**15.5**	**22.5**	**28.9**	**33.5**	**39.6**	**42.5**	**37.6**
(i) Asia	13.0	18.7	22.6	26.3	29.9	31.6	28.1
China	0.3	0.7	1.5	3.8	6.2	6.6	5.1
Hong Kong	3.4	4.4	5.9	5.2	3.9	3.9	3.6
Other Asian Countries	9.4	13.6	15.2	17.3	19.8	21.1	19.4
(ii) Africa	2.0	2.8	4.6	4.9	6.6	7.5	6.3
(iii) Latin America	0.5	1.0	1.7	2.3	3.2	3.4	3.1
5. Others	**3.1**	**2.3**	**0.9**	**2.2**	**0.9**	**0.4**	**2.7**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Directorate General of Commercial Intelligence and Statistics (DGCI&S).

Box VI.3
The Gravity Model of Foreign Trade

Borrowing from Newtonian physics, the model consists of a single equation postulating that the amount of trade between two countries depends positively on the joint size of the two trading economies and is negatively related to the distance between them. Over time, the Gravity Model of trade has been extended to incorporate a wide variety of other factors. This approach has the benefits of capturing the overall impact of a country's policy and institutional environment, including a wide variety of artificial impediments, and not just trade policy. A country is found to "under-trade" if its actual trade across trading partners is, on average, below the level predicted by the Gravity Model without explicit policy variables (IMF, 2002; Rose 2002). An analysis of developing countries' trading patterns, as per the Gravity Model, suggests the following: (i) balance of payments and trade restrictiveness remain important reasons for developing countries to trade less than industrial countries; and (ii) international vertical specialisation, which had played an important role in East Asia, is likely to become more significant for other developing countries with open trading regimes, abundant labour and flexible economies. Full liberalisation of both trade and balance of payments policies in all countries would increase trade between industrial countries (North-North trade) by about 40 per cent, North-South trade by about 63 per cent, and trade between developing countries (South-South trade) by about 94 per cent (IMF, 2002).

6.32 An empirical analysis is undertaken to assess how the broad direction of India's exports to emerging market economies relative to developed countries was determined by the relative price competitiveness effect and real demand conditions. The long-run elasticity of the direction of India's exports with respect to relative price was statistically significant and positive at 1.88, higher than the almost unitary elasticity coefficient with respect to relative real demand conditions[6]. However, a significant structural shift since 1991-92 in the model led to a significant moderation of the relative price effect and improvement in the relative real demand effect. The price elasticity coefficient was reduced to 0.49, while the real demand effect improved to 1.44 (Table 6.13). The contraction in India's exports since October 2008 was mainly conditioned by real demand effects emanating from the sharp fall in real activities in advanced and emerging market economies during the current global crisis.

Leading Exports by Commodities and Firms

6.33 Engineering goods exports have assumed critical proporation in merchandise exports of India during the post-reforms period (Box VI.4). The critical role of engineering and chemicals goods exports was evident during the global crisis. The exports of engineering goods maintained their growth momentum in 2008-09, with a significant acceleration in the growth of transport equipment. The exports of

Table 6.13: Relative Price and Real Demand Effects on India's Broad Direction of Exports (Long-run Co-integration Coefficients)

Dependent Variable: Direction of Exports	Explanatory Variables			
	Intercept	Relative Price	Real Demand	Structural shift
1	2	3	4	5
1. x_{em}/x_{ac}	0.66	1.88	1.01	
		(7.25)	(6.45)	
2. x_{em}/x_{ac}	1.18	0.49	1.44	0.05
		(1.02)	(6.95)	(2.07)
3. x_{em}/x_{w}	0.42	2.17	1.00	
		(12.28)	(7.82)	
4. x_{em}/x_{w}	0.81	1.66	1.26	0.03
		(7.25)	(6.82)	(1.73)
5. x_{ac}/x_{w}	-0.38	10.83	0.47	
		(8.00)	(1.36)	
6. x_{ac}/x_{w}	0.016	3.26	1.87	0.03
		(1.97)	(5.37)	(2.83)

X_{em} : India's exports to emerging and developing economies (EMEs) in US dollar terms.
X_{ac} : India's exports to advanced economies in US dollar terms.
X_{w} : India's total exports to the world in US dollar terms.
Pem : Import price index (unit values) of EMES.
Pac : Import price index (unit value) of advanced economies.
P_{w} : Import price index (unit value) of world.
Q_{em} : Real demand condition of the EMES, *i.e.*, total imports of the EMEs deflated by their import price index measured in US dollars.
Q_{ac} : Real demand condition of the advanced countries, *i.e.*, their total imports deflated by their import price index measured in US dollars.
Q_{w} : Real demand condition of the world, *i.e.*, their total imports deflated by their import price index measured in US dollars.
Relative prices : P_{em}/P_{ac} used in Equations 1 & 2, P_{em}/P_{w} in Equations 3 & 4, P_{ac}/P_{w} used in Equations 5 & 6.
Relative demand : Q_{em}/Q_{ac} used in Equations 1 & 2, Q_{am}/Q_{w} in Equations 3 & 4, Q_{ac}/Q_{w} used in Equations 5 & 6.
Figures in parentheses are t-statistics.

[6] Estimate based on the co-integration model involving the natural logarithm of these variables for the period April 1980 to July 2009.

Box VI.4
India's Exports of Engineering Goods

During the reform period, India's merchandise exports witnessed a notable shift in terms of commodity composition, led by engineering goods. In an environment of increasing openness of the economy and a supportive policy framework since the early 1990s, exports of engineering goods accelerated from US$ 1.2 billion (9.5 per cent of total merchandise exports) in 1987-88 to US$ 47.3 billion in 2008-09 (25.5 per cent of total merchandise exports).The rapid growth of engineering goods exports at a trend growth rate of 27.7 per cent during 2001-02 to 2008-09 was attributable to the growing competitiveness and increasing technological sophistication of India's manufacturing exports. In 2004-05, engineering goods emerged as the largest item of manufacturing exports, surpassing exports of textiles and gems and jewellery. Within engineering goods, transport equipment emerged as the key driver of exports growth, attributable to the increasing global competitive advantage of India's automotive industry. According to the Automobile Components Manufacturing Association of India (ACMA), the Indian auto component industry is characterised by the largest three-wheeler market, the second largest two-wheeler market, the fourth largest tractor market and the fifth largest commercial vehicle market in the world and the fourth largest passenger vehicle market in Asia. Since the mid-1990s, India's automotive industry has witnessed rapid transformation from a low-volume and fragmented sector into a highly competitive sector characterised by world-class technology, large and assured volumes and strict delivery schedules in response to the demand from global vehicle manufacturers. Several Indian companies have entered into technological collaborations and equity partnerships with world leaders in automotive components. Some global vehicle manufacturers have set up subsidiaries for components manufacturing facilities in India, taking into account the lower labour cost and the availability of a highly skilled workforce. Furthermore, India's automotive components industry is highly diversified with a capacity to produce as many as 150 different products. Notwithstanding the recent surge in engineering exports, the technology intensity of India's exports compared with emerging economies in East Asia and Latin America has the potential for substantial growth. In terms of the global positioning of the automotive industry, the share of India's exports in the global automotive market remains small (Table). During 2001-2007, India's exports of machinery and transport equipments posted a trend growth rate of 33.0 per cent compared with the global trend growth rate of the sector at 12.1 per cent. Thus, the share of India's exports of machinery and transport equipment and automotive components at the global level increased from 0.10 per cent in 2000 to 0.33 per cent by 2007. According to the ACMA, the automotive components industry has to accelerate measures towards improving quality and its competitive position in the global market.

Table : Exports of Automotive Products of Emerging Economies

(US$ billion)

Country	Machinery	Automobile
World	5,348	1,234
Brazil	42	15
China	674	29
India*	25	5
Korea	234	49
Mexico	154	46
Russia	17	4
South Africa	16	8
Thailand	74	16
Turkey	39	18

Source: World Trade Organisation.

chemicals also remained resilient in 2008-09, *albeit* with some moderation in growth. The expansion of exports in these two sectors in 2008-09 accounted for the overall expansion of India's total exports in 2008-09. In 2009-10 (April-October), the decline in engineering goods exports accounted for about a half of the decline in manufactured exports and a third of India's total exports.

6.34 The significance of the engineering goods, chemicals and textiles industries within the manufacturing sector is evident from their principal economic characteristics. According to the Annual Survey of Industries 2007-08, the engineering goods sector accounted for about a third of aggregate investment, output, value added and employment in the manufacturing sector. Engineering goods, chemicals and textiles together accounted for more than 50 per cent of investment, output, value added and employment in the manufacturing sector (Table 6.14). Therefore, engineering goods assume a critical proportion in the growth of the manufacturing sector in India and the relative resilience displayed by the performance of engineering good exports somewhat insulated the Indian industry from the shocks stemming from sagging external demand during the crisis.

Table 6.14 : Principal Characteristics of Leading Export Industries

(Per cent to total)

Indicators	Engineering	Chemicals	Textiles	Total
1	2	3	4	5
(i) No. of Factories	25.2	7.6	11.3	44.1
(ii) Fixed Capital	34.4	14.7	10.4	59.5
(iii) Productive Capital	34.9	15.1	9.6	59.6
(iv) Invested Capital	35.2	13.6	9.8	58.5
(v) Workers	26.8	7.5	21.6	55.8
(vi) Total Persons (vii) Engaged	27.8	8.5	20.0	56.3
(viii) Wages to Workers	38.2	9.2	17.4	64.9
(ix) Total Emoluments	40.3	12.2	13.4	65.9
(x) Total Input	34.5	10.3	7.3	52.0
(xi) Total Output	35.3	10.9	7.2	53.4
(xii) Depreciation	34.1	15.8	11.2	61.1
(xiii) Net value added	39.5	12.8	6.3	58.6
(xiv) Rent paid	35.0	10.7	10.6	56.3
(xv) Interest paid	33.2	13.2	13.0	59.4

Source: Annual Survey of Industries 2007-08.

6.35 In order to further ascertain the role of the trade channel in India's growth, firm-level export-orientation information was examined. The firm-level export orientation also demonstrates the growing importance of trade channels in the growth of India's manufacturing sector. An analysis of 1,500 companies from the CMIE database showed that the number of companies with exports-to-sales ratios of 20 per cent or above more than doubled between 1993-94 and 2007-08 (Table 6.15). Their share in manufacturing exports also increased substantially during this period. This trend in firm-level export orientation was the outcome of the increasing internationalisation of Indian companies. On the back of an increased export orientation, the global shocks spilled over to firms in the manufacturing sector through declining external demand for their products from the third quarter of 2008-09.

Impact through Imports

6.36 Merchandise imports also caught the global downswings in the second half of 2008-09, offsetting some of the adverse impact of contracting exports. The growth in India's imports plunged sharply during the third quarter of 2008-09, and subsequently contracted from the last quarter of 2008-09 to 2009-10 (April-October). A massive weakening of imports was witnessed in the case of crude oil, capital goods, and gold and silver (Table 6.16).

6.37 There have been a number of subtle compositional shifts in imports within the broad aggregation during the past decade that need to be recognised. For instance, within petroleum imports, there has been a shift from petroleum products to crude oil, following the large-scale increase in refinery capacity within the country. Further, since 2001-02, India has transformed

Table 6.15: Firm-level Export Orientation

Classification	1993-94	1998-99	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	2	3	4	5	6	7	8	9
Exports-Sales Ratio (per cent)			**Distribution of the Number of Companies**					
>=75	56	71	77	75	81	61	76	71
>=50	75	126	158	160	168	159	169	179
>=35	94	175	219	242	241	249	272	261
>=20	145	269	346	357	382	388	409	417
>=10	249	398	499	533	542	555	566	566
Exports-Sales Ratio (per cent)			**Percentage to Total Exports of Manufacturing Sector**					
>=75	12.5	15.0	13.0	12.6	11.5	10.2	10.4	13.1
>=50	15.6	24.4	28.1	26.9	24.7	24.6	22.5	51.6
>=35	23.2	34.0	36.5	40.8	38.2	42.0	68.8	61.1
>=20	34.3	50.6	68.0	68.2	74.4	73.3	76.0	77.8
>=10	62.1	70.6	84.4	82.8	85.5	84.2	83.1	83.7

Source: Prowess data for 1,497 companies, CMIE.

Table 6.16: Global Crisis and India's Imports

Commodity Group	US$ billion			Growth (%)			
	2006-07	2007-08	2008-09	2007-08	2008-09	April-October	
						2009-10	2008-09
1	2	3	4	5	6	7	8
1. Bulk Imports	**84.2**	**112.7**	**135.7**	**33.8**	**20.3**	**-35.6**	**70.6**
(i) Petroleum and Petroleum Products	56.9	79.6	91.3	39.9	14.6	-35.0	71.6
(ii) Bulk Consumption Goods	4.3	4.6	4.9	7.1	6.2	68.0	3.8
Edible Oil	2.1	2.6	3.4	21.4	34.4	54.9	12.6
(iii) Other Bulk Items	23.0	28.5	39.5	23.9	38.6	-46.2	78.5
Fertilisers	3.1	5.4	13.6	71.9	151.2	-60.4	245.0
Iron & Steel	6.4	8.7	9.4	35.2	7.8	-26.8	19.4
2. Non-Bulk Imports	**101.5**	**138.7**	**155.8**	**36.6**	**12.3**	**-22.7**	**33.7**
(i) Capital Goods	47.1	70.1	70.5	49.0	0.6	-24.1	46.2
Machinery except Electrical & Electronics	13.9	19.9	20.9	43.4	5.3	-21.9	37.5
Electronic Goods incl. Computer Software	16.9	21.1	24.4	24.6	15.7	-12.5	22.4
Transport Equipment	9.4	20.1	13.0	113.1	-35.2	-56.7	133.4
(ii) Mainly Export-Related Items	17.9	20.8	29.7	16.2	43.1	-31.1	75.6
Pearls, Precious & Semi-Precious Stones	7.5	8.0	14.4	6.5	81.1	-39.1	112.1
Chemicals, Organic & Inorganic	7.8	9.9	12.2	26.4	22.8	-25.0	56.1
(iii) Others	36.6	47.8	55.5	30.8	16.1	-16.4	8.8
Gold & Silver	14.6	17.9	18.7	22.0	4.6	-16.3	31.8
Total Imports	**185.7**	**251.4**	**291.5**	**35.4**	**15.9**	**-29.0**	**49.5**
Memo Item							
Non-Oil Imports	128.8	171.8	200.2	33.4	16.5	-25.9	40.3
Non-Oil Imports excl. Gold & Silver	114.1	153.9	181.5	34.9	17.9	-27.2	41.6

Source : Directorate General of Commercial Intelligence and Statistics (DGCI&S).

itself from a net importer of petroleum products to a net exporter of the same. Another significant development during the 1990s has been the channelising of gold imports through official routes (Table 6.17). Since 1997 when banks were allowed to import gold, the import of gold through

Table 6.17: Commodity Composition of India's Imports

(share in per cent)

Commodities	1987-91	1992-96	1997-2003	2004-08	2006-07	2007-08	2008-09
1	2	3	4	5	6	7	8
I. Bulk Imports	**38.3**	**40.9**	**37.4**	**40.3**	**45.5**	**44.8**	**47.8**
Petroleum, Crude and Products	18.6	23.9	23.7	28.4	30.8	31.6	32.9
Bulk Consumption Goods	3.7	2.7	4.2	3.0	2.3	1.8	1.6
Edible Oils	1.7	1.0	3.0	2.2	1.1	1.0	1.2
Other Bulk Items	15.9	14.3	9.5	9.0	12.4	11.3	13.2
Fertilisers	3.6	3.7	2.2	1.3	1.7	2.1	4.9
II. Non-Bulk Imports	**53.1**	**59.1**	**62.6**	**59.7**	**54.5**	**55.1**	**52.2**
Capital Goods	22.9	25.5	20.5	23.7	25.3	28.1	21.3
Export-Related Items	16.0	16.6	16.8	14.1	9.6	8.3	9.9
Pearls, Precious and Semi-Precious Stones	9.5	8.3	9.3	7.5	4.0	3.2	4.7
Organic and Inorganic Chemicals	5.4	6.7	5.9	4.8	4.2	3.9	4.2
Others	14.2	17.0	25.4	21.9	19.6	18.7	21.0
Gold and Silver			9.4	8.2	7.9	7.1	6.6
III. Total Imports/All Commodities	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Non-oil Imports	81.4	76.1	76.3	71.6	69.2	68.4	67.1
Industrial Inputs	73.5	67.3	59.2	58.0	56.3	56.4	53.1

Source: Directorate General of Commercial Intelligence and Statistics (DGCI&S).

Table 6.18: Geographical Diversification of India's Imports

(Per cent share in total)

Region/Country	1987-90	1990-95	1995-00	2000-05	2005-08	2007-08	2008-09
1	2	3	4	5	6	7	8
1. Advanced Economies	**60.3**	**55.0**	**49.6**	**38.3**	**34.3**	**35.4**	**31.8**
(i) EU	**32.8**	**28.7**	**25.7**	**19.4**	**15.6**	**15.3**	**14.3**
UK	8.4	6.3	5.6	4.6	2.2	2.0	2.0
Germany	8.8	7.8	6.1	3.7	4.0	3.9	4.0
Other EU	15.7	14.6	13.9	11.1	9.4	9.4	8.3
(ii) US	10.8	10.8	8.9	6.4	6.8	8.4	6.2
(iii) Other OECD	16.6	15.5	15.0	12.5	11.9	11.8	11.3
2. OPEC	**13.6**	**20.3**	**22.7**	**6.6**	**25.3**	**30.7**	**32.6**
(i) Saudi Arabia	4.7	6.6	5.8	1.0	5.7	7.7	6.7
(ii) UAE	3.5	5.1	4.4	2.3	5.0	5.4	7.1
(iii) Other OPEC	5.4	8.5	12.5	3.3	14.6	17.7	18.8
3. Eastern Europe	**8.3**	**4.3**	**2.8**	**1.9**	**2.1**	**1.5**	**2.3**
4. Developing Countries	**17.8**	**20.5**	**24.8**	**24.9**	**30.4**	**31.5**	**32.9**
(i) Asia	12.7	15.3	18.4	18.8	24.5	25.5	26.6
China	0.5	1.0	2.4	4.6	9.6	10.8	10.8
Hong Kong	0.6	0.8	1.1	1.6	1.5	1.1	2.2
Other Asian Countries	11.6	13.6	14.9	12.6	13.4	13.7	13.7
(ii) Africa	3.0	3.3	4.8	4.4	3.7	3.7	4.3
(iii) Latin America	2.1	1.9	1.6	1.7	2.2	2.3	2.0
5. Others	**0.0**	**0.0**	**0.0**	**28.2**	**7.9**	**0.8**	**0.5**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Directorate General of Commercial Intelligence and Statistics (DGCI&S).

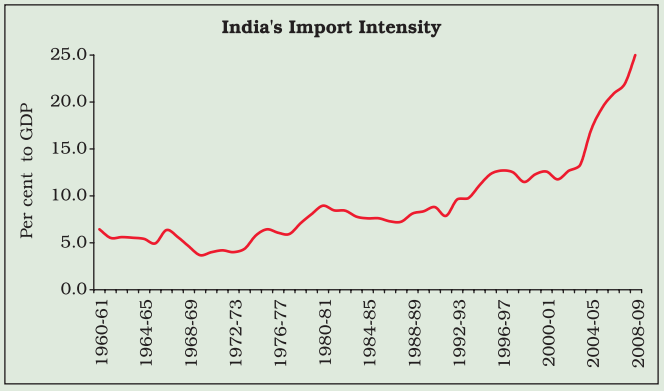
passenger baggage has declined significantly. Industries that have shown the least import propensity since the 1990s and, thereby have gradually been phased out of the import commodity basket, were mainly in the medium- to low-technology, labour-intensive sectors. Similarly, industries with the highest growth rate of imports in the past decade have been largely those with a medium- to high-technology content that produced intermediary products needed for exports.

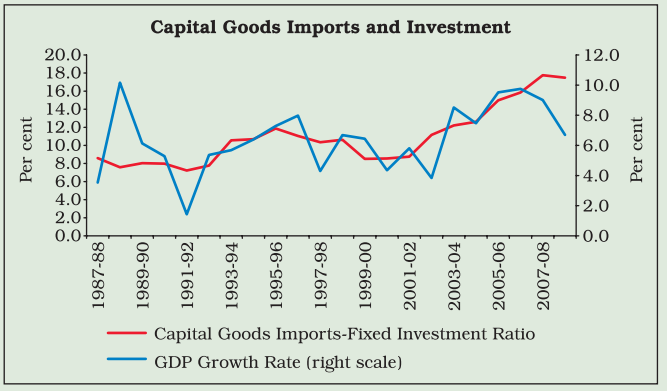
6.38 Since the opening up of the Indian economy, imports are increasingly sourced from a wider range of countries. Traditional key trading partners like Germany, Japan, UK, and US have subsided in terms of their market share and new import partners from East Asia (especially China) have emerged (Table 6.18). Another important development has been a gradual dissipation of the East European countries as a major source of India's imports. The high share of OPEC countries in the recent period reflects the magnitude of crude oil imports due to the rising oil-intensity of the Indian economy and high oil prices. Finally, imports from China have increased significantly during recent years from almost minuscule level in the early 1990s.

6.39 Imports, especially those of capital goods, are often considered a leading indicator of industrial activity and the near-term investment climate (Chart VI.5). A sizeable portion of imports gets channelised as inputs for industrial production. A definite relationship between imports and industrial production, however, may be difficult to establish as imported commodities could be either complements or substitutes to domestic industry. As a result, an empirical test of these relations remains largely country-specific. In the Indian case, however, non-oil imports, thus far, have been mostly in the form of capital goods, raw materials and intermediate goods, which complement industrial production.

6.40 An analysis of import elasticity of output in India suggests that imports have grown at a much

Chart VI.5: Imports and Industrial Activity





faster rate with respect to GDP in the 1990s compared to the 1980s, which is consistent with the liberalisation of external trade. The vital importance of imports for the producing sector was evident from the firm-level evidence. According to the CMIE database, the top 100 importing companies accounted for about half of the manufacturing exports in the late 1990s. By 2008, these companies accounted for 80 per cent of manufacturing exports. The import intensity of these firms, as percentage to sales, almost doubled during 1999 to 2008 (Table 6.19).

Impact through Commodity Price Channel

6.41 Another component of the trade channel transmission is global commodities prices, which, *inter alia*, affects imports and cost of production. Before the unfolding of the recent crisis, global prices of commodities such as crude oil and primary commodities surged significantly due to soaring demand and supply-side constraints and strained the balance of payments of the importing countries across the world. The crude oil prices of the Indian basket peaked at US$ 147 per barrel in July 2008. The significant hardening of global commodity prices, especially crude oil, generated inflationary pressures. The global crisis, however, drastically reduced the demand for these commodities globally and their prices fell sharply, easing the inflationary pressure significantly in the second half of 2008-09.

6.42 The impact of change in prices on value of imports depends on price elasticity of imports and the extent of trade openness. For instance, if merchandise imports are highly price elastic and trade is fairly open, then declining global commodity prices may lead to a rise in imports. The effect of global commodity prices, however, on the cost of production remains unambiguous. In India, oil

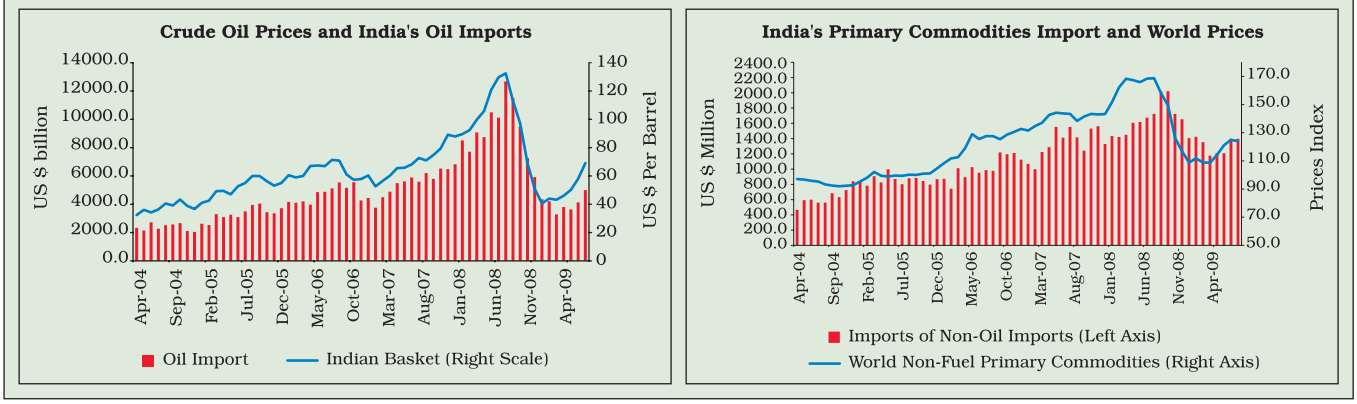
Table 6.19: Import Intensity of Production: Firm-Level Evidence

Per cent

	1999	2003	2004	2005	2006	2007	2008
1	2	3	4	5	6	7	8
Companies	**Share in Industry (manufacturing) Total Exports**						
Top 50	32.4	54.1	56.0	60.6	65.3	70.0	70.8
Top 100	46.2	65.9	67.7	72.2	76.0	78.9	80.0
Top 200	62.0	76.7	78.3	82.0	85.6	87.5	88.8
Top 300	70.2	83.4	85.3	88.0	90.7	92.2	93.3
Top 500	81.8	91.1	91.7	93.5	95.1	96.5	97.4
Total	100	100	100	100	100	100	100
	Share in Industry (manufacturing) Total Imports						
Top 50	57.2	76.0	74.7	74.3	76.6	76.7	77.2
Top 100	63.2	80.4	79.2	79.0	81.0	81.0	81.4
Top 200	68.7	83.7	82.8	82.8	84.0	84.3	84.7
Top 300	71.7	85.7	84.9	85.0	86.0	86.4	86.9
Top 500	78.3	89.0	88.8	88.6	89.4	89.9	90.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Imports Intensity (Imports as percentage to Sales)						
Top 50	19.0	27.6	27.3	31.0	37.8	36.3	39.2
Top 100	18.3	26.1	25.9	29.3	35.7	34.3	36.9
Top 200	17.5	24.4	24.2	27.4	33.2	32.1	34.5
Top 300	16.9	23.6	23.4	26.6	32.3	31.3	33.5
Top 500	16.3	22.4	22.4	25.5	31.1	30.1	32.1
Total	**15.6**	**20.3**	**20.6**	**23.6**	**28.6**	**27.7**	**29.4**

Source: Prowess data, CMIE.

Chart VI.6: India's Imports of Commodities and Global Prices

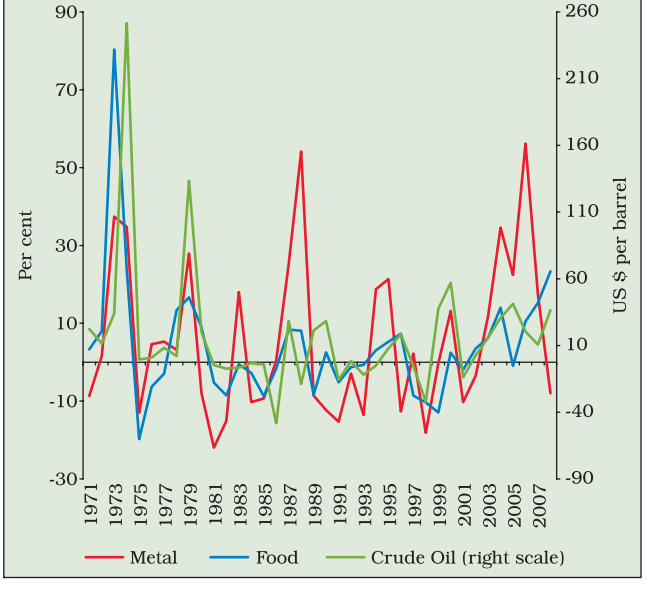


imports, which constitute a large part of total imports, are critical input for real activities. Oil imports in India are relatively price inelastic and, hence, are highly correlated with their prices. Accordingly, oil imports fell sharply in India during the second half of 2008-09, reflecting declining crude oil prices (Chart VI.6). Imports of non-oil primary commodities are also fairly correlated with their prices as manifested by the declining value of non-oil imports when prices of non-oil primary commodities were declining (Chart VI.6).

6.43 Commodity price cycles have played an important role in conditioning business cycles in the global economy. The recent global commodity price cycle that set off in 2002 reached another peak in mid-2008, which had associated implications for asset prices, investment, trade balances and growth across countries (Chart VI.7). According to the commodity price index data of the IMF and the World Bank, all commodities price indices witnessed an average 18.4 per cent increase during 2003-07 compared with a deceleration, *albeit* marginally, during the 1990s, spurred by metals, energy, and food commodities. The World Bank's commodity price index of low- and middle-income countries has also shown a sharp acceleration during the current decade compared with deflation trends in the 1980s and the 1990s. Food price inflation was the highest since the late 1970s, whereas prices of metals and non-fuel commodities were the highest since the late 1980s. This has been driven by the relatively strong and stable performance of the world economy, rapid growth and structural changes in a number of large developing economies and increasing attention by policymakers and market participants to the challenges of climate change and shrinking oil reserves (UNCTAD, 2008). Furthermore, the commodity price cycle was relatively more prolonged compared to earlier cycles, led by the sustained expansionary phase of the business cycle (Box VI.5).

6.44 For commodity price importers, the implications of the commodity prices shocks could be distinctly different. An expansionary phase of commodity price cycles could work through

Chart VI.7: Global Commodity Price Cycles



Box VI.5
Affect of Commodity Prices on Asset Prices, Investment, Trade and Economic Activity

The overall impact of commodity price movements on economies differs considerably, depending on the composition of foreign trade, the relative weight of commodity exports and imports in their gross national income and price responsiveness. Higher prices of primary commodities for commodity-exporting countries have a favourable impact through improved export earnings. This, in turn, augments the potential for financing new investments in infrastructure and productive capacities that spurs domestic productive activities, consumption and employment. However, the impact of commodity price booms on domestic activity would also depend on the allocation of export surpluses for domestic consumption versus investment. The diversion of export surplus arising from commodity price booms could help in inter-temporal distribution of incomes and consumption smoothing. Notwithstanding the beneficial effects of the expansion in the commodity price cycle, a sudden rise in price cycles and its persistence can cause Dutch disease, which, through sharp appreciation in the real exchange rate, can result in diminishing competitiveness of the non-tradable sectors.

various channels. First, commodity price shocks could directly affect domestic prices given the degree of pass-through and exchange rate movements. Further, given that primary commodities such as oil and metals enter as inputs for manufacturing and transportation, the rise in import prices has a second-round effect on the domestic prices of manufactured goods and higher transportation costs. Second, a rise in global commodity prices would adversely affect the trade balance of the importing countries. Particularly, in the case of oil, where the demand is relatively less price elastic, price shocks could lead to wider current account deficit (CAD). At the same time, given the competitive pressures in exports of manufactured products, a rise in primary commodity prices could adversely affect the input cost and, hence, export competitiveness. Third, the indirect effect of the commodity price could be higher inflationary expectations, which in turn could push up nominal interest rates in the economy. Further, a rise in commodity price-induced inflation could create more volatility in domestic prices and, hence, bring in more uncertainty about the investment climate, which could adversely affect the investment decisions of corporates and firms.

6.45 During the recent phase of commodity cycles between 2000 and 2007, the greatest improvement in the terms of trade occurred in developing and transition economies that are exporters of crude oil and minerals. The developing countries that have emerged as important exporters of labour-intensive manufactures and are net oil importers, however, experienced a significant deterioration in their terms of trade. The pass-through of international oil prices to export prices of industrial countries and emerging market economies, as evident from the Granger causal relationship arising from the vector auto-regression model, provided crucial insights about underlying global trade in inflation across the countries. For industrial countries, export price inflation was caused by oil price inflation, but for emerging market economies it was caused by both oil price inflation as well as the export price inflation of advanced countries. This implied that in the absence of an administered price mechanism, industrial countries were in a position to pass on some of the burden of the oil price impact through higher prices of goods exported to emerging market economies. The latter, however, were not in a position to trade in inflation to industrial countries. Further, the interaction between the prices of tradable and non-tradable commodities was evident from the causal relationship among export prices, import prices and domestic consumer prices inflation for industrial and emerging market economies. For industrial countries, the prices of tradable items had a significant causal association with domestic consumer prices; in the case of emerging market economies, the prices of exports rather than imports had a significant causal relationship with domestic prices (Table 6.20).

Table 6.20: Pass-through of International Oil Prices to Export Prices of Developed and Emerging Market Economies: Granger Causal Analysis

Null Hypothesis: X does not Cause Y	Chi-square statistic	Accept/ Reject
1	2	3
(i) Oil prices do not Granger Cause export prices of Industrial countries	30.66 (0.00)	Reject
(ii) Export prices of emerging countries do not Granger Cause export prices of Industrial countries	15.26 (0.23)	Accept
(iii) Oil prices do not Granger Cause export prices of Emerging market countries	43.23 (0.00)	Reject
(iv) Export prices of Industrial countries do not Granger Cause export prices of Emerging market countries	41.67 (0.00)	Reject
(v) Export prices of Industrial countries do not Granger Cause Oil prices	21.75 (0.04)	Reject
(vi) Export prices of Emerging countries do not Granger Cause Oil prices	25.70 (0.01)	Reject

6.46 The pass-through of global to domestic prices in India takes place in two stages. First, the export prices of trading partners at global and regional levels percolate to import prices of India. Second, changes in import prices affect costs of production and domestic supply of goods and services, thus, affecting aggregate domestic inflation measured by producers' prices, which in India relates to wholesale prices. In the Indian context, the most direct impact of the global commodity cycle on the economy comes through the prices of primary commodities.

6.47 The aggregate import price inflation in terms of domestic currency in the 2000s softened significantly compared with the trends in the decades of the 1960s through the 1990s. Second, it is interesting to gauge the foreign prices of India's imports (prices of imports in foreign currency such as the US dollar), since the import price in the domestic currency is affected by the exchange rate. The latter reveals that except for the decade of the 1970s when there was an oil price shock, India's import price inflation in US dollar terms remained subdued through the 1950s to the 1990s. In the current decade so far, however, such a measure of import price inflation averaged 5.2 per cent, in contrast to a declining trend in the 1990s and the subdued trend in the 1980s.

Table 6.21: Correlation of India's Import Prices with Global and Regional Export Prices

	India	EMEs	Industrial Countries	Oil-Producing Countries	World
1	2	3	4	5	6
India	1.00				
Emerging	0.68	1.00			
Industrial	0.63	0.71	1.00		
Oil	0.72	0.84	0.57	1.00	
World	0.70	0.86	0.97	0.72	1.00

6.48 The correlation of India's import price inflation in US dollar terms with export price inflation at global and regional levels for industrial, developing and oil-exporting countries based on annual data reveals that export price inflation of oil economies has a greater correlation with India's import price (Table 6.21). This suggests that the oil price shocks are the most significant external shocks for price stability in India.

6.49 The correlation of India's import prices in domestic currency with domestic prices suggests that the import price index has a near-perfect correlation with the domestic price index (Table 6.22). Since such a correlation could be exaggerated due to trend components in the variables, it is appropriate to consider the correlation of inflation rates. The import price inflation also has a significant correlation with domestic inflation.

6.50 One key channel for transmission of global commodity price shocks to India is oil imports. The rising share of oil imports is attributable to the sharp

Table 6.22: Correlation of India's Import Price Index with Domestic Prices (WPI)

Variables	Correlation of Import Price Index with Domestic Price Index	Correlation of Import Price Inflation with Domestic Inflation Rates
	1950-2008	1950-2008
1	2	3
WPI	0.99	0.61
Domestic fuel price	0.99	0.62
Domestic manufactured price	0.99	0.56
Exchange rate	0.96	0.19

Table 6.23: Oil Imports Volume Growth

(Per cent)

Year	Domestic Consumption Growth	Oil Imports (Gross) Volume Growth	Oil Imports (net) Volume Growth
1	2	3	4
1997-98	6.5		
1998-99	7.4	10.6	14.1
1999-00	7.2	17.0	17.2
2000-01	3.1	12.0	1.8
2001-02	0.4	2.8	0.8
2002-03	3.7	4.1	4.4
2003-04	3.5	10.3	6.2
2004-05	3.6	6.4	3.2
2005-06	1.4	7.8	3.4
2006-07	6.7	14.5	6.9
2007-08	6.8	11.6	8.2
2008-09	3.6	1.6	6.0
2009-10	3.4	–	–
1997-98 to 2008-09	4.5	9.0	6.6
2000-01 to 2008-09	3.6	7.9	4.5

Note : In gross terms, total oil imports in volume include imports of crude oil and finished petroleum products. In net terms, oil import volume growth pertains to total oil imports in volume less exports of oil in volume.

Source : Petroleum Planning Analysis Cell (PPAC), Ministry of Petroleum and Natural Gas, GOI.

increase in international crude oil prices and volume growth of oil imports. According to the Petroleum Planning Analysis Cell (PPAC), Ministry of Petroleum & Natural Gas, Government of India, oil imports in volume terms grew on an average of 7.9 per cent per annum during 2000-01 to 2008-09. In quantity terms, growth in domestic consumption of petroleum products in India remained subdued at 3.6 per cent during the same period (Table 6.23). These stylised facts about oil consumption demand and the import intensity of oil consumption amply reveal that major price shocks in India have been significantly caused by global oil price shocks (Chart VI.8). In 2008-09 also, the price shocks mainly emanated from international crude oil prices.

6.51 Another important channel of price shocks, particularly during recent years, has been volatile movements in international food prices. The rise in international food prices has been transmitted in varying degrees from international to local markets (IFPRI, 2008). This varied transmission of price changes from international to domestic markets is attributed to import dependence, exchange rate behaviour, domestic policies and discretionary market segmentation, transportation costs and natural market segmentation and imperfect transmission related to market structure and the existence of monopolistic/monopsonistic power. Depending upon the weight of food prices in the price index, the impact on the overall inflation has also varied across countries.

6.52 There has been a secular decline in India's dependence on food imports in general over the decades as reflected by the declining share of food imports in total imports over the years (Table 6.24). During the 2000s, though India's food imports in the total import basket declined in significance, the global integration of food prices through rapid financialisation of commodity markets resulted in an increase in the correlation in domestic and world food price inflation to 0.57. In fact, the global

Chart VI.8: Oil and Food Prices

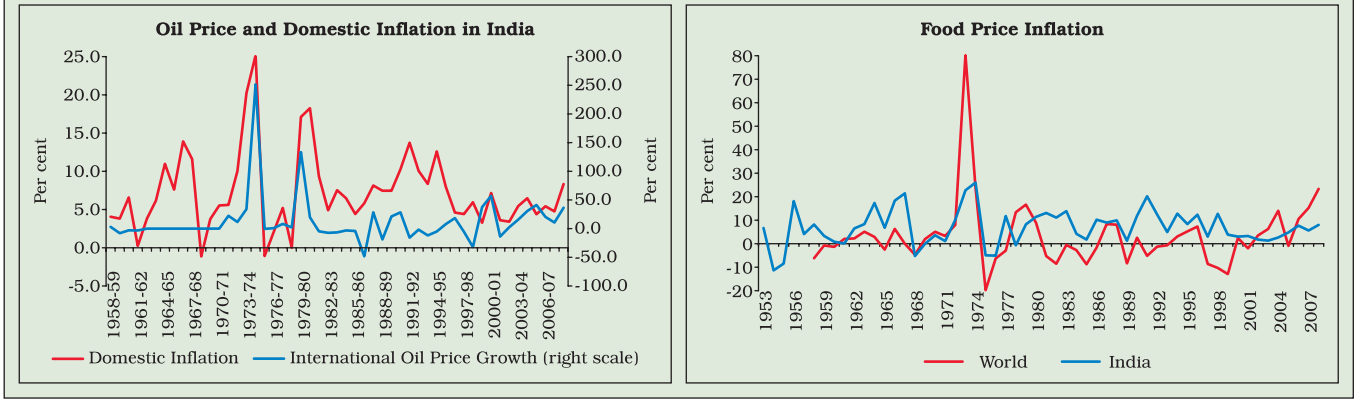


Table 6.24: India's Imports and Exports of Food

Period	Food Imports (per cent to total imports)	Food Exports (per cent to total exports)
1	2	3
1960s	34.3	23.2
1970s	31.7	18.3
1980s	23.5	8.3
1990s	16.8	5.0
2000s	10.8	4.8

Source: World Bank, UNCTAD.

commodity cycle of the 2000s reveals that the expansionary phase in food prices in India closely followed the movements in the global commodity price cycles. The commodity-wise analysis of the correlation coefficient between domestic and international prices reveals that during the period 1995-2008, domestic edible oil prices had the strongest positive correlation with international prices, reflecting the import dependency since a large part of India's consumption needs are met through imports (over 30 per cent) (Rajmal and Misra, 2009). Domestic prices of both food articles and edible oils have started moving in tandem with international prices, particularly during the latter half, *i.e.*, the period 2002-2008, as trade in agricultural commodities has increased.

6.53 The domestic supply and demand balance also condition the transmission of international price shocks to domestic prices. Demand significantly outstripped domestic supply in the case of edible oils and the deficit is met through imports (Table 6.25). The production of pulses has also

Table 6.25: India's Dependence on Imports for Consumption Requirements

Period	Percentage share of imports in total consumption			
	Wheat	Pulses	Sugar	Edible Oils
1	2	3	4	5
2001-02	-3.7	13.3	-0.5	41.7
2002-03	-6.8	14.2	-0.6	47.9
2003-04	-6.4	9.5	-0.5	42.9
2004-05	-3	7.5	0.3	38.9
2005-06	-1.1	8.5	0.1	34.1
2006-07	7.4	12.5	-0.5	33.5
2007-08	2.2	14.8	-1.4	31.1

Source: Ministry of Agriculture, Government of India.

lagged behind demand, resulting in dependence on imports to the extent of more than 10 per cent. The complete pass-through of global food price shocks on domestic prices would be ultimately conditioned by trade policy interventions in terms of import quotas and licensing, custom duties and domestic fiscal measures. The sustained movement of international food prices, however, would impact domestic prices despite short-run stability.

6.54 Empirical findings suggest that global factors (import prices, capital flows, and movements in exchange rate) are able to explain about 20 to 30 per cent of the variation in domestic inflation in India (Raj, Jain and Dhal, 2009). In the long run, import prices, capital flows and exchange rates could have a significant positive association with domestic inflation. The interest rate variable has a negative association with domestic prices in the long run, though its statistical significance is not as strong as other variables. The impact of capital flows on domestic prices could be more pronounced than import prices and exchange rates as capital flows affect the latter.

Impact through Trade in Services & Remittances

6.55 The trade channel also transmits the effects of global developments through services export demand. The tradability of India's services sector has witnessed a significant increase, with the services exports to GDP ratio rising about five-fold from 3.2 per cent in 1990-91 to 15.1 per cent in 2008-09. In services exports, India was among the first ten countries in the world during 2008 (Table 6.26). Among EMEs, the ranking of India was higher, at second place after China, in terms of services exports.

6.56 A large part of the services exports (about 46 per cent) are in the nature of Business Process Outsourcing (BPOs) and Information Technology-enabled Services (ITES), which are driven by the explosion in information technology and are employment-intensive with an estimated direct employment of about 2 million. Since about 80 per cent of the total demand for software exports

Table 6.26: Comparative Position of India among Top Service Exporters, 2008

Country	Exports (US$ bn)	Share (%)
1	2	3
1. USA	545.6	15.3
2. UK	286.9	8.1
3. Germany	246.7	6.9
4. France	161.8	4.5
5. Japan	148.8	4.2
6. China	147.1	4.1
7. Spain	143.6	4.0
8. Italy	123.5	3.5
9. Netherlands	104.5	2.9
10. **India**	**103.0**	**2.9**
11. Ireland	99.29	2.8
12. Hong Kong	92.3	2.6
13. Belgium	88.99	2.5

Note : Share is calculated based on adding services exports available for all countries in the BOPSY, October, 2009. However, the actual share may be slightly different from the calculated share presented here.

Source : BOPSY, IMF, October 2009.

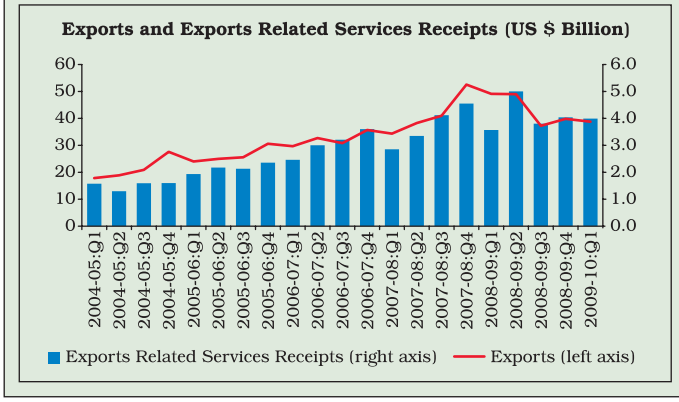
originates in the US and the UK, a sharp contraction in these economies had an adverse impact on demand for software exports. A contraction in demand for software services adversely affected output and employment growth and, thus, reduced the consumption demand of the workforce dependent on this sector.

6.57 Exports and imports of services linked to merchandise trade have also been affected by the contraction in merchandise trade in India since the second half of 2008-09. The compression in merchandise exports since the second half of 2008-09 impacted the exports of related services such as transportation, insurance, and financial, which is discernible from the synchronised movements among merchandise exports and the exports of these services. Similarly, imports of trade-related services were adversely affected by falling merchandise imports as evident from their co-movements over the years, including the recent crisis period (Chart VI.9).

6.58 Although services exports across the board in India were adversely affected by the recent global crisis, miscellaneous services exports, primarily led by software exports, displayed relative resilience, as manifested by decelerated positive growth, whereas all other sub-groups contracted since the second half of 2008-09. Exports of insurance services recorded the highest decline followed by travel and transportation during this period. In the case of services imports, insurance services exhibited relative resilience, reflected in their positive growth, while the import of other services recorded precipitous contraction during the second half of 2008-09. Among the imports of various services, miscellaneous services, largely driven by business services, declined the most, followed by travel and transportation services (Table 6.27).

6.59 Travel services, which include earnings through foreign tourists in sectors such as food, hotels and transportation, are directly related to the

Chart VI.9: Trade-Related Services



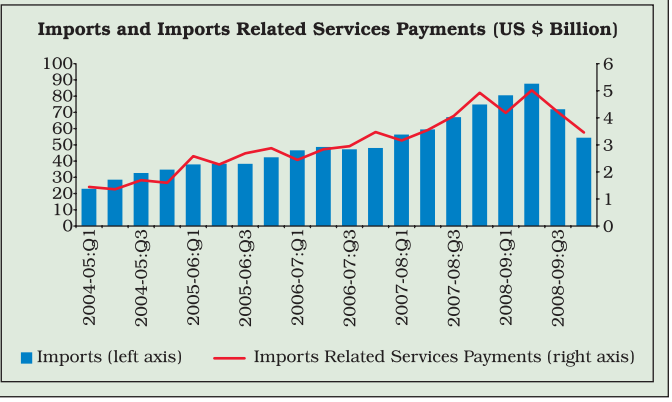


Table 6.27: Growth in Services Exports and Imports (US$)

(per cent)

Category	2000-2001	2001-2002	2002-2005	2005-2008	2008-2009: H1	2008-2009: H2	2009-2010: H1
1	2	3	4	5	6	7	8
			Exports				
Services	3.6	5.4	37.2	27.8	28.9	-0.5	-18.5
Travel	15.2	-10.3	30.0	19.5	22.0	-20.1	-8.8
Transportation	19.9	5.6	29.9	28.9	37.9	-8.0	-10.6
Insurance	16.9	6.7	49.8	23.9	0.4	-25.2	6.1
Misc.	-3.4	12.6	41.9	29.8	29.4	5.0	-21.5
			Imports				
Services	25.2	-5.2	29.3	23.6	17.3	-15.5	-4.9
Travel	31.1	7.5	21.5	21.9	23.1	-13.9	-9.8
Transportation	47.6	-2.6	20.2	41.1	39.1	-11.3	-29.4
Insurance	82.8	25.6	42.5	24.9	13.9	3.8	22.9
Misc.	14.4	-11.7	38.3	23.9	6.6	-20.6	8.7

H1: April-September; H2: October-March.
Source: Reserve Bank of India.

arrivals of foreign tourists in India and affect domestic consumption demand. The growth in foreign tourist arrivals in India decelerated to (-) 4.0 per cent in 2008 from 14.3 per cent in 2007 (Table 6.28). In fact, during second half of 2008-09, the peak of the global financial crisis, the growth of the trade, hotel, transport & communications sector decelerated from 12.5 per cent to 6.1 per cent, which to some extent seems to have been due to the slowdown in external demand from travel and tourism.

Table 6.28: India's Foreign Exchange Earnings from Tourism Sector

Period	Foreign Tourist Arrivals (Percentage Growth)			Foreign Exchange Earnings (US$ billion)		
1	2	3	4	5	6	7
Month	2007	2008	2009	2007	2008	2009
January	16.6	4.5	-17.6	1.1	1.4	0.9
February	14.3	21.9	-10.6	1.0	1.3	0.9
March	20.8	1.5	-12.9	0.9	1.2	0.9
April	13.4	3.0	-3.5	0.8	0.9	0.8
May	8.6	9.9	-1.9	0.6	0.7	0.7
June	11.5	10.0	0.2	0.7	0.8	0.8
July	18.5	8.0	0.6	0.8	0.9	1.0
August	17.8	6.9	-8.6	0.8	0.8	0.9
September	1.3	13.2	-4.1	0.6	0.7	0.8
October	13.6	1.2	-0.9	1.0	0.9	1.0
November	20.3	-0.1	-0.6	1.1	1.0	1.2
December	10.2	-10.5	21.0	1.3	1.0	1.5
Full Period	14.3	4.0	-3.3	9.4	10.7	11.4

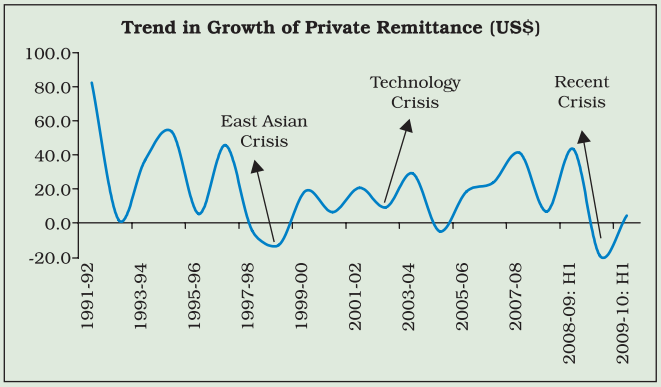
*: Growth rate is for the period January-October 2009.
Source: Ministry of Tourism.

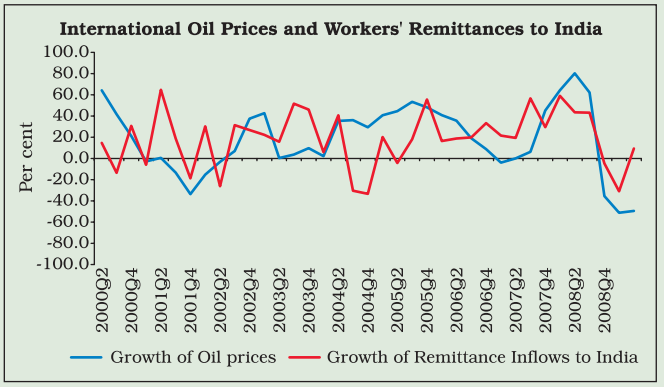
Remittances

6.60 Yet another channel of transmission of global shocks to the real economy in India could be partly through the remittance channel. In the recent past, a subtle shift has been noticed in the geographical sources of inward remittances to India with a significant increase from Gulf region, Europe and Africa a decline from North America and East Asia. However, the two important sources of origin of remittances are the US and the oil-producing Gulf countries. These two regions are estimated to contribute about two-third of India's workers' remittance inflows. While the remittance inflows from the US are affected by economic activity in the US, those from the Gulf countries are conditioned by the pace of activity reflected in oil revenues. During the recent crisis, while remittances from the US could have been affected by the sharp contraction in real activity and unemployment among migrants, the adverse effect of the global crisis on remittances from the Gulf countries seems to have worked through a decline in oil prices, which in turn could have affected migrant employment in the construction and services sectors in the Gulf region. Oil prices and remittances witnessed synchronised movement during the recent period, including the crisis, which corroborates the negative impact of oil price-induced reduction in remittance inflows to India (Chart VI.10). A reduction in remittance inflows, particularly low-value remittances, directly affects the disposable incomes of the dependent households and, hence, affects their propensity to spend. Given that a large part of remittance inflows to India are for family maintenance (above 50 per cent of total remittance inflows to India), negative growth in inflows following the global shock might have adversely affected the consumption demand of the dependent households.

6.61 Accordingly, private remittances to India from advanced countries and the Gulf region, which

Chart VI.10: Remittances: Trends and Relationship with International Oil Prices





remained buoyant till the first half of 2008-09, suffered setback and decelerated in the second half of 2008-09. In fact, the growth in private remittances plunged from 46.3 per cent in the first half of 2008-09 to (-) 19.4 per cent during the second half but recovered to 4.3 per cent in the first half of 2009-10. During previous international crises, *viz.*, the East Asian crisis (1997 and 1998) and the technology crisis (2000 and 2001) also, private remittances to India behaved in tune with global economic dynamics and decelerated sharply.

Software Exports

6.62 India continued to remain the top software services exporter, followed by Ireland (Table 6.29).

Table 6.29: Software Services Export

(US$ billion)

Country	2000	2004	2005	2006	2007	2008
1	2	3	4	5	6	7
1. India	**4.7**	**16.3**	**21.9**	**29.1**	**37.5**	**49.4**
2. Ireland	7.5	18.8	19.6	21.0	26.1	34.5
3. Germany	3.8	8.1	8.4	9.9	12.6	15.1
4. United Kingdom	4.3	11.3	10.8	12.6	14.2	12.9
5. United States	5.6	6.7	7.3	10.1	11.6	12.6
6. Sweden	1.2	2.5	2.7	3.6	6.5	7.6
7. Israel	4.2	4.4	4.5	5.3	5.8	6.9
8. Netherlands	1.2	3.7	3.7	5.0	6.4	6.6
9. China	0.4	1.6	1.8	3.0	4.3	6.3
10. Spain	2.0	3.0	3.6	4.0	5.4	6.1
11. Canada	2.4	3.0	3.6	4.3	4.6	4.6
12. Belgium	....	2.4	2.6	2.9	3.0	3.7

Source: BOPSY, IMF, October 2009.

Since global banks and financial institutions, which were severely hit by the current global financial crisis, were large customers of Indian software providers, the impact of the global crisis seems to have been deceleration in exports to such verticals.

6.63 Although India's software exports remained strong over the years, the slowdown in global demand due to the crisis affected the export performance of software companies to some extent (Table 6.30). After remaining steady till the first half

Table 6.30: Software Services Exports of India

(US$ billion)

Year	IT Services Exports	Engineering Services	ITES-BPO Exports	Total Software Services Exports
1	2	3	4	5
1995-96	0.8	–	–	0.8
2000-01	5.3	–	0.9	6.2
2001-02	6.2	–	1.5	7.6
2002-03	7.0	–	2.5	9.5
2003-04	7.3	2.5	3.1	12.9
2004-05	10.0	3.1	4.6	17.7
2005-06	13.3	4.0	6.3	23.6
2006-07	17.8	4.9	8.4	31.1
2007-08	23.1	6.4	10.9	40.4
2008-09	26.5	7.1	12.7	46.3

ITES: IT-enabled services. BPO: Business Process Outsourcing.

Note : The break-up of engineering services exports is available from 2003-04 onwards; prior to that year, they were added to IT services.

Source : National Association of Software and Service Companies (NASSCOM).

of 2008-09, despite mounting pressures on the back of the global financial shock they succumbed to the falling external demand since the second half of 2008-09 and exhibited sharp deceleration in growth (Box VI.6).

6.64 To sum up, in view of India's exports being highly elastic to world income, the effect of contracting world income has been reflected in the overall decline in merchandise trade since the third quarter of 2008-09. Empirically, it was found that

Box VI.6
Global Crisis and Impact on Software Exports

India's information technology and business process outsourcing (IT-BPO) industry has emerged over time as a key sector of the economy in terms of contribution to growth, export earnings, investment, employment and overall economic and social development. In view of the significant dependence of this sector on external demand, the current global recession emerged as a key concern for this sector. The current crisis led to mounting losses of financial institutions in advanced countries, mainly in the USA in 2008-09, which depend to a large extent on the information technology (IT) and IT-related services of Indian companies and also employ a large pool of Indians. It is amply discernible that growth in India's software exports was significantly correlated with the GDP growth of the USA during the recent period (Chart).

Further, the significance of the US' GDP growth on the growth of Indian software exports has been explored by estimating the co-integrating relationship between India's software exports, external demand conditions and exchange rate movements**.** The estimation reveals that over the medium to long run, a one per cent increase in the US real activity level (Log YUS) leads to about a 4 per cent increase in India's software exports (Log Xsoft). As regards the exchange rate, a one per cent depreciation in exchange rate (Log ERUSD) would lead to about a 2 per cent increase in software exports over the long run (Table 1). It may be mentioned that the US dollar is the major currency of invoicing India's software exports, accounting for about 75 per cent of total software exports. Thus, the co-integrating relationship underscores the dominance of real activity in the host country in determining the external demand for India's software exports.

Chart: Software Exports and External Demand

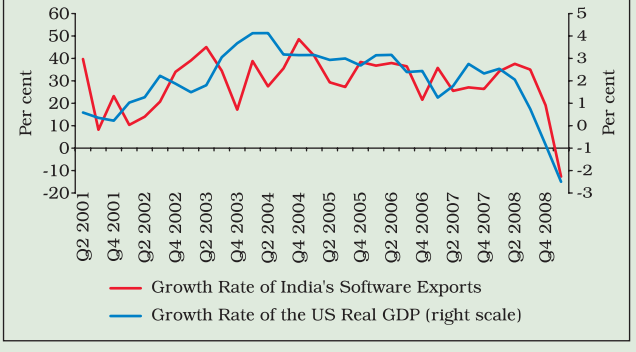


Table 1: Long-Run Co-integration Path of Software Exports to India

Variables	Coefficients
Log X^{soft}_{t-1} (Normalised)	1.000
Log Y^{US}_{t-1}	4.20
	(3.28)
Log E^{RUSD}_{t-1}	2.26
	(9.57)
Intercept	40.44

The variance decomposition analysis reveals that the lagged values of software exports (Log Xsoft) predominantly explain the behaviour of India's software exports during the short run (Table 2). Real activity in the host country (Log Y^{US}) predominantly explains the behaviour of India's software exports over the medium to long run. The nominal exchange rate impact on India's software exports demand is also significant over the short to medium term, although its impact diminishes over time. This amply demonstrates that a large external demand shock adversely affected India's software exports.

Although India's software exports remained strong over the years, the slowdown in global demand did affect export performance to some extent, corroborating the significance of external demand shocks manifested by the estimated results.

Table 2: Variance Decomposition of Software Exports

Quarter	Log X^{soft}	Log Y^{US}	Log E^{RUSD}
1	63.2	0.3	36.5
4	40.6	14.0	45.4
8	15.5	41.9	42.6
12	7.0	62.3	30.7
16	3.9	71.1	25.1
20	2.4	75.7	21.9

declining merchandise trade dented the overall growth of the Indian economy. It was observed that exports of engineering and chemical goods remained resilient during this crisis. The firm-level export orientation also demonstrates the growing importance of trade channels in the growth of India's manufacturing sector. On the one hand, contracting merchandise imports provided a cushion for the aggregate demand; on the other hand, declining non-oil imports negatively affected growth through investment on the back of the elevated import intensity of the industry. At the same time, the price shocks to the Indian economy were transmitted mainly through oil and food prices.

6.65 Overall, the spillover effects of the global economic crisis impacted the current account balance mainly through the merchandise trade route during 2008-09. The current account deficit as a percentage of GDP escalated to 2.4 per cent in 2008-09 on account of widened trade deficit on the back of worsening global conditions. After discussing the impact of the trade channel on the Indian economy, the spillovers effects through the financial channel are investigated in the following section.

III. IMPACT ON INDIA THROUGH FINANCIAL CHANNEL

6.66 The finance channel has pronounced implications for domestic investment activity. In fact, it has been argued that the role of foreign savings has become inportant in the domestic investment in case of India during the post-reforms period (Box VI.7) The transmission of global shocks on investment demand in India could take place through a variety of conduits. These include major channels of capital flows such as FDI, portfolio inflows, external commercial borrowings, trade credit, and overseas borrowings of banks. Besides the interest rate channel, liquidity and credit risks may also impact domestic investment activity. The expectations channels, representing sudden changes in risk perception towards EME assets, uncertainty about the investment climate and sharp turnarounds in exchange rate movements also have an important bearing on domestic investment demand.

6.67 The global shocks propagated through the finance channel could have both a direct and indirect impact on consumption and investment. Such shocks could have affected domestic consumption in India in the following ways. First, a sharp correction in equity prices in response to global shocks eroded a large part of household wealth, which in turn may have adversely affected consumption demand as erosion in household wealth was associated with a sharp deceleration in private final consumption demand during 2008-09. Second, reduced access for banks and financial institutions to foreign markets reduced their lending capacity in the domestic market, including loans to households that, in turn, could have affected consumption demand. Third, contraction in trade finance might have impacted imports and, thus, domestic consumption. Fourth, higher credit spread on overseas borrowings increases the demand for bank credit, which, in turn, leads to a rationing of credit by banks. During the crisis, banks tended to reduce credit for consumption purposes as the risk perception changed significantly.

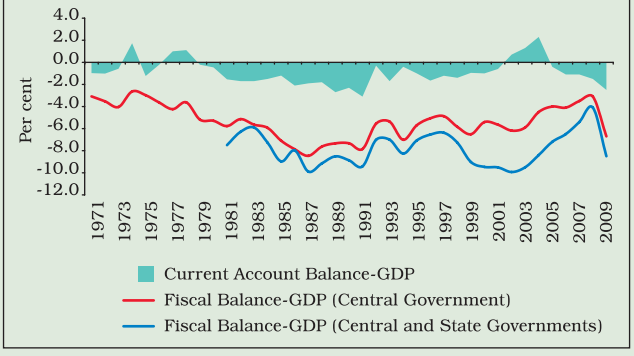
6.68 The growing financial openness in India was accompanied by a notable shift in the composition of capital flows following the reforms period. The gradual liberalisation of the capital account, the shift in emphasis from debt to non-debt flows, financial market development and stronger growth prospects helped India emerge as an increasingly important destination for foreign investment flows. Accordingly, foreign investment flows, comprising direct and portfolio equity flows, became the dominant source of capital flows in the reform period of the 1990s compared with debt and external assistance in the pre-reform period in the 1970s and the 1980s (Chart VI.11). Although the more recent period witnessed a revival of debt flows, unlike the 1970s and the 1980s when debt flows were largely from official sources, it was spurred by private debt flows reflecting the impact of capital account liberalisation in general and better terms of credit faced by corporates due to lenders' confidence in

Box VI.7
Foreign Savings and Investment in India

The shift in the composition of capital flows highlighted the role of foreign savings amidst the changing causal relationship between foreign and domestic savings. Till the 1980s, the current account deficit mainly mirrored the fiscal deficit of the government, but in the reforms period the twin deficits disappeared with the compression of fiscal deficit and financing almost entirely through domestic household savings (Chart). With a progressively open capital account, the current account gap now mainly reflects private sector absorption. Second, foreign savings are no longer planned; they now reflect the choice of market agents driven by push factors from the originating countries and pull factors in the host country. It is argued that investment need not be constrained by the availability of domestic savings, and that domestic savings and investment could have a low correlation. This is based on the familiar permanent income hypothesis, which in an open economy translates into borrowing from international markets to smoothen consumption.

An empirical analysis of the savings-investment relationship for India based on the Granger Causal analysis between the domestic savings rate (S), domestic capital formation rate (I) and the current account balance-GDP ratio (CAB) provided useful insights. An important observation derived from the results is that in the pre-reform period (1951-1991), investment (ΔI) caused CAB, implying that typically under the strategy adopted for financing the saving-investment gap in the plans, the targeted investment rate dictated the rate of foreign savings (Singh, 2009). This unidirectional relationship was reversed in the reform period (1992-2007), with CAB Granger causing ΔI, implying that with an open current account and liberalisation of capital flows, foreign savings was also driving the investment rate as the former was determined by the decisions of market agents.

Chart: Movements in Twin Deficits in India



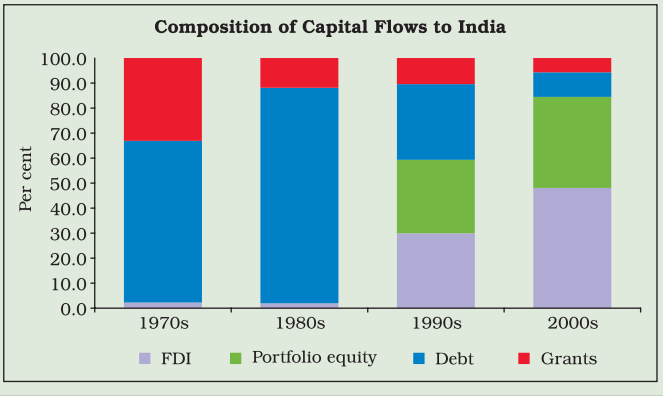
Pair-wise Granger Causality Test

Null Hypothesis:	F-Statistic	Probability value
1951-1991		
ΔI does not Granger Cause CAB	8.44	0.00
CAB does not Granger Cause ΔI	2.01	0.15
1992-2007		
ΔI does not Granger Cause CAB	1.03	0.39
CAB does not Granger Cause ΔI	11.25	0.00

the growth of the Indian economy. A unique feature of capital flows to India was that even during the recent global crisis when other sources of funds dried up, FDI inflows remained steady, re-emphasising their long-run stability.

6.69 The important role of foreign investment inflows was evident from its share in domestic investment. The share of FDI flows in the net domestic capital formation increased significantly during the post-reforms period (Chart VI.11).

Chart VI.11: Capital Flows and Domestic Capital Formation



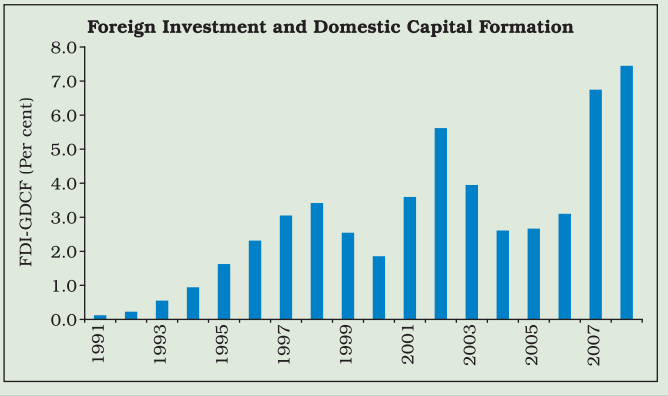


Table 6.31: India: Net Capital Flows

(US$ billion)

	2007-08				2008-09				2009-10		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
1	2	3	4	5	6	7	8	9	10	11	12
1. Foreign Direct Investment	2.8	2.3	2.1	8.6	9.0	4.9	0.4	3.2	6.1	6.5	3.9
Inward FDI	7.6	4.8	7.8	14.3	11.9	8.8	6.3	8.0	8.7	10.7	7.1
Outward FDI	4.7	2.6	5.8	5.7	2.9	3.9	5.9	4.8	2.6	4.2	3.9
2. Portfolio Investment	7.5	10.9	12.7	-3.7	-4.2	-1.3	-5.8	-2.7	8.3	9.7	5.7
3. External Assistance	0.2	0.5	0.6	0.8	0.4	0.5	1.0	0.8	0.01	0.5	0.6
4. ECBs	6.9	4.2	6.2	5.2	1.5	1.7	3.8	1.0	-0.5	1.2	1.5
5. Banking Capital	-0.9	6.6	0.2	5.8	2.7	2.3	-5.0	-3.3	-3.4	4.4	1.9
NRI Deposits	-0.4	0.4	-0.9	1.1	0.8	0.3	1.0	2.2	1.8	1.0	0.6
6. Short-term Trade Credits	2.0	4.9	3.3	5.8	4.5	1.3	-4.8	-2.6	-1.5	-0.6	3.3
7. Others	-2.9	3.8	4.5	5.5	-8.9	-1.4	3.7	5.1	-3.2	0.9	-2.2
Total (1 to 7)	**15.7**	**33.2**	**29.6**	**28.0**	**4.9**	**7.1**	**-6.1**	**1.4**	**5.9**	**22.6**	**14.7**

6.70 The Indian economy, like other emerging market economies (EMEs)[7], rapidly got integrated with the global economy, particularly with advanced countries, through increasing financial flows during the 1990s and the 2000s. The turmoil in financial markets in the advanced countries during the later part of 2007 spilled over to India through financial channels, through deceleration or reversals in capital inflows, especially portfolio investments, despite sound macroeconomic fundamentals and the banking system (Table 6.31).

Foreign Investment

6.71 During the crisis, global financial institutions, as part of substantial global deleveraging, withdrew significant portfolio investments from India, like in other EMEs during 2008-09, despite strong macroeconomic fundamentals. With international financial markets stabilising and signs of early recovery in India becoming prominent, portfolio inflows resumed in the aftermath of the crisis with net inflows during 2009-10 (Table 6.32).

6.72 On the other hand, foreign direct investment in India remained almost unscathed from the ongoing global financial crisis. The continued buoyancy in FDI inflows during 2008-09 and 2009-10 reflected the relatively strong macroeconomic fundamentals of the Indian economy and recognition of India as a long-term investment destination. Despite some deceleration in the

Table 6.32: Foreign Investment in India

(US$ billion)

Period	Portfolio Investment			FDI (Net)	
	Inflows	Outflows	Net	Inward	Outward
1	2	3	4	5	6
2006-07:Q1	30.8	31.3	-0.5	3.4	-1.7
2006-07:Q2	17.9	15.8	2.1	4.4	-2.3
2006-07:Q3	28.6	25.1	3.6	9.8	-7.0
2006-07:Q4	32.2	30.4	1.8	5.1	-4.1
2007-08:Q1	34.7	27.2	7.5	7.5	-4.7
2007-08:Q2	48.7	37.8	10.9	4.7	-2.6
2007-08:Q3	78.1	63.3	14.8	7.9	-5.8
2007-08:Q4	74.2	78.0	-3.8	14.2	-5.7
2008-09:Q1	40.7	44.9	-4.2	11.9	-2.9
2008-09:Q2	42.6	43.9	-1.3	8.8	-3.9
2008-09:Q3	26.6	32.4	-5.8	6.3	-5.9
2008-09:Q4	18.6	21.2	-2.6	8.0	-4.8
2009-10:Q1	38.6	30.2	8.3	8.7	-2.6
2009-10:Q2	44.4	34.7	9.7	10.7	-4.2
2009-10:Q3	35.8	30.1	5.7	7.1	-3.2

Source: Reserve Bank of India.

[7] Foreign private portfolio investment in both emerging market financial assets and cross-border lending by banks from advanced economies increased significantly in the period preceding the recent crisis. Gross private capital inflows to EMEs thus rose from 4 per cent of their combined GDP in 2003 to 10.7 per cent in 2007, compared with an increase from 4.7 per cent to 5.7 per cent of GDP between 1992 and 1996 (BIS, 2008/09).

second half of 2008-09, FDI inflows reverted back on the ascending curve with further acceleration in investments since the first quarter of 2009-10, reiterating confidence in the macroeconomic fundamentals.

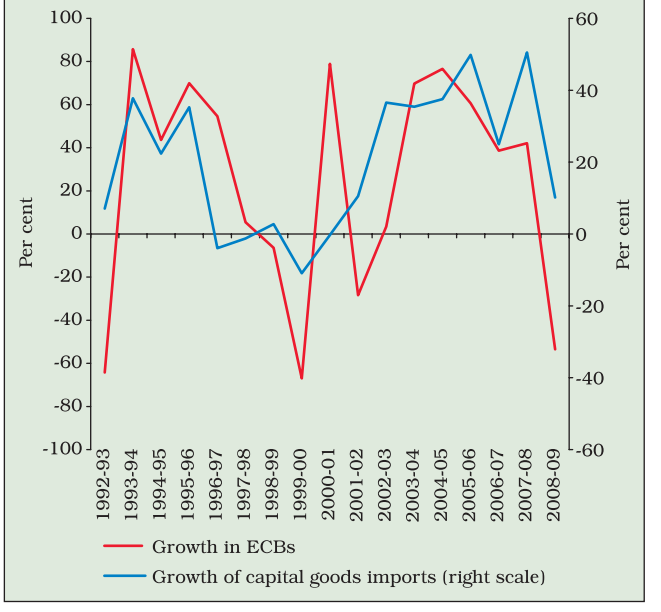
6.73 Interestingly, outbound FDI also remained strong during recent periods on account of Indian firms establishing their production, marketing and distribution networks overseas to achieve global scale along with accessing new technology and natural resources. Overseas investment by Indian corporates surged considerably during the second half of 2008-09, despite deteriorating conditions in international financial markets. Indian companies, particularly in the manufacturing sector, funded their overseas acquisitions by accessing liquidity from the domestic foreign exchange market on the back of worsening conditions in global credit markets.

External Commercial Borrowings (ECBs)

6.74 Corporates take recourse to ECBs mainly for the import of capital goods, project financing and modernisation of plant and capacity expansion, which is a sign of rising investment activity domestically. Commercial borrowings by Indian corporates have also declined sharply since the first half 2008-09 and, during the year, gross commercial borrowing disbursements in India were almost half of the disbursements in 2007-08. During the first quarter of 2009-10, commercial borrowing disbursements further dipped, whereas repayments continued to be strong as in the previous year resulting in net outflows, *albeit* marginal. However, commercial borrowings raised by indian corporates rebounded sharply since the second quarter of 2009-10 with returning of stability in international financial markets and growth recovery in domestic economy.

6.75 A critical issue is that the relationship between ECBs and industrial activities is not a direct one but an indirect one through imports of capital goods. As ECBs are largely used for financing the import of capital goods (machinery, equipment, *etc.*) to meet domestic investment

Chart VI.12: ECB Disbursements and Capital Goods Imports



demand, import of capital goods is the conduit through which such shocks are transmitted. An analysis of the relationship between ECB disbursements and the import of capital goods shows that there is a close positive relationship between these two variables (Chart VI.12). This is also corroborated by a high degree of correlation (0.55) between the variables during the period 1992-93 to 2008-09. The import of capital goods, in turn, is dependent on the momentum in industrial activity. The capital goods import growth closely tracks the movements in industrial production growth. The coefficient of correlation between IIP growth and imports of capital goods is observed to be relatively high (0.50). Thus, a sharp contraction in Indian corporates' overseas borrowings during 2008-09 hampered domestic investment activity (Chart VI.12).

Trade Credit

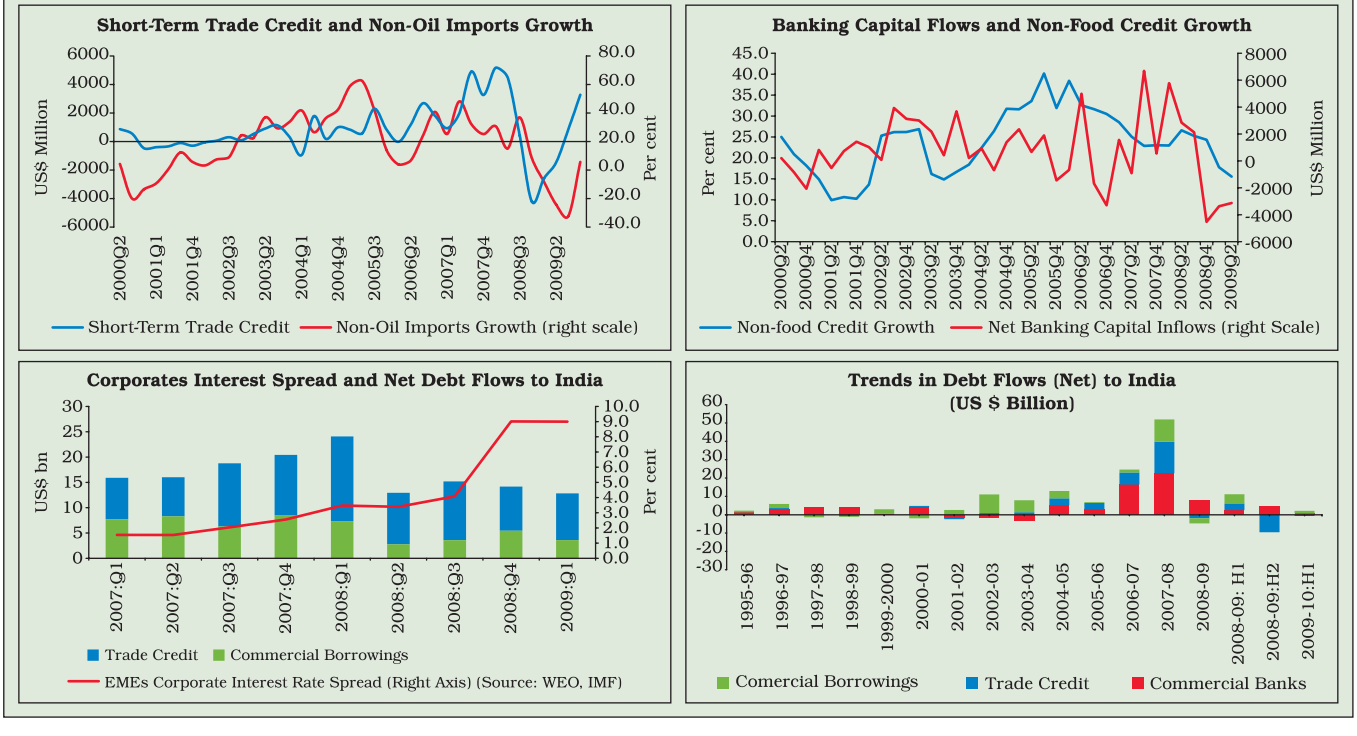
6.76 The supply of international trade credit is also a key channel through which global shocks are transmitted to domestic investment and real activity. During a period of monetary tightening, firms which are likely to be constrained by declines in bank credit resort to increasing use of trade credit. Similarly, firms that experience limited

access to various sources of finance including bank credit are likely to turn to their suppliers for trade credit. With trade credit lines usually being short-term in nature and capable of being redeemed quickly at par, they are considered operationally the easiest asset class for a bank to cut at times of heightened risk aversion, often in the form of not rolling over maturing credits as part of banks' policy of overall reduction in country exposures during a crisis.

6.77 The recent global credit squeeze affected exporters and importers in terms of access to and cost of trade credit. According to the IMF (2009), during the recent global crisis the spreads on trade finance increased from 100 to 150 basis points to around 400 basis points over LIBOR, with intensifying country and counterparty risks. Although the spurt in costs of trade finance was global, the decline in availability of trade credit was felt more by EMEs, especially Asian EMEs, where much of inter-regional trade is in low-profit margin items that are part of the manufacturing supply chain for exports to advanced economies. The higher capital requirements imposed by regulators and by banks on their own lending also increased the spreads between the banks' costs of funds and the price of trade finance to their customers. Additionally, fear of default/counterparty risk led banks to tighten lending guidelines.

6.78 A major part of the decrease in trade credit reflected lower trade volumes and commodity prices, but the decrease was also attributed to the drying-up of the secondary market for trade finance and reduced credit lines from banks specialising in the provision of such finance (BIS, 2008-09). Against this backdrop, short-term trade credit to India decelerated in the first half, but the decline accentuated during the second half of 2008-09. On the other hand, Indian corporates were finding it difficult to roll over the existing trade credit and, hence, repayments of short-term credit escalated sharply, resulting in net outflows in the second half of 2008-09 (Chart VI.13). Thus, gross disbursement of short-term trade credit to India declined sharply in 2008-09; repayments, however, increased significantly, mainly due to problems in rollover. With stabilising global financial markets and reviving growth domestically, trade credit

Chart VI.13: Indicators of Finance Channel



disbursements revived since the beginning of 2009-10 and resulted into net inflows during the second quarter of 2009-10 and subsequently.

6.79 Globally, the decline in the availability of trade finance has been attributed as a major factor in the decline in world trade. With India also witnessing a slowdown in trade credit flows during the second half of 2008-09, it was debated whether it had a role in denting India's imports from October 2008. Anecdotal evidence indicates that the cost of trade credit had risen rapidly, while, at the same time, availability had fallen substantially as reflected in higher repayments. But some of the plunge in trade credit could be attributed to a decline in imports due to the recession, while some of the rise in cost is due to the increased counterparty risk on the back of the continued slump worldwide.

6.80 An exercise has been attempted to estimate the elasticity of imports with respect to trade credit along with other controlling variables, such as industrial growth and exchange rate, with quarterly data for the period 1997-98 to 2008-09 using ordinary least squares (OLS) regression. The estimation results signify that the contribution of trade credit to growth in imports is statistically significant[8]. However, the results show that industrial growth remains the largest contributor to imports growth in India. Thus, the estimation results corroborate the conjecture that contraction in trade credit along with industrial slowdown affected import demand in India.

Banking Capital

6.81 Indian banks' access to international capital markets was also significantly affected during the crisis on account of risk aversion towards the financial sector and the significant risk in repricing of EMEs assets. In international credit markets, the risk default premia for banks and financial institutions reached a peak in October-November 2008 and continued to be at a level higher than in the pre-Lehman episode for quite some time. Coming under the impact of the global shocks, Indian banks witnessed significant outflows under banking capital. During the early 2000s and the recent global crisis, banking capital inflows have displayed pro-cyclical behaviour.

6.82 Despite the cushion provided by NRI deposits, which remained steady during the crisis mainly due to attractive interest rate incentives, the significant net outflows of banking capital in the second half of 2008-09 and first quarter of 2009-10 were due to a significant rise in outflows on account of repayments of existing liabilities and possibly due to the recapitalisation of their overseas subsidiaries in the wake of their deteriorating balance sheets. A sudden jump in repayments of liabilities by commercial banks could also be partly explained by the factors contributing to the roll-over. This decline in access to international borrowings for banks partly constrained their ability to lend in the domestic market.

Overall Balance and Forex Reserve

6.83 The widening current account balance, on account of deteriorating trade balance in the first half of 2008-09, coupled with net capital outflows, resulting from reversal of portfolio investments and significant lowering of debt flows particularly commercial borrowings, trade credit and commercial banks (excluding NRI deposits), led overall balance into deficit in 2008-09. Due to large capital outflows, foreign exchange reserves declined during 2008-09; however, valuation changes as a result of the weakening of the US dollar against major currencies explained a significant portion (around 65 per cent) of the decline in reserves during the year (Table 6.33).

[8] GM = 113.82 + 2.76 GIND + 0.09 GTC – 2.56 EXR + 0.67 AR(1)
(1.62) (2.39) (2.18) (-1.69) (5.48)
R^2 = 0.70 DW = 1.93
where GM = growth in imports (US$), GIND = growth in industrial sector, GTC = growth in trade credit (US$), and EXR = nominal exchange rate.

Table 6.33: Change in Reserves

(US$ billion)

Quarterly	Reserve Position	Reserve Change	Valuation on account of Exchange Rates	Reserve Change excluding Valuation
1	2	3	4	5
Quarterly				
2007-08:Q1	213.4	14.2	3.0	11.2
2007-08:Q2	247.8	34.4	5.2	29.2
2007-08:Q3	275.3	27.6	0.8	26.7
2007-08:Q4	309.7	34.4	9.4	25.0
2008-09:Q1	312.1	2.4	0.1	2.2
2008-09:Q2	286.3	-25.8	-21.0	-4.7
2008-09:Q3	256.0	-30.4	-12.5	-17.9
2008-09:Q4	252.0	-4.0	-4.3	0.3
2009-10:Q1	265.1	13.2	13.1	0.1
2009-10:Q2	281.3	16.2	6.8	9.4
2009-10:Q3	283.5	2.2	0.4	1.8
Half-Yearly				
2007-08:H1	247.8	48.6	8.1	40.4
2007-08:H2	309.7	62.0	10.2	51.7
2008-09:H1	286.3	-23.4	-20.9	-2.5
2008-09:H2	252.0	-34.4	-16.8	-17.6
2009-10:H1	281.3	29.3	19.8	9.5
2009-10:H2	279.1	-2		
Full Year				
2007-08	309.7	110.5	18.4	92.2
2008-09	252.0	-57.7	-37.7	-20.1
2009-10	279.1	27.1	–	–

6.84 To sum up, during this crisis, the impact of the financial channel was more distinct with sharp decline portfolio inflows, external commercial borrowings, trade credit, and overseas borrowings of banks. Foreign direct investment and non-resident deposits, however, showed resilience. A sharp contraction in Indian corporates' overseas borrowings significantly impacted domestic investment activity. Access to trade finance was severely affected for many EMEs due to tightness in overseas liquidity. Some improvement is discernible with the return of a degree of stability in international financial markets and a recovery in the industrial sector in many advanced countries. India's balance of payments (BoP) made a turnaround, gaining strength mainly from elevated private remittances coupled with a sharp bounce-back in portfolio investment and buoyant NRI deposit inflows during 2009-10.

6.85 The final impact through the trade and financial channel penetrated the real sector, which was impacted severely during this crisis. One reason for the higher impact on the real sector was a shift in the composition of aggregate demand towards the external sector during the current decade (see Section I in this chapter). The increasing openness of the Indian economy further accentuated the transmission mechanism through which the impact traversed to the real sector (see Section I of Chapter 5). The final impact on the savings, investment and real sector is discussed in the next section.

IV. IMPACT ON SAVING, INVESTMENT AND GROWTH

6.86 The Indian economy has witnessed a distinct strengthening of the growth momentum before the recent crisis on account of multiple factors, *viz*., improved financial intermediation, increased external demand, strengthening of physical infrastructure and conducive public polices. The recent global financial crisis and the consequent recession in major advanced economies, however, impacted the Indian economy from both the demand and supply sides with differential impact across sectors. While the deceleration in exports may be the key factor on the demand side, the drying-up of external sources of funding, slowdown in capital flows and dampening business confidence could be the supply-side constraints. To what extent these two factors will affect growth, savings and investment needs to be assessed in order to understand their implications for the economy.

Impact on Saving and Investment

6.87 The financial channel of transmission affecting capital flows, stock markets, financial intermediation, *etc.* which eventually boiled down to savings and investment. It may be noted that volatility and disruptions in financial markets during crisis periods might have led to a shift in the composition of household savings towards physical assets. During the previous crises, *viz*., the balance

Table 6.34: Contribution to Gross Domestic Savings

Period	As % of GDP				Relative Contribution to Total Savings (%)		
	Total	Households	Private Corporate	Public	Households	Private Corporate	Public
1	2	3	4	5	6	7	8
1991-1995	23.8	17.3	3.1	2.0	68.4	20.1	11.5
1996-2000	24.9	18.1	4.4	1.1	106.1	21.4	-27.5
2001-2005	26.4	22.7	4.5	-0.2	112.9	6.1	-19.0
2005-06	34.1	22.8	8.2	3.1	56.8	35.6	7.6
2006-07	34.4	22.9	8.0	3.6	48.8	26.0	25.2
2007-08	36.4	22.6	8.7	5.0	42.9	27.4	29.8
2008-09	32.5	22.6	8.4	1.4	1394.9	382.2	-1677.1

of payments (BOP) crisis (1990-91), the East Asian Crisis (1997-1998) and the dot-com crisis in the US (2001-2002), India experienced some slowdown in its growth momentum and a concurrent deceleration in the growth of gross domestic savings. A similar phenomenon has been observed during the recent global financial crisis as growth of gross domestic savings decelerated sharply during 2008-09, reflecting growth slowdown in the economy (Table 6.34). Drawing inferences from past behaviour consequent to international crises, gross domestic savings could surge in the coming years.

6.88 Further, an attempt has been made to find the major factors behind the movements in household savings in India in order to assess the unfolding behaviour during the recent global crisis and coming years. The household savings were regressed on various independent variables, *viz*., personal disposable income, interest rate (yield on government securities), financial deepening (M3/GDP) and fiscal deficit during the period from 1970-1971 to 2008-2009. The regression results show that coefficients of personal disposable income and financial deepening are positive and significant, while the coefficients of interest rate and fiscal deficit are found to be positive but insignificant[9]. The regression results defy the Ricardian Equivalence (RE) hypothesis[10] in the case of India, as the fiscal deficit has not been found not causing any significant movement in household savings. In a study, Ghatak and Subrata (1996) also found invalidation of RE hyphthesis in India. Nevertheless, savings, particularly in the household and private sectors, may accelerate during post-crisis periods on account of other factors, *viz.,* to create cushions for the possible recurrence of such events in future and to pay off liabilities incurred during the crisis.

6.89 The global financial crisis weakened the capacity of companies to invest through reduced access to financial resources, both internally and externally, coupled with collapsed growth prospects and heightened uncertainty severely affecting the

[9] LHHSt = -1.5528 + 0.5426 *LPDIt + 0.0124*LFISDt-1 + 0.0012*RINTt + 0.0052*LFINDt + 0.4884*LHHSt-1
(-2.6497) (3.2955) (0.2702) (0.5001) (1.5880) (3.4054)

R2 = 0.9981, DW= 2.0771
LHHS= Log of household savings.
LPDI= Log of personal disposable income.
LFISD= Log of fiscal deficit.
RINT= Real interest rate (simple average deposits interest rates).
LFID= Financial deepening (M3/GDP)

[10] The Ricardian Equivalence hypothesis provides that government expenditure funded through borrowings would be internalised by rational consumers in their consumption behaviour, leading to more saving in order to pay higher taxes in future to the government for repaying these borrowings.

private sector's propensity to invest. All these factors led to a perceptible contraction in private investment in the economy during 2008-09. It may be noted that private investment behaved similarly during the past two international crises, *i.e.*, the East Asian and dot-com crises, when the pace of private investment depleted significantly in the former and overall investment contracted in the latter. During these crises, the growth of investment in the household and public sectors also dipped substantially. Therefore, private investment supported by other sectors led to a sharp fall in the growth of gross domestic capital formation during the past crises. Since the government has enhanced expenditure in infrastructure as a counter-cyclical measure during the recent global crisis, the pace of incremental public investment have not witnessed a sharp decline. At the same time, households investment accelerated sharply during 2008-09. Since, the gross domestic capital formation during the last few years was powered by private investment, the steep contraction in private investment led to sharp deceleration in its growth during the recent crisis (Table 6.35).

6.90 In light of the significance of private investment to propel gross domestic capital formation, an analysis of the factors driving the momentum of private investment was undertaken. The possible major factors driving private investment could be bank credit, net capital flows and interest rate from the supply side and personal disposable income from the demand side. All these variables were tested for stationarity and they were found to be of the I(1) order. Since all these variables had a unit root problem, instead of a simple VAR, the Johansen Cointegration (1988, 1991) methodology was used to estimate the variance decomposition of private investment with respect to select explanatory variables[11]. The Cholesky Variance Decomposition suggests that bank credit explains about 28 per cent of the variation in private investment, while personal disposable income and interest rate explain about 8 per cent and 5 per cent variation, respectively. The net capital flows, however, explains negligible variation in private investment. The extent of variation in private investment explained by bank credit, however, increases over the period, while it

Table 6.35: Gross Domestic Capital Formation at Current Prices

Year/Period	Growth (Per cent)				Share in GDP (Per cent)			
	Household	Private	Public	Total	Household	Private	Public	Total
1	2	3	4	5	6	7	8	9
1990-1991	23.2	20.6	14.4	18.9	9.7	4.5	10.0	24.2
1991-1992	**-24.9**	**58.1**	**9.1**	**4.6**	**6.3**	**6.2**	**9.5**	**22.0**
1992-1996	24.7	34.3	12.3	22.4	7.2	7.7	8.9	23.8
1996-1999	**19.9**	**0.3**	**8.0**	**8.2**	**7.4**	**8.3**	**7.2**	**22.9**
1999-2000	37.8	15.6	17.7	28.5	10.5	7.4	7.4	26.1
2000-2002	**11.7**	**-5.3**	**4.1**	**1.4**	**11.3**	**5.3**	**6.9**	**24.2**
2002-2003	20.8	17.7	-4.6	12.3	12.6	5.9	6.1	25.2
2003-2004	13.2	29.4	16.9	19.3	12.7	6.8	6.3	26.8
2004-2005	13.8	79.9	24.3	34.9	13.5	10.3	7.4	32.5
2005-2006	0.0	50.1	21.8	20.9	11.8	13.5	7.9	34.3
2006-2007	16.8	24.5	22.7	21.3	11.9	14.5	8.4	36.0
2007-2008	11.0	28.1	22.9	20.6	11.5	16.1	8.9	37.6
2008-2009	19.8	-11.0	18.6	6.7	12.2	12.7	9.4	35.6

Source : Handbook of Statistics on Indian Economy.
Note : The growth in gross domestic capital formation was 4.7 per cent during the first quarter of 2009-10.

[11] The rank of co-integrating vectors has been found to be 1, implying only one co-integrating relationship. The various lag selection criterions indicated only one lag.

declined in the case of personal disposable income. Further, the results[12] of the VAR Granger Casualty test show that unidirectional causality runs from bank credit to private investment at the 10 per cent significance level and is bidirectional from personal disposable income to private investment at a 1 per cent level of significance. The causality from interest rates and net capital flows to private investment and *vice versa* has not been found significant. The above empirical results demonstrate the importance of like personal disposable income and bank credit in influencing private investment. In the present context also, both these factors on the back of the economic slowdown appear to have triggered the significant deceleration in private investment eventually leading to a sharp decline in the growth of gross domestic capital formation in 2008-09.

Impact on Overall Growth

6.91 Although the growth of the Indian economy started slowing down from the last quarter of 2007-08 and the trend continued in subsequent quarters taking a cue from world growth, slowdown accentuated in the third and fourth quarter of 2008-09 before improving somewhat during the first quarter of 2009-10 (Table 6.36). In fact, the Indian economy was already on the moderating growth trajectory of the business cycle from the fourth quarter of 2006, but the current global crisis made the slowdown more pronounced from the third quarter of 2008-09 (RBI Annual Report, 2008-09)[13]. Hence, the Indian economy would have witnessed a slowdown during 2008-09 even in the absence of the global financial crisis, *albeit* at a lower pace.

6.92 The Indian economy, as mentioned above, witnessed incipient signs of slowdown in the last quarter of 2007-08 but the actual impact was felt in the second half of 2008-09. On the demand side, the first to respond to the global financial crisis were investments (capital formation) and private consumption, as growth in both these components started decelerating concomitantly in the last quarter of 2007-08. Exports of goods and services got impacted in the third quarter of 2008-09 and their growth plummeted sharply on account of a large decline in the spending of advanced economies (Chart VI.14).

Table 6.36: Quarterly Growth in GDP at Factor Cost

(Per cent)

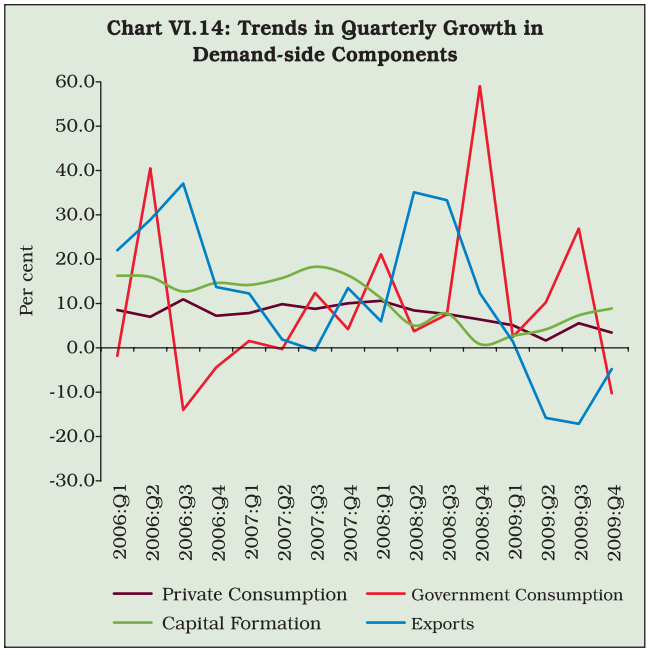
Sector	2007-08	2008-09	2009-10	2007-08				2008-09				2009-10			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Agriculture & Allied	4.7	1.6	0.2	3.1	3.9	8.7	2.1	3.2	2.4	-1.4	3.3	1.9	0.9	-1.8	0.7
Industry	9.3	3.1	10.4	10.5	9.5	9.5	7.8	5.2	4.9	1.7	0.8	4.6	9.0	12.3	15.1
Services	10.4	9.3	8.3	10.7	10.5	10.2	10.4	9.8	9.3	10.0	8.0	7.5	10.0	7.3	8.5
Total	**9.2**	**6.7**	**7.4**	**9.3**	**9.4**	**9.7**	**8.5**	**7.8**	**7.5**	**6.1**	**5.8**	**6.0**	**8.6**	**6.5**	**8.6**

Source: Central Statistical Organisation, Government of India.

[12] **VAR Granger Causality /Block Exogeneity Wald Tests**

Null Hypothesis	Chi-square statistics	Accept / Reject (X does not cause Y)
Bank credit does not cause private investment	3.06 (0.10)	Reject
Net capital flows does not cause private investment	1.33 (0.25)	Accept
Personal disposable income does not cause private investment	18.26 (0.00)	Reject
Interest rate does not cause private investment	0.45 (0.50)	Accept

[13] During the current business cycle, the expansionary phase lasted for about 8 to 9 quarters beginning in 2004 (Q4) and reached its peak closer to 10 per cent in the second and third quarters of 2006. Thereafter, the momentum of underlying growth showed some moderation until 2008-09 (Q4).



6.93 The positive cyclical co-movements between GDP and private consumption and gross domestic capital formation (investment) further strengthened during recent periods (2006-2009) (Table 6.37). The cyclical co-movements between GDP and government consumption turned negative in the recent past, primarily resulting from the counter-cyclical fiscal policy stance executed in the form of fiscal stimulus measures providing support to the weakening growth in the wake of the global crisis. The cyclical synchronisation between the growth of GDP and various components of aggregate demand was also assessed by estimating the relationship between the variables with ordinary least squares (OLS) regression for the period from the second quarter of 1996 to the second quarter of 2009. The results of the regression demonstrate that the causality running from cyclical gross domestic capital formation and

Table 6.37: Cyclical Co-movements of GDP with Components of Aggregate Demand (Correlation Coefficient)

Component	1996-2000	2001-2005	2006-2009:Q2
1	2	3	4
Gross Domestic Capital Formation	0.67	0.44	0.64
Private Consumption	0.00	0.50	0.60
Government Consumption	0.42	0.16	-0.72
Exports of Goods & Services	-0.01	0.14	0.32

Source: National Accounts Statistics, CSO, Govt. of India.

private consumption to cyclical GDP is significant, while it is insignificant in case of government consumption and exports of goods and services[14]. This indicates the primacy of private financial consumption and investment in driving the growth of the Indian economy in recent periods. Hence, it could be inferred that the recent global crisis accentuated the cyclical downturn in the Indian economy, adversely affecting private consumption and investment.

6.94 The real growth in GDP at market prices started slowing down from the first half of 2008-09, after witnessing a higher trajectory during 2005-2008, on the back of the global crisis adversely affecting investment and private consumption during this period (Table 6.38). The growth in exports of goods & services, which had surged significantly in the first half of 2008-09, decelerated steeply during the second half. The growth in capital formation, which decelerated substantially in the first half of 2008-09, plunged further in the second half. Similarly, private consumption continued to decelerate during the second half of 2008-09 on account of a continued slide in the stock market and heightened uncertainty. At the same time, government consumption increased massively in

[14] CGGDP = 4.97 + 0.12 CGPFCF - 0.02 CGGFCE + 0.28 CGGDCF + 0.0001 CGNX
(2.38) (1.77) (-1.08) (4.92) (0.25)
R^2 = 0.41 DW = 1.65
CGGDP = Cyclical Growth in Gross Domestic Product.
CGGDCF = Cyclical Growth in Gross Domestic Capital Formation.
CGGFCE = Cyclical Growth in Government Final Consumption Expenditure.
CGPFCE = Cyclical Growth in Private Final Consumption Expenditure.
CGNX = Cyclical Growth in Net Exports of goods and services.

Table 6.38: Growth in Demand Components of GDP (At 2004-05 Prices)

(Per cent)

Period	Private Consumption	Government Consumption	Capital Formation	Exports	Imports	Overall GDP (Market Prices)
1	2	3	4	5	6	7
Trend						
1990-95	3.7	2.8	7.8	10.8	13.3	4.7
1995-00	5.9	9.8	8.0	13.4	13.3	6.6
2000-05	4.6	1.8	10.0	16.1	11.1	5.9
2005-08	9.0	7.2	15.3	17.6	21.5	9.5
Annual						
2007-08	9.8	9.7	16.9	5.2	10.0	9.6
2008-09	6.8	16.7	-1.7	19.3	23.0	5.1
2009-10	4.3	10.5	7.1	-6.7	-7.3	7.7
Half Yearly						
2007-08:H1	9.3	5.2	16.2	0.6	1.2	9.6
2007-08:H2	10.3	13.5	13.5	9.4	18.7	9.6
2008-09:H1	8.0	5.5	0.9	34.2	40.0	7.1
2008-09:H2	5.8	25.7	-3.9	6.6	8.6	3.4
2009-10:H1	4.6	22.5	0.9	-15.9	-9.5	5.8
2009-10:H2	4.0	2.3	13.0	3.3	-4.8	9.3
Quarterly						
2008-09:Q1	8.4	3.7	0.1	35.1	34.4	7.3
2008-09:Q2	7.6	7.5	1.6	33.3	45.2	6.9
2008-09:Q3	6.4	59.0	-4.9	12.3	23.2	3.0
2008-09:Q4	5.1	2.5	-2.9	1.4	-4.4	3.8
2009-10:Q1	2.9	15.3	-0.3	-16.0	-8.5	5.2
2009-10:Q2	6.4	30.5	2.1	-15.8	-10.5	6.4
2009-10:Q3	5.3	2.5	8.4	-7.5	-5.8	7.3
2009-10:Q4	2.6	2.1	17.3	14.2	-3.7	11.2

Source: Central Statistical Organisation, Govt. of India.

the second half of 2008-09 as the government took counter-cyclical measures. The component-wise (demand-side) analysis shows that the upturn in growth during the first half of 2009-10 has come from the upturn in gross domestic capital formation supported by robust growth in government consumption. All other demand components, *viz*., private consumption, exports and imports, which directly contribute to growth, continued to witness growth deceleration/contraction during this period.

Sectoral Impact of Slowdown

6.95 Industrial growth decelerated significantly in the first half of 2008-09 from a high level during the past three years as a result of spill-over effects of the global crisis penetrating through trade and financial channels. The decline in industrial growth was higher than the deceleration in overall growth and, accordingly, the relative contribution of the industrial sector in GDP also declined considerably during 2008-09. On the other hand, the services sector experienced moderate slowdown in growth compared to industry during the 2008-09 and its relative contribution in GDP improved (Table 6.39). Moderation in the growth of the services sector during this period emanated from the financial channel and drying up of external demand.

6.96 The impact on the industrial and services sectors got amplified in the second half of 2008-09 with overall contraction in merchandise exports and deceleration in the growth of services exports along with shattered confidence reinforcing the adverse affects stemming from the financial channel. During this period again, the growth

Table 6.39: Sectoral Growth in GDP (At 2004-05 Prices)

(Per cent)

Period	Contribution to Incremental GDP			Growth			
Period	Agriculture	Industry	Services	Agriculture	Industry	Services	Overall
1	2	3	4	5	6	7	8
Trend							
1990-95	11.8	17.2	71.0	3.4	5.3	5.6	4.8
1995-00	10.0	17.9	72.1	3.1	6.0	8.6	6.6
2000-05	2.9	21.5	75.6	1.8	6.0	7.8	6.0
2006-08	8.7	22.0	69.3	4.6	10.3	10.6	9.5
Annual							
2007-08	8.8	20.8	70.4	4.7	9.3	10.4	9.2
2008-09	3.9	9.5	86.6	1.6	3.1	9.3	6.7
2009-10	0.5	27.9	71.7	0.2	10.4	8.3	7.4
Half Yearly							
2007-08:H1	5.8	22.5	71.7	3.5	10.0	10.6	9.4
2007-08:H2	11.5	19.3	69.2	5.7	8.7	10.3	9.1
2008-09:H1	5.5	14.2	80.3	2.9	5.1	9.6	7.6
2008-09:H2	2.0	4.2	93.7	0.7	1.2	9.0	5.9
2009-10:H1	2.7	19.4	77.9	1.4	6.8	8.7	7.3
2009-10:H2	-1.5	35.1	66.4	-0.7	13.8	7.9	7.6
Quarterly							
2008-09:Q1	6.7	14.2	79.1	3.2	5.2	9.8	7.8
2008-09:Q2	4.3	14.2	81.5	2.4	4.9	9.3	7.5
2008-09:Q3	-4.6	5.7	98.9	-1.4	1.7	10.0	6.1
2008-09:Q4	8.9	2.8	88.3	3.3	0.8	8.0	5.8
2009-10:Q1	4.8	15.6	79.6	1.9	4.6	7.5	6.0
2009-10:Q2	1.3	22.0	76.7	0.9	9.0	10.0	8.6
2009-10:Q3	-5.1	35.9	69.2	-1.8	12.3	7.3	6.5
2009-10:Q4	1.2	34.6	64.2	0.7	15.1	8.5	8.6

deceleration was more severe in the industrial sector than the services sector, as manufacturing exports, which contribute a large part to industrial sector demand, contracted sharply on the back of a sharp fall in the spending of the advanced economies on consumer durables. It may, however, be mentioned that services sector growth continued to decelerate during 2009-10, whereas industrial growth revived significantly.

6.97 Agriculture and allied activities, which largely remain unconnected to global developments, grew at a healthy rate due to robust monsoons and provided support to industry and services in the form of rural demand during the first half of 2008-09. The growth in agriculture and allied activities, however, decelerated significantly and, accordingly, the rural demand component weakened in the second half of 2008-09. The failure of the south-west monsoon in 2009 and the consequent fall in agricultural output appears to have weakened rural demand during 2009-10.

Industry: Disaggregated Analysis

6.98 The cross-country analysis reveals that the impact of the crisis on the industrial sector has been quite severe and broad-based as manifested by a sharp deceleration in growth or contraction in industrial output in many advanced and emerging market economies, including India, during 2008 and 2009 (Table 6.40). Although the industrial sector of the advanced economies was hit first, the ripple effects travelled with a lag to emerging markets and other developing economies through trade and financial channels.

Table 6.40: Industrial Growth in Advanced and Emerging Market Economies

(Per cent)

Country	2007				2008				2009				2010
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Emerging													
Brazil	3.8	5.6	6.3	7.9	6.9	5.9	6.3	-7.2	-13.8	-11.6	-8.7	6.3	17.2
China	15.1	18.3	18.1	17.5	10.9	15.9	13.0	6.4	9.7	9.0	12.3	17.9	-
India	10.3	8.7	8.3	7.0	5.3	4.7	0.8	0.5	3.8	9.0	13.4	15.1	12.9
Korea	4.1	6.3	6.1	10.9	11.2	9.2	5.9	-10.9	-15.7	-6.1	4.3	16.1	25.6
Malaysia	0.6	1.8	2.1	4.5	6.6	2.4	0.1	-9.1	-14.4	-10.9	-6.6	2.6	-
Mexico	2.5	1.5	2.1	1.8	0.4	1.3	-1.4	-2.6	-9.6	-11.1	-6.3	-2.0	5.2
Advanced													
Canada	-1.6	0.1	0.2	0.0	-5.0	-4.6	-4.3	-7.2	-10.6	-14.5	-13.0	-7.1	-
France	0.5	-0.1	1.5	2.7	1.0	1.3	-1.2	-8.9	-15.7	-16.4	-10.6	-4.6	-
Germany	8.9	6.7	6.3	5.9	5.3	3.3	0.4	-7.6	-21.8	-21.3	-17.4	-10.1	-
Italy	3.9	2.0	3.0	-1.5	1.0	0.2	-5.2	-10.4	-22.3	-23.2	-17.2	-9.3	-
Japan	2.9	2.4	2.6	3.3	2.5	0.8	-1.3	-14.1	-33.5	-26.6	-18.9	-4.2	26.0
UK	-1.3	0.7	0.4	1.6	-0.6	-0.9	-2.1	-8.0	-12.6	-12.8	-11.0	-6.3	-
USA	1.3	1.5	1.4	1.8	1.2	-0.3	-3.2	-6.7	-11.5	-13.5	-9.2	-4.6	2.5

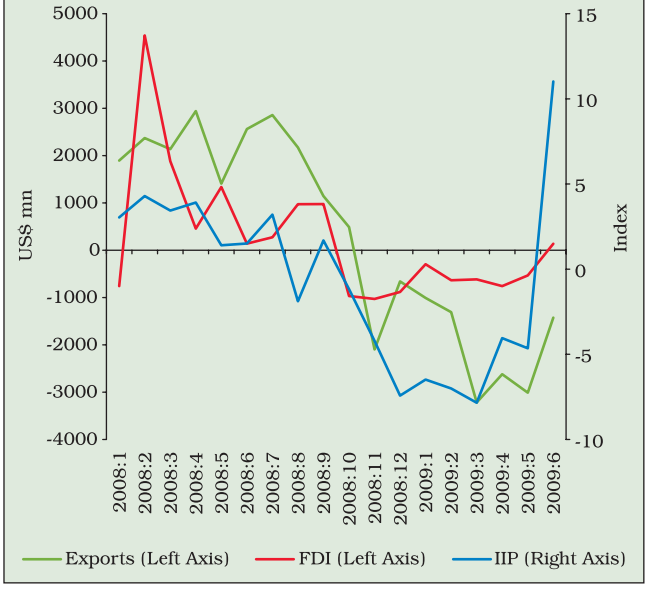
Source: International Financial Statistics, IMF; CSO, Government of India.

6.99 After witnessing buoyant growth during the past few years, the industrial sector was already on the slowdown curve of the business cycle from November 2007 [based on the index of industrial production (IIP)]. This sector was hit severely by the spillover effects of the recent financial crisis, resulting in a more pronounced slowdown beginning from October 2008. The growth in industrial production decelerated sharply in the second half 0f 2008-09. However, the industrial sector turned around and recorded accelerated growth during 2009-10.

6.100 The correlation between the cyclical component of IIP and merchandise exports weakened substantially and turned insignificant during the period of contracting merchandise exports, *i.e.,* from October 2008 to June 2009. At the same time, the correlation between cyclical IIP and non-food credit and FDI further strengthened during this period, implying the increasing association of the financial channel in the pronounced slowdown in the industrial sector during this period (Chart VI.15). The steep rise in correlation between cyclical components of the IIP and non-food credit during recent periods could be on account of shrinking demand for credit during the crisis period on the back of the economic slowdown and heightened uncertainty. The correlation does not imply any cause-and-effect relationship between the variables and hence, to ascertain this relationship, further investigation with a technical exercise was taken up.

6.101 To further investigate the role of different factors, the Granger causality between industrial

Chart VI.15: Trends in Cyclical IIP, Exports and FDI



growth (based on the IIP), growth in bank credit (non-food credit) and exports was estimated from the vector autoregression model (VAR) using monthly data from 1995-96 to 2009-10 to see the cause-and-effect relationships. The results[15] show bidirectional causality running between bank credit and industrial growth and exports. The causality running from industrial growth to bank credit is more significant than bank credit to industrial growth. On the basis of the Granger causality results, it can be inferred that in the beginning of the recent crisis, lower bank credit was caused by a slowdown in industry which, in turn, further dampened both industrial slowdown and bank credit as part of the cycle. Further, the VAR Granger causality suggests that contracting exports hampered industrial growth during the crisis period. The causality from industrial growth to exports growth probably reflects the technological improvement and competitiveness effects of exports. In sum, the Granger causality results suggest that the global crisis affected the industrial sector through contracting exports and, in turn, affected bank credit.

Disaggregated Analysis

6.102 At the disaggregated level, the manufacturing sector, which carries the largest weight of 74.4 per cent in IIP, was affected the most (Table 6.41). The significant slowdown in the manufacturing sector immediately reflected in a sharp fall in the growth of the overall industrial sector. Other sectors, *viz*., mining & quarrying and electricity, gas & water supply, also witnessed a slowdown in the second half of 2008-09.

6.103 The cyclical slowdown in the manufacturing sector became more broad-based, with 15 out of 17 two-digit manufacturing industries experiencing negative/ decelerated growth during 2008-09. Like in the previous two phases of slowdown, cotton textiles, wood & wood products, and furniture & fixtures exhibited negative growth in the current phase (Table 6.42). However, the manufacturing sector rebounded with significant positive growth since the first quarter of 2009-10, drawing strength from domestic factors and stabilising international financial markets.

Table 6.41: Performance of Broad-Based Sectors in Industry

	2005Q2-2008Q1	2008: Q2	2008: Q3	2008: Q4	2009: Q1	2009: Q2	2009: Q3	2009: Q4	2010: Q1
1	2	3	4	5	6	7	8	9	10
Growth in Value Addition (%)									
Mining & quarrying	4.6	2.6	1.6	2.7	-0.3	8.2	10.1	9.6	14.0
Manufacturing	11.6	5.9	5.5	1.3	0.6	3.8	9.1	13.8	16.3
Electricity, gas & water supply	8.4	3.3	4.3	4.0	4.1	6.6	7.7	4.7	7.1
Industry	10.3	5.2	4.9	1.7	0.8	4.6	9.0	12.3	15.1
Relative Contribution in Value Addition (%)									
Mining & quarrying	5.2	5.8	3.8	19.3	-5.0	20.6	12.3	9.6	11.6
Manufacturing	86.6	87.8	87.5	58.5	56.0	65.0	79.2	86.7	83.9
Electricity, gas & water supply	8.3	6.4	8.8	22.3	48.9	14.5	8.5	3.7	4.5

[15] **VAR Granger Causality / Block Exogeneity Wald Tests**

Null Hypothesis	Chi-square statistics	Accept/ Reject (X does not cause Y)
Growth in non-food credit does not cause industrial growth	12.55 (0.05)	Reject
Exports growth does not cause industrial growth	25.04 (0.00)	Reject
Industrial growth does not cause growth in non-food credit	48.09 (0.00)	Reject
Industrial growth does not cause exports growth	(75.60) (0.09)	Reject

Table 6.42: Growth Performance of 17 two-digit Manufacturing Industries

(Per cent)

Industry	2007-08				2008-09				2009-10			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	2	3	4	5	6	7	8	9	10	11	12	13
1. Food products	26.8	-1.6	-4.9	9.9	-7.1	7.6	0.6	-25.2	-17.2	-5.2	0.7	10.2
2. Beverages, tobacco and related products	9.7	8.8	17.7	11.9	30.7	9.8	12.2	12.5	-6.2	2.1	1.7	3.1
3. Cotton textiles	7.3	5.0	2.0	2.9	3.5	-3.2	-3.5	-4.3	-1.7	4.3	9.9	9.7
4. Wool, silk and man-made fibre textiles	3.3	6.1	0.4	9.4	7.3	-8.8	1.3	0.5	4.8	21.2	10.7	-1.9
5. Jute and other vegetable fibre textiles (except cotton)	30.1	9.9	-0.7	205.7	-8.1	-2.9	-23.2	-6.3	-16.2	-18.3	-6.3	-52.8
6. Textile products (including apparel) apparel)	5.9	0.7	6.1	2.3	6.3	4.0	3.8	8.7	8.2	11.0	12.8	2.5
7. Wood and wood products, furniture & fixtures	93.0	66.9	45.8	-3.7	-11.9	-0.5	-10.0	-16.3	14.7	1.3	11.2	13.1
8. Paper and paper products and printing, publishing and allied industries.	1.6	0.2	4.0	5.0	1.3	7.7	1.3	-2.8	3.6	-0.5	3.5	9.4
9. Leather and leather & fur products	8.5	10.8	11.4	16.2	5.8	-8.7	-10.5	-13.0	-3.5	4.8	1.3	7.1
10. Chemicals and chemical products (except products of petroleum & coal)	6.9	10.5	14.9	10.4	11.2	1.2	-4.6	8.8	2.0	13.8	21.9	5.5
11. Rubber, plastic, petroleum and coal products	12.5	11.3	6.5	5.6	-3.5	-4.5	-0.9	2.7	10.6	14.3	18.4	17.8
12. Non-metallic mineral products	6.6	10.6	3.8	2.3	1.0	0.1	1.9	1.7	8.3	4.9	6.5	11.1
13. Basic metal and alloy industries	20.1	16.9	6.8	6.8	4.9	8.4	5.0	-2.0	7.7	2.6	3.8	12.0
14. Metal products and parts (except machinery and equipment)	-0.1	-1.9	-16.9	-2.2	2.0	1.8	-0.4	-16.8	-4.8	4.9	16.4	45.9
15. Machinery and equipment other than transport equipment	14.3	8.4	13.5	6.6	7.9	12.3	4.7	10.3	7.2	15.0	24.4	35.0
16. Transport equipment and parts	1.5	2.1	5.3	2.6	10.3	13.9	-10.9	-1.5	6.9	12.0	44.0	37.2
17. Other manufacturing industries	7.4	18.2	35.8	17.1	-9.4	6.5	5.6	-2.7	14.9	12.3	1.3	16.6

6.104 In the manufacturing sector, the group of export-oriented industries (*viz*., basic chemical and chemical products, textile products, wool, silk and man-made fibre textiles, cotton textiles and leather and leather & fur products), which experienced sizable growth during 2003-08, had suffered along with domestic-oriented units. Interestingly, both export-oriented and domestic-oriented industries rebounded with significant acceleration in their growth during 2009-10 (April-September), which remains considerably higher than the second half of 2008-09 (Table 6.43).

6.105 The sluggish performance of the basic goods and consumer goods industries in the first half of 2008-09 also deteriorated further in the second half of 2008-09 (Table 6.44). All the sub-groups experienced deceleration/ negative growth in the second half of 2008-09, but some of the sub-groups, *viz*., intermediate goods and basic goods, turned around with improved performance from the beginning of 2009-10, illustrating recovery from the slump. The performance of corporates in the private sector, after remaining subdued in the second half of 2008-09, also witnessed a turnaround in their margins, despite a decline in their sales in the first quarter of 2009-10 (Box VI.8).

6.106 The analysis of the behaviour of use-based sub-groups during the previous international crises and afterwards could provide vital leads about the sustainability of the industrial recovery witnessed

Table 6.43: Average Growth in Export-Oriented Manufacturing Industries (based on IIP)

(per cent)

Group	2000-03	2003-08	2008-09: H1	2008-09: H2	2009-10: H1	2009-10: H2
1	2	3	4	5	6	7
Exports-Oriented* (weight = 25.46)	4.3	8.8	4.4	2.1	7.4	11.0
Domestic-Oriented (weight = 53.90)	4.9	9.7	5.8	0.7	5.8	17.1
Total Manufacturing (weight = 79.36)	4.7	9.4	5.3	0.4	6.3	15.4

Note : Growth has been calculated aggregating the index of these industries as per their weights in IIP.

* Five industries have been taken where the major portion of sales comes through exports.

Table 6.44: Monthly Growth of Use-based Industries

(Per cent)

	Basic Goods			Capital Goods			Intermediate Goods			Consumer Goods		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
1	2	3	4	5	6	7	8	9	10	11	12	13
April	8.6	4.0	4.4	10.9	12.4	-5.9	10.6	3.1	7.9	14.7	8.5	-4.6
May	10.3	3.0	3.8	22.4	4.3	-3.6	8.8	1.9	6.6	8.7	7.4	-1.1
June	9.2	2.2	10.7	23.1	7.8	13.4	8.6	2.8	7.9	3.6	9.9	4.4
July	8.7	5.3	4.7	12.3	17.9	1.7	7.7	3.0	9.8	7.1	5.9	9.7
August	12.7	3.9	7.7	30.8	0.9	9.2	13.8	-5.5	14.4	0.0	6.4	10.9
September	6.5	5.0	5.3	20.9	20.8	13.5	10.1	-2.5	11.0	-0.2	7.4	9.7
October	6.5	3.2	4.0	20.9	4.2	10.2	13.9	-4.4	15.5	13.7	-0.9	12.1
November	5.2	2.2	6.0	24.2	0.5	11.1	5.5	-3.9	19.6	-2.9	9.4	12.2
December	3.4	2.0	8.4	17.6	6.6	38.7	7.6	-8.9	22.8	8.7	1.7	13.1
January	3.6	-0.7	11.5	2.6	15.9	53.7	8.0	-7.2	21.9	8.4	3.6	3.0
February	7.3	-0.1	8.4	10.7	11.8	44.7	8.5	-3.0	15.0	11.7	-1.3	9.1
March	3.3	1.9	10.4	20.3	-6.3	28.4	4.9	1.9	13.1	0.9	1.3	10.7
Apr.-Mar.	7.0	2.6	7.1	18.0	7.3	19.2	8.9	-1.9	13.6	6.1	4.7	7.3

Source: CSO, Government of India.

in 2009-10. Capital goods led the recovery in the industrial sector during the East Asian crisis, whereas in the case of the dot-com crisis phase, all the sectors jointly pulled the industry from a slowdown, but it was again the capital goods sector that made the largest contribution. On the basis of

Box VI.8
Global Crisis and Performance of Corporates in India

The global crisis affected the performance of corporates in India through all three channels of transmission, *viz*., trade, financial and confidence. The impact on private sector corporates became precipitous from the third quarter of 2008-09 on the back of accentuating disruptions in international financial markets that eventually mutated into a world recession/ economic slowdown. Tightening domestic and foreign liquidity resulted in a steep escalation in the cost of funds as well as reduced accessibility. On the other hand, the recession in advanced economies pulled down the demand for Indian corporates as manifested by contracting exports since October 2008. The uncertainty prevailing in the world economy also dampened investor confidence and, hence, private corporates were hesitant to undertake fresh investments. All these factors dampened both domestic and external demand, availability of funds, and investment prospects and were reflected in the subdued performance of private sector corporates during the second half of 2008-09. The performance of the corporate sector, however, improved considerably during the second half of 2009-10 owing to revival in both domestic and external demand alongwith stability in global financial markets (Table 1).

The revenue growth of private corporates, which was quite impressive during the first half of 2008-09, decelerated sharply in the second half of 2008-09. Sales growth after averaging about 22 per cent for 20 quarters (from the 3rd quarter of 2004 to the 2nd quarter of 2009) moderated sharply to 9.5 per cent in the third quarter and further to 1.9 per cent in the fourth quarter of 2008-09. The deceleration in net profits of private corporates,

Table 1. Performance of the Private Corporate Sector

	2007-08	2008-09	2009-10	2008-09: Q1	2008-09: Q2	2008-09: Q3	2008-09: Q4	2009-10: Q1	2009-10: Q2	2009-10: Q3	2009-10: Q4
Growth (%)											
Sales	18.6	17.2	11.7	29.3	31.8	9.5	1.9	-0.9	0.1	22.5	29.1
Expenditure	19.4	19.5	9.6	33.5	37.5	12.6	-0.5	-4.4	-2.5	20.6	30.7
Gross Profit	24.9	-4.2	24.9	11.9	8.7	-26.7	-8.8	5.8	10.9	60.0	336.7
Net Profit	26.0	-18.4	28.8	6.9	-2.6	-53.4	-19.9	5.5	12.0	99.3	44.0
Ratio (% of Sales)											
Interest	2.5	3.1	2.7	2.4	2.9	3.8	3.2	2.8	3.1	2.7	2.4
Gross Profit	14.9	13.3	14.8	14.5	13.5	11.0	13.7	15.7	14.9	14.3	14.6
Net Profit	9.8	8.1	9.4	9.7	8.6	5.3	8.1	10.2	9.4	8.8	9.0

(Contd...)

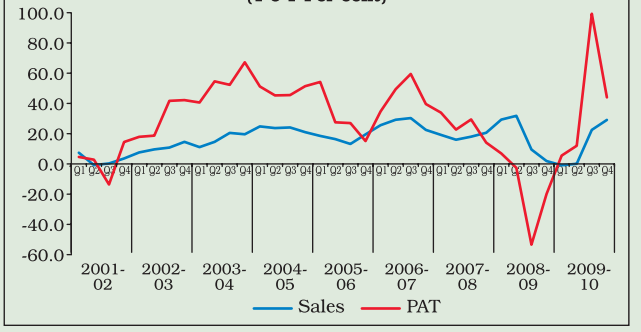
(....Concld.)

which erupted from the fourth quarter of 2006-07 after an average acceleration of 42 per cent for 21 quarters from the third quarter of 2001-02 to the third quarter of 2006-07, became more severe at (-) 53 per cent during the third quarter of 2008-09, before turning around with a rise of 19 per cent in the fourth quarter of 2008-09 (Chart 1). The non-core 'other income' comprising mostly forex gains and treasury income, which contributed significantly to net profits in the past couple of years, also showed a decline impacted by subdued stock market activity and a weakening rupee during 2008-09.

The sales of select small companies (defined as annual sales of less than Rs.100 crore), which increased year-on-year by above 10 per cent in the first two quarters, plummeted post-September 2008. Likewise, year-on-year growth of around 30 per cent in the sales of large companies (defined as having annual sales of more than Rs.100 crore) in the first two quarters fell to less than 10 per cent in the last two quarters of 2008-09. Operating margins weakened by around 400 basis points compared to that recorded in Q3 of 2007-08. However, the pressure on margins seemed to have eased since Q1 of 2009-10, owing primarily to falling input costs and lower rise in interest outflow, resulting in improvement in margins to levels recorded prior to the Lehman Brothers' collapse in September 2008.

In terms of sectoral breakdown, the slowdown in sales and profits performance for companies in the manufacturing sector was more evident vis-à-vis those in IT and other services sectors. The net profit margin, measured as net income-to-sales ratio, has mostly been the lowest for the manufacturing sector and reduced from the two-digit level in the third quarter of 2007-08 to less than 5.0 per cent during the third quarter of 2008-09. The net margin, however, appeared to have slowly returned to close to 10 per cent in the first quarter of 2009-10. In comparison, companies in services were able to maintain profit margins despite decelerating sales during the quarters of 2008-09; the rise in commodity prices during the first half of 2008-09 had a lower impact on the services industries because raw material consumption formed a relatively low share in their total expenses.

Chart 1: Growth Performance of Private Corporate Sector in India (Y-o-Y Per cent)



the experiences during the past two international crises, it can be inferred that capital goods recovery is pivotal for sustainable recovery in the industrial sector from the current slowdown, underscoring the need to accelerate investment. Thus, the buoyant growth in capital goods during 2009-10 suggests that industrial recovery has become firm and sustainable.

6.107 The core infrastructure industries, which constitute a large part of the industrial sector (27 per cent weight in IIP), were also impacted by the spillover effects of the current global crisis. The infrastructure sector, which continued to be in deficit mode and a major bottleneck despite the high growth trajectory in the recent past, suffered due to non-availability of the requisite funds especially projects in the private sector since the onset of the amplified global crisis in September 2008. The gap between the target and achievements further widened among various infrastructure industries during 2008-09 and 2009-10, reflecting the global crisis (Table 6.45). The Eleventh Five-Year Plan had envisaged stepping up the gross domestic capital formation in infrastructure from 5 per cent of GDP in 2006-07 to 9 per cent of GDP in 2011-12 for improving availability and bridging the gap between demand and supply.

Services Sector: Disaggregated Analysis

6.108 The high growth in the services sector has been underpinning the buoyancy in India's growth. This sector exhibited an average growth of above

Table 6.45: Gap Between Targets and Achievements of Infrastructure Industries

(Per cent)

Sector	2007-08	2008-09	2009-10
1	2	3	4
Power	-0.8	-6.5	-2.3
Coal	-1.0	-0.9	0.1
Finished Steel	-3.1	-7.3	-
Railways	0.5	-2.0	-0.2
Shipping (Cargo handled at Major Ports)	0.7	-7.9	-3.5
Fertilisers	-12.6	-12.2	-0.1
Crude Petroleum	-2.5	-6.8	-11.4
Petroleum Products	6.7	-2.4	4.5
Natural Gas Production	-2.9	-11.1	-8.8

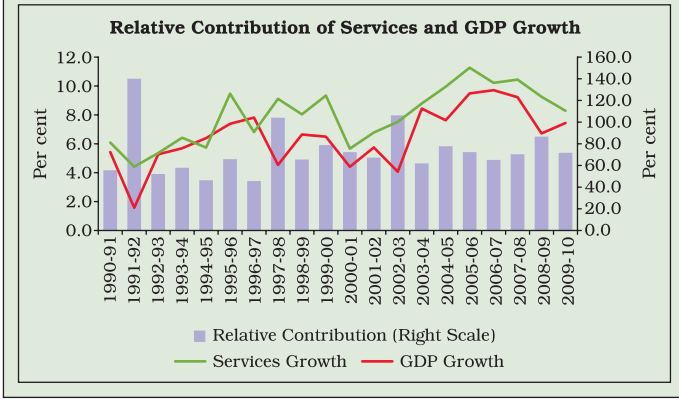
Source: Ministry of Statistics and Programme Implementation, Govt. of India.

10 per cent during the five years preceding 2008-09 and its share and relative contribution in GDP amounted to above 60 per cent and 70 per cent, respectively during this period. The contribution of services exports in overall value-added accelerated sharply from 6.9 per cent in 2000-01 to 15.1 per cent during 2008-09. Despite decelerating growth during 2008-09 and 2009-10 against the backdrop of knock-on effects of the global economic crisis, the services sector continued to grow at a higher pace than overall growth in the Indian economy. The resilience displayed by the services sector during the recent crisis cushioned the Indian economy from the worsening growth witnessed by most of the advanced and emerging market economies, especially on the back of the crumbling industrial sector. Interestingly, the services sector provided a similar cushioning to the Indian economy during the previous international crises, such as the Gulf crisis (1990-1991), the East Asian crisis (1997-1998), and the technology crisis (2000-2001) (Chart VI.16).

6.109 The disaggregated analysis of the services sector shows that different sub-groups were affected at different points of time by unfolding international developments. Interestingly, when one sub-group was adversely hit, the better performance of another sub-group mitigated the effects on the overall growth of the services sector. For example, in the first half of 2008-09, the financial, insurance, real estate and business services sub-group was impacted severely, but another sub-group – trade, hotels, transport and communications – continued to grow at an elevated pace and cushioned the services sector from sharp deterioration. Similarly, during the second half of 2008-09, the growth of trade, hotels, transport & communications plunged sharply, but growth in the financial, insurance, real estate and business services sub-group recovered, along with acceleration in the growth of community, and social & personal services, providing a cushion to services sector growth (Table 6.46).

6.110 In sum, the Indian economy witnessed incipient signs of a slowdown in the last quarter of 2007-08 but the actual impact was felt in the second half of 2008-09. The recent global crisis accentuated the cyclical downturn in Indian economy, adversely affecting private consumption and investment. Industrial growth decelerated significantly, while the services sector experienced a moderate slowdown in growth compared to industry during the first half of 2008-09. The steep fall in correlation between cyclical components of the index of industrial production and non-food credit could be on account of shrinking demand for credit during the crisis period on the back of the economic slowdown and heightened uncertainty. The performance of corporates in India was affected through all four channels of transmission, *viz*., trade, financial, commodity prices and confidence. The moderation in the growth of the services sector was due to heightened volatility and uncertainty in domestic financial markets in tune

Chart VI.16: Relative Contribution of Services



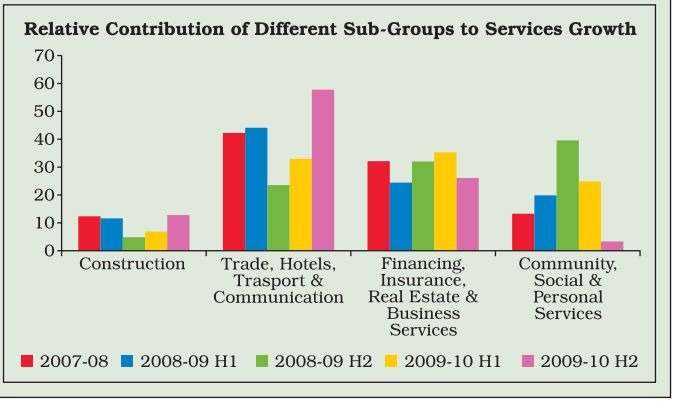


Table 6.46: Growth of Services Sector at Disaggregated Level (At 2004-05 Prices)

(Per cent)

Year	Construction	Trade, hotels, transports, communications	Financing, insurance, real estate & business services	Community, social & personal services	Services
1	2	3	4	5	6
Trend					
2000-2002	5.1	8.2	5.7	4.4	6.3
2002-2005	12.0	10.7	7.4	5.4	8.7
2006-2008	11.0	11.5	13.5	5.7	10.6
Annual					
2007-08	10.0	10.7	13.2	6.7	10.4
2008-09	5.9	7.6	10.1	13.9	9.3
2009-10	6.5	9.3	9.7	5.6	8.3
Half Yearly					
2007-08:H1	11.9	10.7	13.9	5.6	10.6
2007-08:H2	8.3	10.8	12.6	7.7	10.3
2008-09:H1	8.5	10.4	8.8	9.6	9.6
2008-09:H2	3.4	5.1	11.3	17.8	9.0
2009-10:H1	4.6	7.0	11.7	11.0	8.7
2009-10:H2	8.4	11.3	7.9	1.2	7.9
Quarterly					
2008-09:Q1	9.8	10.8	9.1	8.7	9.8
2008-09:Q2	7.2	10.0	8.5	10.4	9.3
2008-09:Q3	1.1	4.4	10.2	28.7	10.0
2008-09:Q4	5.7	5.7	12.3	8.8	8.0
2009-10:Q1	4.6	5.5	11.8	7.6	7.5
2009-10:Q2	4.7	8.5	11.5	14.0	10.0
2009-10:Q3	8.1	10.2	7.9	0.8	7.3
2009-10:Q4	8.7	12.4	7.9	1.6	8.5

with international financial markets. Indian economy has, however, come out of slowdown with firm recovery specially in industrial sector and external trade since the second half of 2009-10.

V. CONCLUDING OBSERVATIONS

6.111 The recent global crisis was unique in terms of its intensity and synchronisation of slowdown across countries. The transmission of global shocks to the real sector in India has worked through various channels, notably, trade, finance, expectations and commodity price channels. In the Indian context, while traditionally the trade channel was the primary conduit of transmission of shocks to the real sector, financial channels have emerged stronger over time. Even the trade channel has become relatively prominent over time with a rising trade-to-GDP ratio for goods and services.

6.112 India's business cycle synchronisation has been strengthened by financial openness during the past few years. After the onset of the sub-prime crisis, it was debated whether India, along with other EMEs, had remained unscathed and decoupled from advanced economies, which were witnessing a severe slowdown. However, the growth of the Indian economy also slowed down from the third quarter of 2008-09, reflecting the increased business cycle synchronisation of India with advanced countries and EMEs, which invalidated the decoupling hypothesis.

6.113 The impact of the recent global financial crisis on the Indian economy was experienced directly through the trade channel, with export demand predominantly determined by external demand conditions. The Granger causal analysis revealed the direction of causal relation from exports to GDP growth rates but not *vice versa*. Commodity-wise patterns showed that engineering goods were more responsive to the global economy. On the other hand, the direction of the causal relationship between the trade deficit ratio and economic growth was from the latter to the former, attributable to the role of import demand driven by domestic economic activity. Thus, as the import demand also contracted in tandem with domestic activity, the adverse impact of the slowdown in external demand on the balance of payments position was contained. It is felt that to improve the prospects for exports on a more sustainable basis the emphasis should be on diversification, in terms of both markets and export items, and competitiveness, without making the sector remain dependent on incentives like tax breaks, lower excise and customs duties on inputs used for exports, and concessional interest rates on financing for exporters, even though such incentives may be necessary in a phase of contraction in global demand as a temporary support to the export sector.

6.114 The transmission of global shocks to India was also through services such as travel, software

and other ITES-BPO services. The global shocks adversely affected tourist arrivals and, hence, the demand for travel-related services such as hotels and transportation mirrored the slowdown. ITES-BPO services, which are highly export-dependent, experienced the direct and indirect effects of the global shocks in terms of loss of exports, which indirectly but significantly affected employment and domestic consumption demand emanating from this sector.

6.115 The commodity price channel operated mainly through shocks to international prices of primary commodities such as food, metals, oil, and minerals. The impact of such shocks on prices and real activity in an economy depends on their weight in the consumption basket. In India, the shocks to oil price, which are predominantly import-dependent, contributed significantly to domestic prices and real activity in the past. During the recent global crisis, the oil price shocks led to large fluctuations in domestic inflation. In recent periods, though India's food imports in the total import basket declined in significance, the global integration of food prices through rapid financialisation of commodity markets resulted in an increase in the correlation in domestic and world food price inflation. In fact, the global commodity cycle in the recent period reveals that the expansionary phase in food prices in India closely followed movements in the global commodity price cycles.

6.116 Consumption demand in India, though primarily driven by domestic consumption, was indirectly influenced by the external shocks. First, a slowdown in remittance inflows, which were impacted by both the slowdown in the US economy and the sudden collapse of oil prices in the Middle East countries, seems to have impacted consumption demand in India as a large part of the money repatriated to India is for family maintenance. The empirical literature also suggests some relationship between private consumption demand and remittance transfers to India. Second, the employment impact of export-dependent and employment-intensive sectors, such as gems and jewellery, cotton textiles, leather goods, and ITES-BPO services directly resulted in a significant loss of employment in these sectors and, hence, adversely affected consumption demand. Third, the uncertainty created by the loss of external demand and volatile global financial markets impacted the investment decisions of domestic firms, which led to overall compression in domestic investment demand.

6.117 The impact of the finance channel was mainly carried through portfolio flows external commercial borrowings, banking capital and trade credit. The decade of the 1980s heralded a regime shift in capital flows to India with the ascendancy of private capital flows in the form of external commercial borrowings (ECBs), Non-Resident Indian (NRI) deposits and short-term trade credit. The liberalisation of the foreign investment regime in the 1990s brought a further shift in capital flows to India, particularly equity flows. Capital flows have been intricately linked to interest rates, stock prices, exchange rates and commodity prices.

6.118 The deleveraging by global financial institutions and hedge funds resulted in a sharp reversal of capital inflows from India in 2008-09, which impacted the economy through a sharp reduction in equity prices, exchange rate and interest rate movements. The reversal of FIIs flows had a direct contribution to the fall of equity prices which, in turn, reduced the access of corporates to capital markets as their balance sheets became weak and the primary market turned illiquid. The tightening of credit conditions in international markets reduced Indian firms' access to overseas bond markets. At the same time, access to trade credit significantly declined, with rollover problems leading to compression in import demand. Banking capital also witnessed significant outflows which, in turn, led to deterioration in domestic credit conditions. The impact of capital inflows was reflected in slowdown in the growth of investment demand in the economy.

6.119 Despite substantial decline in net capital inflows from US$ 107 billion in 2007-08 to US$ 7.2

billion in 2008-09, the external sector of the economy exhibited resilience as the reserve loss (excluding valuation) was only US$ 20 billion during 2008-09. For the year as a whole, the current account deficit widened to 2.4 per cent of GDP in 2008-09 from 1.5 per cent of GDP in 2007-08. The significance of maintaining comfortable foreign exchange reserves, even with a largely flexible exchange rate regime, became evident during the year when one of the severest external shocks could be managed without any exceptional measures to modulate specific transactions in the current and capital accounts.

6.120 The final impact through trade, financial and commodity prices channels was reflected on growth. Growth, which decelerated with the cyclical slowdown in the first half of 2008-09, was magnified in the second half due to the contagion from the global crisis. The significant deceleration in private consumption and gross domestic capital formation along with contracting external demand necessitated expansion in public sector demand, both consumption and investment. In fact, it has been found that cyclical movements in GDP growth have been mainly driven by cyclical private consumption and gross domestic capital formations.

6.121 The industrial sector witnessed a slowdown or recession in most of the advanced countries and EMEs during the current crisis and the movements of the industrial sector in India have become highly correlated with advanced and EMEs in recent periods. The services sector also caught the downswings generated by the global crisis, but displayed strong resilience and cushioned the growth rate of the Indian economy. Although India's services sector has a competitive edge in several knowledge-based services, India needs to gain the competitive edge by improving physical infrastructure along with quality human resources in the remaining services. The services sector faces multiple challenges notwithstanding the high growth and resilience displayed in the recent period. In this regard, attention will have to be devoted to improve the policy framework in health and education, while the potential of services like professional, legal, postal, accountancy and insurance need to explored with further liberalisation.

6.122 Adequate infrastructure is the key to the development process. However, the development of infrastructure has large financing requirements and for this both the public and private sector need to collaborate. The Eleventh Five-Year Plan has estimated an investment requirement of over US$ 500 billion. The recent global crisis dampening the investment climate made it really challening to realise this investment. The challenge here is to make the investment attractive in terms of expected return on capital while also being fair to consumers and actual users of the infrastructure to enable the active participation of the private sector. In recent years, some progress is discernible in attracting private investment in infrastructure sectors such as telecommunications, power generation, airports, ports, roads and the railways through public-private partnerships (PPPs).

6.123 The Government of India and the Reserve Bank responded with appropriate fiscal and monetary policy measures, which were swiftly delivered in a forward-looking manner. While the Reserve Bank of India undertook swift and calibrated policy measures to improve both domestic and foreign exchange liquidity in the system, the government implemented counter-cyclical fiscal stimulus measures to support the sagging aggregate demand. Both monetary and fiscal policy measures appear to have brought the desired result as manifested recovery in GDP growth in 2009-10. The industrial sector has recovered from the slump witnessed in the second half of 2008-09 with buoyancy in growth since the first quarter of 2009-10. The services sector, however, continued to experience decelerated growth in 2009-10, although upturn in growth was witnessed in Q2 on account at payment of arrears of sixth pay commission. The services sector has been seen responding with a lag to the industrial sector and the current industrial recovery would spur the growth of industry-related services such as travel, transportation, financing, and business

services, generating some impulses for upward movement in the growth of the services sector.

6.124 There is an active debate on the timing and sequencing of expansionary monetary stance around the world. The exit from the current monetary policy accommodation could, however, be different across countries depending on the balance of risk to growth and price stability, types of balance sheet adjustments that have taken place during the crisis and the position of the economy in the business cycle. In the case of advanced countries, where central bank balance sheets have expanded substantially including the portfolio comprising mortgage-backed securities, commercial papers and corporate bonds, the exit policies may be constrained by the speed of revival and developments in the specific market segments. In contrast, the central bank accommodation in India was mainly done through unwinding of MSS and conduct of OMO, including LAF, and through special refinancing facilities in the banking system. Thus, the withdrawal of monetary accommodation in India should be feasible without an adverse impact on specific market segments (Mohanty, 2009).

6.125 The October 2009 Review of Monetary Policy for the Year 2009-10 brought forward the challenges faced by the indian economy while managing the recovery. The precise challenge for the Reserve Bank is to support the recovery process without compromising on price stability. This calls for a careful management of trade-offs. Growth drivers warrant a delayed exit, while inflation concerns call for an early exit. Premature exit will derail the fragile growth, but a delayed exit can potentially engender inflation expectations. The balance of judgment at the current juncture is that it may be appropriate to sequence the 'exit' in a calibrated way so that while the recovery process is not hampered, inflation expectations remain anchored. Thus, the 'exit' process began with the closure of some special liquidity support measures. The Reserve Bank began the first phase of 'exit', in October 2009 by withdrawal of most of the unconventional measures taken during the crisis period, followed by increase in CRR and policy rates. The government also, acting on the recommendations of the Thirteenth Finance Commission, initiated exit of the expansionary fiscal stance with partially rolling back the indirect tax rates and compressing non-plan expenditure during the budget 2010-11.

7 LESSONS FROM THE CRISIS AND FUTURE CHALLENGES

7.1 Unlike other financial crises, the seeds of the recent crisis were sown in advanced economies particularly the US. This crisis erupted there in the summer of 2007 and subsequently spread over to other parts of the world. It is now clear that multiple factors were responsible for the crisis. The proximate cause of the crisis might be the collapse of the housing cycle in the US and the associated rise in delinquencies on sub-prime mortgages, which imposed substantial losses on many financial institutions and shook investors' confidence in credit markets, but certain macroeconomic factors were also operating at the global level which enabled such booms to build up.

7.2 An inter-temporal comparison of crises shows that although the unfolding of recent financial turmoil embedded some new elements, more fundamental constituents have remained the same (see Chapter 2). The recurrence of crises reflects a basic pro-cyclicality in the system, which is characterised by a build-up of risk-taking and leverage in good times and an abrupt withdrawal from risk and an unwinding of leverage in bad times. Empirically it has been found that the patterns of asset prices in recent episode of crisis are reminiscent of those in other major financial crises episodes. The overall size of the US housing boom and its dynamics including rising house prices in excess of 30 percent in the five years preceding the crisis and peaking six quarters prior to the beginning of the crisis, bear remarkable resemblance to housing prices developments during some previous banking crises in advanced economies, *e.g.*, Finland, (1991); Japan, (1992); Norway, (1987); Sweden, (1991); and Spain, 1977 (Reinhart and Rogoff, 2008). Again, the prolonged US credit expansion in the run-up to the crisis is similar to earlier episodes, except that this time it was concentrated in one segment, *i.e.*, the sub-prime mortgage market. Nonetheless, there were some new dimensions with respect to its transmission and amplification that played an important role. These new dimensions included (i) the widespread use of complex and opaque financial instruments; (ii) the increased interconnectedness among financial markets, nationally and internationally, with the US at the forefront; (iii) highly leveraged financial institutions; and iv) the central role of the household sector.

7.3 The collapse of the US sub-prime mortgage market as the immediate cause of the global financial crisis revealed that some financial products and instruments have become so complex that they posed considerable risk to the global financial system which, in turn, led the world economy to a crisis in a synchronised mode. However, in order to understand the causes of the crisis, it is important to distinguish between the factors that contributed to rising defaults in the US sub-prime housing loan market and those factors that amplified these losses and resulted in major dislocations in financial markets. Factors that were directly responsible for rising losses in sub-prime housing can be identified as (i) the low interest rate/benign macroeconomic environment that encouraged lending and risk taking in a search for higher yield by investing in more complex financial products; (ii) regulatory structures that encouraged the increased use of securitisation and the expansion of the 'originate and distribute' mortgage model; (iii) less attention to credit quality; (iv) lack of due diligence among investors; and (v) weaknesses in risk management systems and regulatory oversight. Other factors that contributed and exacerbated the crisis included (i) the lack of transparency inherent in complex structured financial products in the over-the-counter market (OTC); (ii) difficulties and inexperience in using fair value accounting during

periods of stress; (iii) weaknesses in risk management systems across all financial market participants, particularly with regard to liquidity risk; (iv) insufficient disclosure about exposures and risks; (v) high degrees of leverage; and (vi) over-reliance on credit ratings and shortcomings in the credit ratings of structured products. More broadly, high leverage has been a significant factor amplifying losses, leading to some financial institutions to sell securities in the falling markets as they faced margin calls on earlier price falls. This contributed to downward price spirals (G-20 Study Group, 2008). In short, both macro and micro factors contributed to the financial crisis.

7.4 As a result of financial crisis - characterised by heightened systemic risks, falling asset values, and tightening credit - business and consumer confidence suffered a setback across countries and precipitated a sharp slowing in global economic activity. The impact on output, employment, trade and financial flows has been severe (see Chapter 3). In fact, with increasing trade and financial integration between advanced and emerging market economies (EMEs), the effects of the crisis have proved to be more contagious. In addition to the impact on GDP growth, the financial crisis impacted capital flows to EMEs through flight to safety and rising home country bias.

7.5 The synchronised nature of the crisis due to its potential contagion brought together governments and central banks across the globe for co-ordinated efforts in exploring ways to minimise the catastrophe in the world financial system. Therefore, the responses were manifold. Some short-term actions aimed at sustaining market liquidity and capitalisation, as concerns about losses from bad assets increasingly raised questions about the solvency and funding of core financial institutions. According to IMF (2009d), policy responses to global developments have been rapid, wide-ranging, and frequently unorthodox, but were too often piecemeal and failed to arrest the downward spiral. With the consequent impact of the collapse of Lehman Brothers, authorities in major mature markets attempted to instil confidence that no other potentially systemic financial institution would be allowed to fail. As discussed in Chapter 4, in the US and the Europe, significant direct capital support and guarantees were provided to a number of major banks that had toxic assets. More broadly, authorities have followed multifaceted strategies involving continued provision of liquidity and extended guarantees for bank liabilities to alleviate funding pressures, making available public funds for bank recapitalisation, and announcing policy measures to deal with distressed assets. However, this did not prove to be very convincing for financial markets due to the lack of details on these policies and the exit strategies. As inflation concerns dwindled and the macroeconomic outlook deteriorated further, central banks across the world resorted to a range of conventional and unconventional policy tools to support the economy and ease credit market conditions. Similarly, policy responses in EMEs, in response to moderating growth rates and rising external pressures due to decline in exports and capital flows, have varied considerably. Many countries, especially in Asia and Latin America, have been able to use policy buffers to alleviate pressures, letting exchange rates adjust downward but also used reserves to counter disorderly market conditions and to augment private credit, including, in particular, to sustain trade finance.

7.6 Simultaneously, besides the quick policy response, efforts at the domestic as well as global level began to introspect on the regulatory and supervisory oversight in light of the factors contributing to the evolution of the crisis. A number of high-level committees and working groups were constituted at the multilateral level to assess the changes required in the world financial system and to make recommendations on restructuring the regulatory and supervisory frameworks at the national and global level from the lessons thrown up by the crisis. The initiatives taken so far with respect to financial regulation and supervision have already been discussed (see Chapter 4). However, the views emerging for future reforms in this area are discussed and analysed in this chapter as reforms in the financial supervision and regulation

are expected to evolve after sufficient deliberations on each of the complex aspects. Due to increasing globalisation, the contagion of the crisis traversed to the EMEs, including India. The impact on various sectors of the Indian economy and the policy responses by the authorities are detailed in Chapters 5 and 6. The recent crisis appears to be 'beyond compare' despite the fact that it shares some important features with previous crisis. It had some unique characteristics relating to both its causes and its dynamics (Papademos, 2009). A number of important issues have emerged relating to the prevention and management of crisis which allow us to draw relevant lessons for both market participants and policy-makers. The analysis of underlying factors – whether macroeconomic or microeconomic – that were responsible for evolving and intensifying the crisis raises issues about the role of public authorities, *viz*., central banks, supervisors/regulators and governments in safeguarding financial stability.

7.7 The crisis has certainly questioned the efficacy of the existing institutional framework and available policy instruments at the national as well as international levels in ensuring global financial stability. It also raises skepticism about the functioning of financial markets and institutions, in particular their capacity to price, allocate and manage risk efficiently. The events of the past two years have revealed weaknesses in both private sector risk management and inadequacies in the public sector's oversight of the financial system. Thus, the lessons are not only manifold but also relevant for a diverse set of authorities entrusted with the task of maintaining financial stability. Most of these lessons, *albeit* not always straightforward, are not only most immediately applicable to the major advanced economies but also have a broader relevance for EMEs. The recent global crisis resembles past episodes of crisis in some dimensions. For instance, it is essentially an abrupt adjustment to past imbalances resulting from strong credit growth, fuelling higher equity and house prices. In addition, conventional factors such as asymmetric information once again explain the rapid spreading of the crisis to other parts of the financial system and other countries. Nonetheless, the recent crisis is distinct from other episodes of crisis notably regarding the massive underpricing of risk and explosive lending to non-creditworthy households (sub-prime mortgage debtors) prior to mid-2007. Furthermore, all the past crises, whether global or regional ones, were essentially traditional retail banking and currency crises.

7.8 The recent financial crisis also seems to share some similarities and dissimilarities with the East Asian crisis of 1997-98. For instance, both crises occurred because the volume of international financial flows increased considerably in recent decades. This evolution was underpinned by many factors including the deregulation of markets, which lifted capital controls in many developing countries, *de facto or de jure*; the high returns available on portfolio investment in East Asian financial markets; and the improvement of the general economic outlook. Another similarity with the recent global situation is the fact that the East Asian crisis also did reveal inadequacies in the management, supervision and regulation of financial institutions. While the instability of cross-border capital flows and exchange rate volatility played a crucial role in causing the East Asian crisis, they played only an incidental role during the recent crisis. Capital flows to EMEs turned volatile in late 2008 but only in response to the crisis, and did not play any fundamental causative role. As far as other distinctions between the East Asian crisis and the recent crisis is concerned, apart from the fact that the recent one originated in the US and European financial systems and not in EMEs, policy responses to the recent crisis appear to be more bold, comprehensive, and contra-cyclical. This time, the policy authorities attempted to strengthen aggregate demand as well as maintain credit availability to households and businesses. This was in sharp contrast to what occurred in Asia in 1998 where the high domestic interest rate policies adopted to encourage the retention of resources in national economies initially attracted further capital inflows and external borrowing by domestic

residents. This had led to financial institutions and the private sector assuming a growing level of foreign currency risk, which eventually made East Asian economies more vulnerable to external shocks. Nonetheless, the present challenge for policymakers is to build upon the lessons of all the past crises.

7.9 Against this background, this chapter attempts to draw lessons from the crisis and identify some of the future challenges. Section I of the chapter covers the lessons for the central banks, while Section II elucidates the lessons for financial regulation and supervision. Section III brings out certain lessons on international policy co-ordination followed by the role of international financial institutions in Section IV. Issues coming out of global imbalances and macroeconomic management are discussed in Section V, lessons for fiscal policy in Section VI and the role of credit rating agencies in Section VII. A proper balancing between the real and financial sectors is emphasised in Section VIII. The lessons for EMEs and India are detailed in Section IX. The major challenges for policymakers have been discussed in Section X. Finally, Section XI presents the concluding observations.

I. LESSONS FOR CENTRAL BANKS

7.10 With the occurrence of any economic and financial crisis, the role of central banks becomes critical. During the recent financial crisis, central banks became the first line of defence in sharp contrast to their standard association with lagged transmission and lender of last resort. In doing so, central banks reinvented themselves towards the unconventional and unprecedented role. With the experience of the Great Depression, central banks around the world, including the US Federal Reserve which was often criticised for continuing deflationary policies and aggravating the situation during that time, have become more aware of the importance of monetary policy in regulating the economy. In this context, Friedman and Schwartz (1963) deserve credit for highlighting the role of monetary factors during the Great Depression in their book on US monetary history. The East Asian crisis was also partly attributed to the Japanese zero interest rate policy to fight deflation which helped create the carry trade that generated bubbles in Asia whose effects brought down Asian economies. In fact, a great deal of research on the causes of the Great Depression and other subsequent episodes of crisis suggests that central banks and other governmental agencies have an important responsibility to maintain financial stability. The central banks' role becomes crucial not only as lenders of last resort, but also because they are considered to be better equipped to look at both financial system and economic cycles. Central banks' proximity to the banking system provides them with an intimate knowledge of financial dynamics and they are supposed to provide a candid assessment on the evolving dynamics of the economy. In the recent crisis, central banks played a decisive and active role in limiting the impact of the crisis by taking rapid and innovative policy decisions, sometimes in co-operation with other central banks. Experience of crisis shows that there is a good case for bringing financial stability higher in the priorities of central banks. Thus, it is widely perceived that there is a need to revisit and redefine the role of central banks. In this context, the following issues have attracted attention in policy discussions.

Asset Prices and the Role of Monetary Policy

7.11 The recent financial crisis motivated a review of financial stability frameworks and, within that, the role of central banks in financial stability. The crisis has brought to the limelight the fact that financial imbalances and excesses were building up in an environment of macroeconomic stability and price stability. The pre-crisis consensus on the best practice in monetary policy framework as the one characterised by 'a single target' (*i.e.*, price stability) and 'a single instrument' (*i.e.*, short-term policy interest rate) has again become a subject of debate among policymakers and researchers. Price stability should be an important goal of money policy, but not the sole one. An important lesson of the crisis is that the single-minded focus on price

stability may have yielded low and stable inflation in terms of prices of goods and services, but the lowering of returns in the commodity/service producing sectors could have diverted the search for yields to the financial sector. The primary lesson that emerged from the crisis is that financial stability can be jeopardised even if there is price stability and macroeconomic stability (Subbarao, 2009d). The myth of complementarily between price and financial stability proved to the wrong. In fact, contradictions are more clearly apparent now. Thus, it needs to be examined whether financial stability has to shift from being an implicit variable to an explicit variable of the economic policy.

7.12 The recent crisis has led to a debate whether economic policy should be used to rein in booms. If so, does this fall under the responsibility of monetary policy? Till the onset of the crisis, it was largely argued that price stability was necessary and (nearly) sufficient for economic growth and financial stability. However, success in stabilising goods prices was often accompanied by inflation in asset prices, causing unsustainable speculation that led to asset booms. During the pre-crisis period, inflation spread from financial asset prices to petroleum, and then to other commodities and food, as they were increasingly treated as financial asset classes subject to financial investment and speculation. It is not that the issue of money and credit being important for the analysis of asset price development is entirely new. After the Great Depression, Fisher (1932) investigated the reasons for various booms and depressions. Among other things, he stressed the role of monetary factors by pointing to the fact that in all cases real interest rates had been too low and thus monetary factors were aggravating the bubbles. Other studies focusing on other past episodes of asset price booms and busts apparently found substantial, *albeit* unintentional, monetary policy mistakes (Bordo and Jeanne, 2002; Borio, *et al.* 1994; Gerdesmeier, *et al.* 2009; Issing, 2002). Thus, the lesson that re-emerges from the crisis is that monetary policy decisions should be sensitive to the sources of inflation. It is now increasingly felt that central banks need to assess the impact of their policy on the broader canvas of macroeconomic stability rather than merely price stability. In fact, stability of all types is core to the goals of a central bank - price stability, output stability, financial stability - with the hierarchy of weights assigned to each flexibly according to underlying macroeconomic and financial conditions. The concept of national and global macroeconomic stability, therefore, also needs to be broadened.

7.13 Although there are contrasting arguments regarding the role of monetary policy in pricking asset bubbles, it has been increasingly emphasised that the relationship between monetary policy and asset prices needs to be revisited. The first school of thought perceives that asset prices are often subject to bubbles and crashes. These can have strong pro-cyclical effects that can also affect the stability of financial markets. Since central banks are generally held responsible for financial stability, they should monitor asset prices and try to prevent the emergence of bubbles (that invariably lead to crashes). In this view, the use of the interest rate is seen as an effective tool in preventing bubbles from emerging. For instance, Papademos (2009), Meltzer (2009) and Orphanides (2010) emphasised that one of the lessons from the recent crisis is that monetary policy tools should also be employed to prevent asset market excesses and the systemic and deflation risks they entail.

7.14 The second school of thought has been dominated by the famous Greenspan orthodoxy on asset price build-up. Bernanke and Gertler (2001) argued that central banks should disregard asset prices in their policy formulation. They found little, if any, additional gains from allowing an independent response of central bank policy to the level of asset prices. In support of this proposition, the first argument is that it is difficult to identify bubbles *ex ante*. It is argued that central banks may not have better information than markets to influence asset prices. The second argument is that even if a bubble can be identified *ex ante*, using the interest rate is ineffective in bursting a bubble. All that the central bank can do is to limit the

damage once the bubble bursts (Grauwe *et al*. 2008). Bernanke (2010) accorded greater priority to efforts towards strengthening the regulatory system. Mishkin (2008) and Taylor (2010) also did not see any role of monetary policy in bursting asset price bubbles. Arguing against the role of monetary policy, Mishkin (2008) opined that in most cases monetary policy should not respond to asset prices *per se*, but rather to changes in the outlook for inflation and aggregate demand resulting from asset price movements. Since it is difficult to identify asset price bubbles with certainty, any monetary policy response to misidentified bubbles may hamper the growth process. Similarly, monetary policy response to tackle an asset boom can interfere with the role of asset prices in allocating resources, particularly if there is uncertainty with regard to the presence, nature or extent of a bubble. In short, this school of thought perceives that monetary policy can do more harm than address the issue. Arguing that most central banks already have their hands full using one tool (the short-term interest rate controlled by the central bank) to hit two targets (low inflation and full employment), Calomiris (2009) argued that adding a third target to monetary policy of identifying and deflating asset bubbles would be undesirable as it would undermine the ability of central banks to use interest rates to meet the key goals of monetary policy. Instead, he recommends that prudential regulation is ideally suited to addressing asset market bubbles, since loose credit supply has been so closely identified historically with the growth of asset bubbles. Mohan (2009a) suggested that pre-emptive and calibrated monetary and regulatory measures would be better than an inertial monetary policy response.

7.15 Despite these contrasting arguments with their own merits and demerits regarding the role of monetary policy, it is realised that the policy of benign neglect of asset price build-up has failed and price stability does not necessarily deliver financial stability. The recent crisis clearly falsified the pre-crisis consensus view for monetary policy analysis, which builds upon models where financial conditions, *e.g.*, developments in asset prices, quantity of money and credit, play at most a very limited role in macroeconomic outcomes and transmission of monetary policy. Under that framework, they may reflect, or even anticipate; underlying economic conditions, but they do not provide any feedback on those conditions. The pre-crisis consensus view also rested on a presumption that strong asset price dynamics and misalignments tend to be associated with strong inflationary pressure. Thus, any central bank responding to a surge in inflation would be automatically addressing such financial imbalances. However, the dot-com boom and bust in 2000 and the recent global crisis coinciding with relatively low and stable inflation in most parts of world point towards a more explicit role for financial conditions in formulating monetary policy. Therefore, it is increasingly felt that the mandate of monetary policy should include macro-financial stability and not just price stability. Central banks should adopt a broader macro-prudential view, taking into account in their decisions asset price movements, credit booms, leverage, and the build-up of systemic risk. In fact, the stance of monetary policy, which is typically set in a forward-looking manner, should provide the lead indicator for the stance of macroprudential policies.This broader approach to monetary policy might require that concern for macro-financial stability be explicitly included in central banks' mandates. However, expectations should be realistic as even the best leading indicators are found to be imperfect.

7.16 With regard to the appropriate response of central bankers to a crisis, IMF (2009f) underscores that central banks have to assess (i) the potential gains from reacting to signs of emerging financial vulnerability, (ii) whether other policies can be used and (iii) the trade-offs between focusing output on stabilising output and inflation and attempting to reduce the risk of asset price booms and busts. In other words, there is definitely a greater role for monetary authorities to assess the signs of increasing macro-financial risks and to suggest a suitable policy response. Central banks should

communicate their concerns on the sustainability of strong increases in asset prices and contribute to a more objective assessment of systemic risks. In this context, the recommendations of the Report of the G-30, "Financial Reform: A Framework for Financial Stability", *inter alia*, on the greater role of central banks in ensuring financial stability are also noteworthy. A recent Report of Squam Lake Working Group on Financial Regulation (June 2010) also emphasised that central banks should be the supervisors of overall financial stability.

7.17 To sum up, recent developments show that a crisis can emerge in any segment of the financial system. In view of this, there is no room for complacency for monetary and regulatory authorities. The lesson is that there is more to monetary policy than just fighting inflation. With excessive focus on inflation, some central banks ignored what was happening to their financial markets. Hence, central banks need to continuously monitor the nature of asset price booms and decide whether monetary policy has any role in minimising the risks associated with booms of a speculative nature. At least they need to assess the aggregate cost associated with inflation and asset prices, if they remain unchecked. For this, central banks may have to develop new measures of systemic risks so that the distinction between genuine and speculative booms can be made explicit. Even though the issue of explicit inclusion of asset prices in the mandate of monetary policy is still a debatable issue, central banks would, in any case, need to improve the underlying analytical framework of their monetary policy. It is essential that monetary policy strategy provides the framework for such analysis so that asset price movements, monetary and credit developments, the build-up of financial imbalances and the emergence of potential systemic risk are closely tracked.

Adequate Provision of Liquidity as a Lender of Last Resort

7.18 In addition to the conduct of monetary policy, a vital responsibility of central banks in most countries is to perform the role of lender of last resort (LOLR). At its core, the LOLR function is to prevent and mitigate financial instability through the provision of liquidity support either to markets or individual financial institutions. However, the recent crisis has brought to the fore the issue of the efficacy of central banks as LOLR and raised the question of whether the tools available with them are sufficient for confronting the challenges posed by a crisis (Bernanke, 2009c; Cecchetti and Disyatat, 2009). The failure of Lehman Brothers indeed demonstrated that liquidity provision by the Federal Reserve would not be sufficient to stop the crisis and substantial fiscal support was necessary. In fact, financial innovation in recent years greatly enhanced the reliance on markets for liquidity management. Financial innovations have also broadened the definition of liquidity, making it more difficult to differentiate between liquidity crisis and solvency crisis. Thus, experience shows that the concept of liquidity can no longer be confined to the ability of an institution to raise funds against the collateral of its assets ('funding liquidity'), but must now encompass its ability to dispose of assets quickly into deep markets at predictable prices ('market liquidity'). The recent crisis clearly demonstrated that channelling emergency liquidity assistance through the interbank market would not work if the interbank market was not functioning properly. As the crisis unfolded, a radically changed concept of the LOLR had to be put into practice by the central banks. Central banks provided extraordinary monetary accommodation to deal with all types of liquidity shortages faced by banks and financial institutions. Central banks expanded the scope of their operations by extending maturities, broadening the range of collateral, increasing the number of counterparties, and introducing swap lines. Further, guarantees and the direct purchase of a range of private sector securities were used.

7.19 The recent crisis has made it abundantly clear that the interaction of funding liquidity with market liquidity can create difficult challenges for central banks. Thus, central banks should envisage such runs in markets and not just banks, which

given mark-to-market accounting, leads to threats to the liquidity and solvency of banks *via* changes in market prices. In this regard, based on developments in 2007 and 2008, IMF (2009e) reveals that unconventional tools like capital injections and asset purchases were more effective in reducing the default risks of banks than conventional tools in the post-Lehman period. In this connection, it is worth highlighting that the Reserve Bank had realised the need for unconventional policy options quite early in October 2007. The Reserve Bank in its Mid-term Review of Annual Policy of 2007-08 had stated that it was ready to take recourse to unconventional policy responses to developments in the financial markets.

7.20 Cecchetti and Disyatat (2009) argued that central banks are likely to require their operational frameworks to include (i) flexibility; (ii) far-reaching counterparties; (iii) a wide range of eligible collateral; (iv) clear communication of intended actions; (v) close co-ordination with fiscal authority; and (vi) close co-operation with other central banks. The crisis has provided useful guidance for re-designing central bank liquidity frameworks to facilitate more effective crisis management in future. It would be important for central banks to undertake further refinements and augmentation of their liquidity management frameworks not just for crisis management but also for day-do-day operational purposes and monetary transmission. In this context, mandated reserve requirements can ensure liquidity buffers that can be used in a crisis and also exploit synergies with payment system liquidity. An important consideration for the functioning of liquidity management as well as the payment system is the prescription of liquidity ratios in terms of the highest quality collateral as is the statutory liquidity ratio prescribed by the Reserve Bank of India. It is increasingly argued that Bagehot's view of the lender of last resort requires modification. As the financial system has become more complex, so have all facets of the role of central banks. The theory of the LOLR needs to be refined by identifying the nature of liquidity shortages that can occur in the modern financial system. It could be: (i) a shortage of central bank liquidity, (ii) an acute shortage of funding liquidity at a specific institution, or (iii) a systemic shortage of funding and market liquidity. The appropriate principles for central banks' LOLR support must be conditioned on the particular type of liquidity shortage that takes place. Bagehot's dictum of providing liquidity to illiquid but solvent banks at penal rates applies only to the benign situation of liquidity shortages. Otherwise, a systemic event would definitely require lending at an effectively subsidised rate compared with the market rate while taking collateral of suspect quality. Thus, central banks need to adopt a more flexible approach and strengthen their capacity to provide liquidity and respond to systemic shocks. This will help central banks restore confidence in short-term money markets in a phase of acute liquidity shortages of a systemic nature.

Communication with the Market

7.21 Another issue that recent global developments have highlighted, *albeit* rarely emphasised, pertains to the communication of central banks with the market. Although central banks have attempted to minimise the economic impact of the financial crisis, they have often faced criticism for either doing too much or too little. As mentioned above, due to lack of comprehensiveness on various policy responses, particularly in advanced economies, credit and financial markets remained unconvinced about the policy measures and did not react positively for some time. This underscores the importance of communication by policy authorities, including central banks, with the markets.

7.22 During the recent crisis, central banks in both advanced as well as EMEs resorted to various unconventional policy measures to instil confidence and stabilise the markets. However, uncertainty about the effectiveness of unconventional monetary policy and extraordinary measures might push the boundaries of monetary policy. Thus, these aspects can be dealt with by better communication by the central bank with markets (Mohanty, 2009). Central banks face several dilemmas in designing an

appropriate communication policy. What should be communicated and to what degree of disaggregation is one set of issues. The second set of issues relates to the stage of evolution of internal thinking and debate when the information should be disseminated. The third set relates to the timing of communication with reference to its market impact. The fourth relates to the quality of information and the possible ways in which it is perceived. Thus, alleged incoherence or an element of ambiguity at times on the part of central bankers in explaining policies is as much a reflection of the complexity of the issues as it is of the differing perceptions of the variety of audiences to which the communication is addressed (Reddy, 2006).

7.23 In this context, Shirakawa (2009) elaborates "careful explanations while continuously evaluating both the positive and adverse effects of the steps taken become critical. Even during times of crisis, if central banks take time-inconsistent policy measures, this could rather have negative effects on confidence in the central bank and, as a result, reduce the effectiveness of monetary policy. At the end of the day, the central bank needs to communicate its aims and strategies in response to the characteristics of the problem the economy faces, and also needs to take policy measures which are consistent with the communication." Citing communication policy of central banks as an important tool, Bernanke (2009a) argues, "[e]ven if the overnight rate is close to zero, the Committee should be able to influence longer-term interest rates by informing the public's expectations about the future course of monetary policy……..To minimise market uncertainty and achieve the maximum effect of its policies, the Federal Reserve is committed to providing the public as much information as possible about the uses of its balance sheet, plans regarding future uses of its balance sheet, and the criteria on which the relevant decisions are based." Pointing out the lack of communication during the Northern Rock fiasco, Wood (2009) argues "[t]he authorities charged with maintaining financial stability should have a clear plan of action for when that stability is threatened. They should make clear in advance what that plan is, and, when it needs to be implemented, it should be announced that the plan is being used, and each stage in the crisis resolution described as it goes along…The unexpected will almost certainly happen during a crisis. When it does, there should be someone in overall charge of the response who can co-ordinate what is done to deal with unplanned for events. And this person should have a clear communication strategy to explain this response – ideally, this person should do the explaining." It is often argued that the monetary policy measures of the European Central Bank and the Federal Reserve are more predictable than those of the Bank of England (Ehrmann and Fratzscher, 2007).

7.24 Not only central bank policy measures need to be clearly communicated, the dissemination of information on economic outlook by central banks is also important. It is often argued that central banks have better information on economic outlook and assume special credence among market players as evident in the case of the communication policy of the Federal Reserve. However, it has also been argued that the forward guidance given by US monetary authorities contributed to a considerable underpricing of risk that was an important ingredient in the unfolding of the global financial crisis. Thus, the extent to which central banks should give forward guidance remains a subject of active debate. Nonetheless, during crisis, it becomes important for central banks to ensure that their communication with the market is clear enough to add certainty and predictability. It is also emphasised that clarity of communication over some of the withdrawal strategies, *i.e.*, unwinding of unconventional policies, is critical for markets. In addition to a well-defined strategy for unwinding unconventional policies, confidence in the financial system will be bolstered by clarity over future regulatory reforms needed to address systemic risks. In short, central banks have to reiterate explicitly their commitment to the stability of financial markets and the financial system. This will make their monetary policy implementation and transmission process more effective in future.

II. LESSONS FOR FINANCIAL REGULATION AND SUPERVISION

7.25 One of the most salient lessons to emerge from the crisis is that free markets should not necessarily be unregulated markets. In fact, market discipline and supervision should complement each other. Whilst the creation of complex financial securities from sub-prime mortgages given to borrowers with poor credit histories could be regarded as the catalyst for the recent crisis, the roots of the financial regulation problem go much deeper. All the influential reports from major international forums [*e.g.*, the G-20 Working Group I Report (2009), the de Larosière Report (2009), the Turner Review (2009), the Geneva Report (2009), and the Group of Thirty Report (2009)] have highlighted that one factor responsible for the crisis was the gap in the regulatory and supervisory aspects of the financial system. These reports raised a number of issues and identified possible directions in which the regulation of the financial markets may move. The G-20 Working Group I on "Enhancing Sound Regulation and Strengthening Transparency" reviewed the regulatory aspects and accordingly made recommendations to strengthen international regulatory standards, enhance transparency in global financial markets and ensure that all financial markets, products and participants are appropriately regulated.

7.26 Although diverse views still exist in certain areas, there is growing consensus in certain key areas, *viz.*, redefining the scope and boundaries of financial regulation and supervision, managing the pro-cyclicality in the system, strengthening capital and provisioning requirements, and refining valuation and accounting rules. It has been seen that even stricter regulation of the regulated part can push activity into the unregulated part (*e.g.*, SIVs and conduits). According to Buiter (2009), "What is clear is that a lot more regulation, and regulation different from what we have had in the past, will be required to reduce the likelihood of future systemic failures and to better align private and public interests." Some issues that need a closer review of regulators and supervisors are discussed below.

Importance of System-wide Approach

7.27 The recent financial crisis has exposed how important the inter-connections are among the banking system, financial markets, and payment and settlement systems. Such inter-connections make the overall financial system more prone to contagion of risks. Thus, since the onset of the crisis, the need to focus on systemic risk is increasingly recognised. It has become clear that regulators need to look at system-wide risk and not just individual institution-specific risk. The supervisors and regulators need to evaluate the financial system in its entirety, given the experience that developments in one area can often have a damaging impact elsewhere. In addition to having a vertical perspective on supervision, the horizontal interconnectedness across banks, financial institutions, markets and geographies also needs to be recognised in policy formulation.

7.28 It is evident that regulation and supervision were too firm-centric to see through to the systemic risk. In particular, policymakers missed the moral hazard implicit in too-big-to-fail firms outside the regulatory ambit (which prompted excessive risk-taking) and the negative externalities when firms too-interconnected-to-fail failed. Experience shows that regulation and supervision at the institution level is necessary, but may not be sufficient in such cases. Thus, it is necessary that the micro-prudential approach is supplemented by a macro-prudential approach. Although a number of policy institutions, particularly central banks, enhanced their analysis of systemic risks in recent years and many of the systemic vulnerabilities that caused or enhanced the current turmoil had in fact been identified, policy mechanisms to effectively translate these analyses into policy action have been lacking. Thus, financial sector authorities should have suitable macro-prudential tools to address systemic vulnerabilities.

7.29 The conventional wisdom that market discipline and self-regulation would deter excessive risk-taking by lightly regulated and unregulated

institutions has become debatable. Thus, the important lesson involves understanding why markets often do not work the way they are meant to. There are many reasons for market failures. In this case, too-big-to-fail financial institutions had perverse incentives. It is evident that market discipline was ineffective even in constraining risk-taking outside the banking sector. Some unregulated entities were able to undertake credit and liquidity risks in a big way with a high degree of leverage. It has been realised that non-banking entities are systemically important as they carry the potential to impact the functioning of key financial markets and their confidence. Markets and regulators clearly failed to recognise the problems of flawed incentives, information gaps, procyclical lending, and risk concentrations behind the financial innovation boom. This shows the lack of a system-wide approach in regulatory and supervisory mechanisms, particularly across the advanced economies. Regulators and supervisors were not aware of emerging systemic risks associated with the interaction of regulated and unregulated entities, activities and markets (IMF, 2009a). This limited scope of regulation allowed financial innovations to happen without accompanying risk management practices. Regulators should ensure that financial institutions are less leveraged but more liquid.

7.30 The continuing growth in the size and complexity of many banking institutions in advanced countries exposed them to a wide array of potential risks, while at the same time making it more challenging for a single supervisor to have a complete view of firm-wide risks and controls. Such inadequacies could be attributed to fragmented regulatory structures and legal constraints on information sharing. Given the complex inter-linkages between banks and non-banks and the move towards conglomerates, it is important that regulatory loopholes are fixed to avoid regulatory arbitrage. Further, it is necessary that system-wide or macro-prudential oversight is adopted, which broadens the mandate of regulators and supervisors to encompass consideration of potential systemic risks and weaknesses as well. In the context of US, Bernanke (2009b) and Tarullo (2009) suggested that all systemically important financial firms, and not just those affiliated with a bank as provided for under the Bank Holding Company Act of 1956, should be subject to a robust framework for consolidated supervision. Likewise, Ram Mohan (2009) emphasised the need for examining whether all systemically important financial institutions must be subject to central bank regulation.

7.31 It is important to recognise that focus on only one part of the financial system can obscure vulnerabilities that eventually may prove very important. Thus, supervisory practices need to be revamped by making them more co-ordinated and multi-disciplinary. With the recent crisis, the assumption that the failure of a large bank would be more costly than the failure of a large non-bank also became questionable. The systemic importance of non-banks was not well appreciated. Thus, it is widely perceived that the scope of financial sector surveillance needs to be expanded to a wider range of institutions and markets. Emphasising on instituting a macroprudential approach to supervision, IMF (2009a) and Bernanke (2009b) suggest setting up a separate regulator to take care of systemic risk, although the efficacy of such proposals is doubted by Taylor (2010). Tarullo (2009) also suggests a major revamp of the regulatory and supervisory system to address the problem of systemic risk. However, it is important that the scope of regulation is expanded by national authorities in close co-ordination and under guidance provided by international bodies, such as the Financial Stability Forum and the Basel Committee on Banking Supervision. This is required to ensure broad consistency across jurisdictions. The G-20 Working Group I recommended that the boundaries of the regulatory framework should be reviewed periodically within national jurisdictions, in light of financial innovation and broader trends in the financial system. International bodies will

promote good practice and consistent approaches in this area. In a similar vein, Turner Review (2009) recognised that that there was inadequate focus on the analysis of systemic risk and of the sustainability of entire business models, and a failure to design regulatory tools to respond to emerging systemic risks. The Geneva Report on the World Economy (Brunnermeier *et al*. 2009) also suggested a fundamental re-appraisal of the basis for financial regulation and sets out a proposal on how the existing Basel II regulations should be modified to incorporate macro-prudential goals.

7.32 In short, the principal lesson of the crisis is that an approach to supervision that focuses narrowly on individual institutions can conceal broader problems that are building up in the system. In order to ensure financial stability, macroeconomic as well as regulatory and supervisory policies need to be redesigned with a focus on mitigating systemic risks. Regulations need to be incentive-compatible, across institutions and over time, while balancing possible adverse impacts on innovation and efficiency. In the case of an institution whose distress may have systemic externalities, the regulatory structure should provide incentives enabling it to internalise such costs in its business planning and risk management. All systemically important financial institutions, markets and instruments should be subject to an appropriate degree of regulation and oversight, depending on their local and global systemic importance. In fact, size and interconnectedness need to be examined together when assessing systemic importance. The adoption of a macroprudential approach to financial stability by regulators and supervisors would help strengthen resilience in the financial system. However, this does not mean that micro-prudential factors are less important. In fact, the macro-prudential approach subsumes the rationale for its micro-prudential approach. The need is to understand and undertake the improvement of micro-prudential regulation and the development of macro-prudential regulation.

Policies to Mitigate Pro-Cyclicality in Regulation and Accounting

7.33 The recent crisis reflected the broad rise in risk-taking and leverage that took place in the preceding years. There was a build-up of risk-taking and leverage in good times and an abrupt withdrawal from risk and an unwinding of leverage in bad times. It is evident from recent developments that private sector behaviour and practices, prudential regulation, and macroeconomic policies can act to magnify cycles and have detrimental effects. To some extent, the fair value accounting system also operated in a pro-cyclical fashion to exacerbate financial stress. Subramanian and Williamson (2009a) argued "[t]he existing regulatory system not only fails to recognise that the dangers in the system were to a large extent due to cyclicality, but itself tends to reinforce the pro-cyclical tendencies." Thus, there is a need to re-examine the existing regulatory and institutional practices to ensure that they do not exert a pro-cyclical impetus.

7.34 According to IMF (2009a), there is an emerging consensus among market participants and regulators that current loan loss provisioning rules and practices tend to have a too short-term horizon, and are backward looking, thus recognising risks too late and allowing excessive risk-taking during economic upswings. In order to avoid the outsized effects of a crisis in future, new policy responses need to be identified that could help to mitigate pro-cyclicality. In this context, the G-20 Working Group on "Enhancing Sound Regulation and Strengthening Transparency" underscored the need to mitigate pro-cyclicality by promoting the build-up of capital buffers during economic expansion and by dampening the adverse interaction between fair valuation, leverage and maturity mismatches in times of stress. Andritzky *et al.* (2009) suggested that two issues require immediate attention, *i.e*., (i) adapting prudential regulations so as to explicitly counter-cyclical tendencies; and (ii) encouraging larger liquidity buffers, perhaps even formal liquid asset minimums, to offset the under-pricing of liquidity risk by financial firms in upturns.

7.35 The Geneva Report (2009) proposed to tackle the issue of pro-cyclicality by adding a system of macro-prudential regulation to the existing system of micro-regulation. This would help increase banks' capital adequacy ratios during booms and reduce them in periods of crisis, providing a deterrent to increasing credit during the period of boom and an incentive to lend during the period of slowdown. Similarly, more aggressive provisioning requirements may help mitigate pro-cyclicality during periods of high credit growth during a boom. However, these measures are desired only once conditions in the financial markets stabilise. The rapid implementation of measures towards mitigating pro-cyclicality with inappropriate sequencing and timing may further destabilise financial markets and harm weak institutions. Concerns have also been raised that the enhanced risk-sensitivity in the Basel II capital requirements could exacerbate potential pro-cyclical behaviour. Suggesting the regulatory response to crisis, Turner Review (2009) recommended that regulators should take immediate action to ensure that the implementation of the current Basel II capital regime does not create unnecessary pro-cyclicality. This can be achieved by using 'through the cycle' rather than 'point in time' measures of probabilities of default. It also emphasised that the regulatory framework, in general, and its capital component, in particular, do not amplify the business cycle. In order to address the issue of pro-cyclicality, regulators have to focus on (i) improving and diversifying market risk management models, (ii) identifying factors that amplify cycles, (iii) undertaking more rigorous stress testing and (iv) adopting forward-looking procedures to capital calculations to dampen their inherent pro-cyclicality. In the same context, the High-Level Group on Financial Supervision in the EU (Chairman: Jacques de Larosière) in its report of February 2009 observed that it was not appropriate to blame the Basel II rules *per se* for being a major cause of the crisis. However, the report emphasised a fundamental review of Basel II.

Enhancing Transparency and Disclosure

7.36 Recent developments are testimony to the fact that when information is imperfect, markets often do not work well and information imperfections are key in finance and the associated externalities are pervasive. The major weakness that the crisis has highlighted is the lack of transparency inherent in complex structured finance products and in the OTC market that contributed to market liquidity drying up. Risk disclosure is found to be a key component of transparency in the case of structured products. The G-20 working Group I in its Report (March 2009) noted that, in many cases, investors and other market observers could obtain only minimal information about pricing, trading volumes, and aggregate open interest in various products that trade in the OTC markets.

7.37 In fact, there were many areas where a lack of transparency contributed to a loss of confidence, which intensified the crisis. One particular area was the case of over-the-counter securities such as asset-backed securities (ABS), commercial mortgage-backed securities (CMBS), residential mortgage-backed securities (RMBS) and collateralised debt obligations (CDOs) and their associated derivatives. In order to deal with the systemic consequences of opacity in counterparty risk, regulators must ensure that derivatives contracts are cleared through a clearing house, thereby eliminating the problem of measuring counterparty risk.

7.38 There was also a transparency issue associated with the ratings of structured financial instruments. Since structured finance products were too complex to be understood by the majority of the investor class, investors over-relied on credit ratings instead of undertaking adequate due diligence. This complexity also meant that exposures to sub-prime lending were difficult to determine, which contributed to difficulties in assessing counterparty risks. In addition, as markets deteriorated, concern regarding estimates of the fair value of assets rose. Turner (2009) observed that some banks were truly doing

'originate and distribute', but the trading operations of other banks (and sometimes of the same bank) were doing 'acquire and arbitrage'. Although it is clear that leverage played a role in the magnification of losses, it needs to be better understood how instruments that were designed to spread and diversify risks ended up concentrating the risks. The new model left most of the risk still somewhere on the balance sheets of banks and bank-like institutions, but in a more complex and less transparent manner.

7.39 Lack of transparency not only made the risk assessment mechanism of regulators inadequate but also restrained investors from exercising due diligence before taking investment decisions. Thus, the crisis underpinned the need for greater market transparency about the techniques, data characteristics, and caveats surrounding the valuation of complex financial instruments; improved information regarding OTC markets and clearing arrangements; and reporting of exposures (on and off-balance sheet) in a format that permits regulators to aggregate and assess risks to the system as a whole. In addition, the crisis brought out the weaknesses in public disclosures by financial institutions. Lack of adequate disclosure regarding the type and magnitude of risks associated with on and off-balance sheet exposures of banks and financial institutions damaged market confidence during the turmoil.

7.40 Efforts have already begun to address the issue of lack of transparency. In this direction, several accounting standard setting bodies have provided guidelines to clarify expectations for the valuation of financial instruments, including complex financial products. Further, the G-20 Working Group I (March 2009) observed that prudential supervisors in many jurisdictions have tried to encourage their internationally active financial institutions to enhance disclosure by adopting leading risk disclosure practices addressed in a report by the Senior Supervisors Group to the Financial Stability Forum (FSF). According to IMF (2009b), transparency measures would help final investors perform some of the due diligence currently outsourced to rating agencies, while also helping the latter do a better job of measuring tail risks.

7.41 In short, there is wide consensus on the need for reviewing financial regulation. The new global risk environment and the speed of developments have increased dramatically, leaving policymakers with less time for a suitable policy response. The key lesson for supervisors is the need to remain attentive to the emergence of new risks, particularly in the face of rapid financial innovations. They also need to take due cognisance of the increasing interconnectedness of the regulated and unregulated segments of the financial system. There is a need for regulation staying ahead of the curve, and for continually upgrading the skills and instruments for financial regulation and supervision. In addition, it needs to be ensured that prudential regimes encourage incentives that support systemic stability and discourage regulatory arbitrage, and assure effective enforcement of regulation. Increasing the effectiveness of supervision must be the top priority for supervisory institutions. At the same time, it needs to be ensured that over-regulation does not harm the dynamism of the economy or incentives for further innovations.

Effective Regulation of Cross-border Institutions

7.42 With greater global financial integration and the significant increase in cross-border lending and investment in the past decade, a financial crisis in one country or region could result in large negative effects on other economies. During the pre-crisis period, national supervisory authorities were not apparently active in sharing information and identifying a build-up of vulnerabilities in globally active and systemically important financial institutions. Thus, the crisis clearly revealed the limits of local policy responses in dealing with the activities of systemically important financial institutions operating at the global scale, markets and instruments.

7.43 In view of this, it becomes necessary to formulate a robust framework for regulating cross-border institutions that provides guidance on the roles and responsibilities of authorities in home and host countries. IMF (2009b) also emphasises the need to tackle political and legal impediments to the regulation and resolution of cross-border institutions. Highlighting the need for better co-ordinated supervision internationally and a robust global resolution framework, Mohan (2009b) argues that in order to avoid regulatory arbitrage, there is a need for greater consistency in the regulation of similar instruments and of institutions performing similar activities, both within and across borders.

7.44 In this context, some of the recommendations by Turner Review (2009) are noteworthy. These include (i) the establishment and effective operation of colleges of supervisors for the largest complex and cross-border financial institutions, (ii) off-shore financial centres to be covered by global agreements on regulatory standards, and (iii) enhancing international co-operation among supervisors, central banks and finance ministries for the pre-emptive development of crisis co-ordination mechanisms and contingency plans. Further, it suggested setting up a new European institution which will be an independent authority with regulatory powers, a standard setter and overseer in the area of supervision, and will be significantly involved in macro-prudential analysis while supervision of individual firms continues to be performed at the national level. The crisis has clearly pointed out the lack of an international legal framework that could guarantee a fair resolution in case a global firm/bank fails. Hence, policymakers from countries where large cross-border financial entities actively operate should co-operate and co-ordinate to address such legal constraints.

Resolution Mechanism for Non-banking Financial Institutions

7.45 One lesson that emerged from the crisis is the importance of a resolution mechanism for non-banking financial institutions in economies like the US as they provide a larger share of financial intermediation than banks. Thus far, the principle that guided regulators in the US was based on the premise that the failure of a bank would be much more damaging for the economy as a whole than the failure of a non-bank. This premise proved to be incorrect as the crisis unfolded. Non-banks are very large players in the derivative markets. In the absence of an adequate resolution mechanism for non-bank financial entities, authorities in US were not prepared to place a systemically important investment bank or hedge fund into Chapter 11 bankruptcy. In such cases, authorities have limited options. Goldstein (2008) suggested that large investment banks need to be under the supervision of the "prudential regulator". There should be a resolution regime for systemically important non-bank institutions to complement the current regime for banks under the Federal Deposit Insurance Act. Tarullo (2009) observed that although in most cases federal bankruptcy laws provide an appropriate framework for the resolution of non-bank financial institutions, this framework does not sufficiently protect the public's strong interest in ensuring the orderly resolution of non-depository financial institutions when a failure would pose substantial systemic risks. Thus, an appropriate resolution regime for non-banking financial institutions needs to be put in place to address the too-big-to-fail problem in countries like the US.

Mixing Commercial and Investment Banking

7.46 The Great Depression had shown that banks were simply too economically important to fail. With the occurrence of the recent crisis, it is argued by many that financial deregulation removed the very legislation designed after the Great Depression to stop them failing in the first place. It is widely perceived that one of the causes for the financial crisis has been deregulation and, in particular, the Gramm-Leach-Bliley Act (1999), the core of which was the repeal of the Glass-Steagall Act's (1933) prohibition on the mixing of investment and commercial banking. The Gramm-Leach-Bliley Act facilitated the way for investment and commercial banks to merge, thus giving investment

banks the incentive to take greater risks while reducing the amount of equity they are required to hold against any given dollar of assets (Hadar, 2009). Moreover, financial engineering had been rapidly changing the character of the financial services sector as a whole. Securitisation and associated derivative instruments were merging capital markets and traditional lending activities, which led to a shadow banking system. As a result, both the asset mix and sources of funding of many banks were shifting, sometimes dramatically (Tarullo, 2009). Most of the large commercial banks, facing the need to raise their own capital in competitive securities markets, relied increasingly on trading profits, in effect turning themselves into hedge funds. On the other hand, most of the large investment banks engaged in significant trading operations, increasingly used the repurchase-agreement market to fund themselves with what, in effect, amounted to short-term deposits. Such a blurring of the distinction between commercial and investment banking activities made the financial system more vulnerable.

7.47 The approval of the Gramm-Leach-Bliley Bank Reform Act in the US encouraged banks to engage in a much wider range of financial activities and to provide a full range of products and services without regulatory restraint. Such deregulation allowed increasingly risky innovations that made the system more vulnerable. A number of large banks were increasingly engaged, either directly or indirectly through their affiliates, in the process of securitisation by sponsoring and administering special purpose vehicles. At the same time, it has been argued that the Gramm-Leach-Bliley Act softened the impact of the crisis by allowing for the mergers and acquisitions of collapsing banks as the crisis unfolded. Kuttner (2007) also highlighted the repeal of the Glass-Steagall Act as a contributing factor to the mortgage crisis. Volcker (2009) emphasised the need to separate commercial and investment banking. Although the spate of financial innovations witnessed in recent years has made it impossible to re-segregate commercial and investment banking along the lines of the Glass-Steagall Act, the architecture of financial regulation in the US needs to be radically reformed to address the kind of risks that can emerge in a globalised world. In the context of the US, the Volcker Rule is being proposed as part of a reform agenda in the US under which banks will no longer be allowed to own, invest, or sponsor hedge funds, private equity funds, or proprietary trading operations for their own profit, unrelated to serving their customers. The proposal will place broader limits on the excessive growth of the market share of liabilities at the largest financial firms, to supplement existing caps on the market share of deposits.

7.48 In short, regulators need to ensure that (i) credit and equity cultures are not mixed, (ii) capital rules are targeted efficiently and (iii) the cost of leverage is sufficiently high to ensure that their size and risk-taking activities are appropriately contained. The crucial lesson of the recent crisis is that policymakers should regard financial regulations not as an economic burden on the market but as an investment for making financial systems more resilient to sudden disruptions and reducing future government bailout obligations.

Compensation Structure

7.49 An analysis of the crisis shows that compensation schemes were also partly responsible for excessive risk-taking. Compensation schemes encouraged managers to forsake long-run prospects for short-run returns. Market participants, *viz*., traders, loan managers, risk committees and boards of directors were given strong economic incentives to focus on short-term profits. According to BIS (2009), in some cases, profits calculated with complex mathematical models were used to determine rewards even when markets for the assets underlying the calculations did not exist and so they could not be sold. As a result, equity holders and asset managers were unduly rewarded for risk-taking because of their limited liability and the compensation system, respectively. However, the adverse impact of the downturn was largely borne by the creditors or the

government. This shows that short-term factors in the design of financial contracts need to be corrected. In tune with the recommendations of various major reports on the financial crisis, a reform of the executive compensation schemes and practices should be an essential part of policy to secure financial stability. In this context, the squam Lake Report (June 2010) suggested deferment of a significant portion of compensation which could be contingent upon continuing health of the firms.

Efficacy of Financial Innovations

7.50 A rapid rise in financial innovations without accompanying risk management practices precipitated the crisis. Financial innovations like credit default swaps and collateralised debt obligations were expected to promote efficient allocation of risk and, hence, allow those market participants to bear the risk of an asset who could best afford it. Posen (2009) elaborated that non-financial companies freed from the burden of such risk were supposed to engage in more productive capital formation, generating growth for the entire economy. However, growth in new financial products outpaced fixed capital formation, both globally and in the US in a big way. There seems to be only a weak link, if any, between the growth of the innovative complex financial products and real corporate investment. In this context, the UN Report (September 2009) argued that unregulated market forces have provided incentives for the creation of an abundance of financial products with little relevance for meeting social goals and the under-production of financial products that support social goals. Thus, one of the roles of financial policymakers is to address these market failures in financial product development.

7.51 Even though financial innovations can benefit consumers, the financial system and the broader economy, their risks are not properly understood by market players. It appears that innovations were also aimed at injecting complexity to undermine regulation. In this context, public policy towards fostering and improving awareness of financial matters and promoting economic and financial education is also required. Buiter (2009) reveals that innovations considered to be genuine and potentially socially useful (interest rate swaps, securitisation, CDS) were often abused and became socially damaging. He stressed that these products should be properly vetted before they were permitted by the regulators. Moreover, banks need to evaluate more comprehensively the possible unintended consequences of new financial instruments and how these instruments will perform under stressed market conditions. Thus, it is necessary that innovations like securitisation – that has the capacity to enhance systemic efficiency and effectiveness – must be developed within a sound regulatory framework.

7.52 It is least likely that the process of financial innovations will come to a halt due to the crisis. Policymakers, however, have to decide how much to increase regulation and supervisory oversight of financial institutions dealing with such products. At the same time, they have to be cautious in their approach towards reforms by ensuring the enabling environment for genuine innovations. Over-regulation should not hamper the process of financial innovation. Instead, regulators should encourage responsible innovations that can be properly implemented and enhance consumer welfare. Posen (2009) suggested that even if many financial innovations are beneficial, all of them need to be monitored over the long term by regulators, as well as scrutinised before issuance, for their safety and effectiveness. In addition, financial institutions need scope for greater capital and liquidity on their balance sheets. This will help promote more prudent behaviour as a financial intermediary seeks to grow its balance sheet through product innovations. Financial innovations need to be pursued in the broader context of financial stability and have to necessarily correspond to the level of maturity of the financial system and the needs of the real economy. To sum up, regulators should allow "responsible innovation" that increases consumer welfare. In order to ensure that excessive regulation does not deny the benefits of financial innovation, regulators need better judgment and insight.

Policy Co-ordination between Monetary and Regulatory/Supervisory Authorities

7.53 The recent crisis highlights the fact that market self-regulation has limits. In order to avoid the possibility of market failure, monetary and regulatory officials need to co-ordinate better (than in the past), particularly during the build-up of asset-price bubbles. Authorities need to clarify the division of responsibilities so that in the event of banks facing financial stress, appropriate procedures are in place for sharing information, co-ordinating their respective roles, and designing strategies to resolve disputes. "Communication" failures evident during the recent crisis (*e.g.*, on the occasion of the bailout of Northern Rock) point to the issues involved in co-ordinating the actions of two separate agencies. Better co-ordination will bring consistency and coherence of policies of both sets of agencies.

7.54 During the recent crisis, it was realised that the proper flow of information among regulators, even within the same jurisdiction, was lacking due to imprecise legislation (IMF, 2009b). Emphasising inter-agency co-ordination, Subbarao (2008) argued that the respective roles of central banks, regulators, supervisors, and fiscal authorities regarding financial stability need to be revisited. Central banks should play a central role in maintaining financial stability and should have the necessary information base to do so effectively. This implies close co-operation among all the agencies entrusted with the task of maintaining financial stability. Better co-ordination between central banks and other supervisory and regulatory agencies can be achieved not only by putting in place institutional arrangements to achieve more efficient functioning of the financial system and more effective co-ordination of financial stability measures, but also by defining their respective mandates in promoting monetary and financial stability with greater clarity. Effective information sharing and close co-operation is essential not only for efficient crisis management, but also for avoiding negative spillovers, distortions to competition and regulatory arbitrage. The co-ordination mechanism needs to introduce greater coherence between the reality of an integrated market and the organisation of supervision.

7.55 Jenkinson (2007) opined that as markets become more interconnected, national as well as international regulators have to work more closely, co-operating in their oversight and operational activities and co-ordinating their risk assessments. However, there are two distinct viewpoints. For instance, Nier (2009) perceived a number of synergies between the tools already at the disposal of central banks and an expanded role in financial regulation and, thus, suggests that an expanded role for central banks in financial regulation may increase the effectiveness of financial regulation. Goldstein (2008) argued that "if one (say, the monetary authority) is constrained from doing much, then the other (say, the regulatory authority) will have to act more forcefully." There is a need to improve the capacity of national authorities to respond to systemic crises by establishing mechanisms for co-ordination, both within and across borders.

7.56 The co-ordination between central banks and regulators is not only essential while dealing with the crisis but also important for designing concrete exit strategies to withdraw the market support given by many country authorities and frame a transition to a new and more stable financial market structure. This, however, requires careful planning and international co-operation in order to avoid market distortions and to promote a revival of markets at a reasonable level of systemic risk. In addition, more co-ordination is expected among finance ministries, central banks, and regulators while developing exit strategies from the monetary and fiscal expansions that were undertaken to slacken the pace of the slowdown.

7.57 To conclude, the failure of the concept of market self-regulation during the recent crisis has generated a great deal of debate on lessons for regulators and supervisors. Although there are variations in the views expressed, they broadly point towards lack of fundamental risk management, underwriting, basic financial management, better recognition of concentration risks (*e.g.*, asset,

funding and counter-party) and proper governance structures. Given the fact that self-regulation by profit-oriented private financial firms has proved to be insufficient to meet the challenges presented by today's complex financial markets, the basic principle of democratic governance becomes all the more important as management incentives are found to be often at odds with those of the firm's ultimate owners. Further, the effects of large changes in financial markets that occurred in recent decades, such as the growth of securitisation, the increasing use of leverage, and the decline in the role of relationship banking have become overriding issues to be addressed. These facets of the crisis show that regulation is necessary and it is the responsibility of public policy to provide it.

III. INTERNATIONAL POLICY CO-ORDINATION

7.58 It is evident from the recent crisis that shocks can be transmitted across borders through non-traditional channels. Similarly, it has become clear that the failure of financial markets has negative externality on the real sector. However, these externalities are not explicitly taken into account in national policy decisions. In view of greater financial globalisation, safeguarding of financial stability becomes a more interdependent task, requiring effective co-ordinated international action aimed at addressing financial system vulnerabilities. It has been seen that even though national governments and central banks responded with every possible policy option, they were not able to revive positive sentiment because of the interconnectedness of the financial system and the positive and negative cross-border externalities to domestic policy actions. Most importantly, they found that sentiment and confidence were remarkably correlated across countries around the world. Events like the London G-20 summit in April 2009 show that in the age of globalisation, a financial crisis cannot be managed without global co-operation and global response. Thus, the international aspect of crisis response becomes more important than before, and it is important that policies are better co-ordinated across countries during crisis. Policy co-ordination, in particular, cross-country consultation on macroeconomic policies and consistency across some types of financial and monetary support, can lead to better outcomes during such periods.

7.59 With financial institutions and markets becoming more global in nature, international authorities, both policymakers and supervisors, are increasingly required to take a co-operative and co-ordinated approach to deal effectively with episodes of financial stress. Although some element of cross-border co-operation has been seen during the recent crisis, it was not perfect or very effective. International co-operation was particularly lacking in the areas of deposit insurance and other forms of guarantees of bank liabilities. Thus, one of the lessons from the crisis is that regulatory arbitrage needs to be avoided. This is possible only if international policy co-ordination is more harmonious and effective. Strauss-Kahn (2009a) stated that as the crisis broke, countries acted in an uncoordinated manner to expand lender-of-last-resort facilities, increase protection of creditors and depositors, and recapitalise banks with public funds. Thus, the lack of co-ordination had some destabilising effects, at least in the short term. Towards this end, it is suggested that key aspects of prudential regulations must be applied consistently across countries and across financial activities. This is particularly important to achieve a less fragile global financial system by strengthening financial regulation and supervision, not only of cross-border institutions but also of cross-border markets. Areas that need a better co-ordination mechanism at the global level include (i) co-ordination of resolution tools for financial entities, (ii) consistency and co-ordination in depositor and investor protection and (iii) clear legal obligations and powers to share information between home and host countries.

7.60 The Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System (September 2009) identified that much of the effort to co-ordinate international economic policy has focused on putting constraints

on countries whose behaviour is not systemically significant, while doing little about countries whose policies can have systemically significant consequences. Further, it needs to be realised that international liquidity has to become gradually less dependent on the monetary policies of a few countries that issue reserve currencies. Developed countries, in particular, need to be aware of the consequences of their negative externalities, and developing countries need frameworks to protect them from regulatory and macroeconomic failures in the major industrialised countries. In this context, the G-20 Working Group II has highlighted various areas of international policy co-ordination which need to be addressed in a short to medium-term perspective.

7.61 For better international policy co-ordination, the international financial architecture also needs a better system to deal with the impact of globalisation. It is important that there is compatibility in the activities and standards of national and international regulatory institutions. National policies can be more effective if co-ordinated internationally. Otherwise, co-ordination failure can result in further growing global imbalances and an increase in exchange rate and asset price volatility, which can make the growth recovery process more difficult. Similarly, international policy co-ordination needs to deter the protectionist measures introduced by some countries in response to the crisis, which may hamper the speed of global recovery. In fact, multilateral co-ordination becomes even more important to mitigate cross-border distortions for some types of interventions during the post-crisis period.

IV. ROLE OF INTERNATIONAL FINANCIAL INSTITUTIONS

7.62 The crisis has exposed fundamental problems, not only in national regulatory systems affecting finance, competition, and corporate governance, but also in the international institutions and arrangements created to ensure financial and economic stability. First, surveillance of global economic developments and policies which was supposed to be done by the international financial institutions, did not give sufficiently pointed warnings about the risks building up in the international financial system. The crisis has seriously dented the credibility of global financial stability architecture (Pattanaik, 2009). According to IMF (2009g), aggregate implications of individual risks remained uncovered and macro-financial issues were often viewed in isolation, and spillovers as well as feedbacks were not adequately explored. Second, arrangements for international liquidity and loans to support adjustment could not fill gaps adequately as the crisis deepened further and spread across EMEs, reflecting shortcomings in the design and size of lending instruments of multilateral institutions. Their inadequacy to take appropriate and timely actions to prevent the crisis has demonstrated the urgent need for reforms by undertaking an appraisal of the mandates of these institutions and their governance. Third, it needs to be examined whether the large reserve accumulation that took place in many emerging market countries was partly motivated by a lack of trust in institutions like the IMF. The IMF is, among its other functions, intended to be the global reserve-pooling organisation. IMF has to make a self-assessment about whether the reserve accumulation phenomenon has anything to do with the experiences of countries, previously hit by crisis over the past two decades, in dealing with the IMF.

7.63 Despite the fact that the role of international financial institutions like the IMF has been questioned since the onset of the crisis, there is a clear lesson for members of the Fund that the IMF has an important, continuing role, in co-operation with other institutions such as the World Bank, in providing potential financing to member governments in pre-crisis, incipient-crisis, and actual-crisis situations (Eichengreen, 2009b; Truman, 2009). For instance, at the end of 2008, IMF credit outstanding under GRA was SDR 17.5 billion which increased to SDR 37.2 billion at the end of 2009 (SDR 46.8 billion so far in 2010) and, more importantly, total forward commitment capacity was US$ 161.7 billion. Since in today's global economy and financial system,

financial crises are inevitable, it is necessary that such institutions are supported by adequate resources to assist its members when they occur. Increasing the availability of financial resources that can be tapped in adverse market conditions and providing greater flexibility in terms of credit by multilateral institutions would certainly help in limiting the inclination of EMEs towards self-insurance in the form of massive build-up of official international reserves. Assuming that the crisis was a reminder that there is always a need for a global lender of last resort under certain circumstances, building support for the IMF to play this role effectively is emphasised.

7.64 It was felt in various quarters that international institutions have failed to prevent the crisis and were criticised for remaining slow to design and implement adequate responses. At the Pittsburgh G-20 Summit in September 2009, the role of the IMF in the emerging global economic order was comprehensively discussed. The G-20 forum emphasised the need to modernise the IMF's governance process which is a core element of efforts to improve its credibility, legitimacy, and effectiveness. It was perceived that the IMF should remain a quota-based organisation and that the distribution of quotas should reflect the relative weights of its members in the world economy, which have changed substantially in view of the strong growth in dynamic emerging markets and developing countries. Hence, the financial crisis underscores the need for shifting patterns of global governance, including the greater inclusion of developing countries in multilateral financial as well as international standards-setting bodies. In this regard, the most crucial area of governance reform is to ensure a meaningful quota and voice reform, which is underway in the IMF and has been completed in the World Bank.

7.65 Emphasising the greater role of international financial institutions, the report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System (Chairman: Joseph E Stiglitz) released in September 2009 recommended that the international community must give more consideration to the long-term consequences of 'too big to fail' institutions if they are to design sound public policies for the world economy using the lessons of this crisis.

7.66 Given the evidence that Bretton Woods institutions were ill-prepared to face the challenges of crisis, the immediate priority should be to ensure that the Fund has adequate resources to fulfil its role in helping to resolve the recent crisis. In January 2009, it was proposed to double the IMF resources. The G-20 summit and International Monetary and Financial Committee in April 2009 endorsed the proposal, agreeing to an immediate increase of US$ 250 billion and a subsequent trebling of IMF resources through an expanded New Arrangements to Borrow (NAB). Another issue is with regard to exploring the scope for providing an alternative to reserve accumulation as an insurance mechanism by increasing IMF resources and through the flexible credit line. It may be noted that IMF made a general SDR allocation equivalent to about SDR 161 billion (US$250 billion) in August 2009 in order to provide liquidity to the global economic system by supplementing the Fund's member countries' foreign exchange reserves. In addition, IMF made special SDR allocation of SDR 21.5 billion (about US$34 billion) on September 9, 2009.

7.67 In addition to the issues of adequacy of resources, most of the recent reports on the financial crisis have pointed out that multilateral institutions like the IMF need to be reformed in terms of governance as well as upgrading their surveillance mechanism. There seems to be a strong *prima facie* case for better integration of macro-financial linkages into monetary policy considerations, which institutions like the IMF need to incorporate into their regular surveillance process. The Fund can play a key role in reducing uncertainty and the likelihood of inconsistencies, by reporting on the unwinding process through its surveillance mechanisms, additional monitoring, and technical support. At the same time, reforms are also needed in order to enhance their legitimacy and accountability. The G-30 Report stressed the need to enhance the effectiveness of IMF advice

to governments on their economic policies, strengthen its authority and ensure that it has the capability to mobilise the actions necessary to avoid crises and mitigate systemic vulnerabilities. In this context, the G-20 Working Group III was tasked with advancing the actions covered in the November 2008 Leaders' Declaration dealing with the reform of the IMF. It emphasised the urgency of accelerating changes to the IMF so that it can more effectively fulfil its mandate. Such changes should address any underlying deficits in resources, lending instruments, and governance structures, with a view to enhancing legitimacy, ownership and efficiency, and clarifying the roles and responsibilities of the Fund. It also recommended the Action Plan as immediate and proposed medium-term measures in reforming the Fund. Further, international institutions like the IMF and the Financial Stability Board (FSB) should collaborate in such a way that there is no ambiguity with regard to their respective roles and co-ordination mechanisms.

7.68 The main message for the IMF that emerges from the crisis is with regard to the need for strengthening its surveillance of policies and markets. Its surveillance mechanism should attempt to indicate clearly when it perceives potential threats to national and global financial stability. IMF (2009g) suggests the establishment of a joint Fund–FSF early warning system (see also Chapter IV). In short, the Fund must enhance not only its resource adequacy but also capability to identify and prevent potential crises and do whatever it takes to get ahead of the curve on a real-time basis. The Fund should equip itself to issue confidential warnings to systemically important countries and a more open communication of risks whenever developments in their economies or financial sectors give cause for concern.

V. GLOBAL IMBALANCES AND MACROECONOMIC MANAGEMENT

7.69 The global macroeconomic imbalances might not be the direct triggering factor behind the crisis, but they certainly were a part of the problem. Profound asymmetries, particularly in major stakeholder economies, led to domestic as well as external imbalances at the global level and the recent crisis can be considered as a disorderly unwinding of the past build-up of imbalances. With persisting global imbalances, there were relatively low interest rates worldwide for much of the 2000s that drove investors to seek higher yields. On the other hand, relative stability in financial markets, reflecting the low cost of funds and strong economic growth, led to significant underpricing of risk. Policymakers failed to sufficiently take into account growing macroeconomic imbalances that contributed to the build-up of systemic risks in the financial system and in housing markets. In this context, Reddy (2006a) had noted, "[W]e view that global developments, particularly those in the world financial markets, have the most direct and serious impact on the financing conditions in the emerging markets. Any abrupt and disorderly adjustment to global imbalances may have serious adverse implications." Recognising these developments and highlighting the consequences of the global imbalances, the Prime Minister of India, Dr. Manmohan Singh, noted "[w]hile to some extent mismatches in current account positions are to be expected –and even desirable –in the global economy, large disparities raise concerns about unsustainability and hard landings. The process of correcting imbalances can be disruptive if it is sudden and unexpected. The present level of global imbalance cannot be sustained forever. It calls for action both from countries having current account surpluses and those having current account deficits. A co-ordinated effort is necessary to correct the imbalances to prevent a sudden downturn. International financial institutions need to play a proactive role in this regard."

7.70 In a statement (November 2008) of the G-20 Summit, the role of global imbalances in the crisis was highlighted, "[m]ajor underlying factors to the current situation were, among others, inconsistent and insufficiently co-ordinated macroeconomic policies, inadequate structural reforms, which led to unsustainable global

macroeconomic outcomes. These developments, together, contributed to excesses and ultimately resulted in severe market disruptions." Smaghi (2008) and Dunaway (2009) argued that early policy response to rising global imbalances could have made the crisis less damaging. In short, had the symptoms of building up of external imbalances been taken more seriously with appropriate policy action, it may have been possible to lessen the adversity of the recent crisis. Thus, dealing more aggressively with global imbalances in the incipient stages would have been the best policy response in the pre-crisis period.

7.71 With the crisis, concerns about global imbalances have not disappeared. As elaborated by the IMF's World Economic Outlook (April 2009), the financing of current account deficits, particularly in the US, may still be problematic in the coming years due to (i) a decline in the attractiveness of the US assets attributable to rising debt concerns, (ii) the possibility of a lasting increase in home bias and (iii) a decline in cross-border gross capital flows. This may entail higher risk of an eventual disorderly unwinding of global imbalances. To deal with such scenarios, policymakers of major stakeholder countries may have to use macroeconomic and structural policies to rebalance savings and investments in their jurisdictions. They should also use regulation to help reduce systemic risk stemming from capital flows. Multilateral consultations among the major stakeholder countries, as was initiated by the IMF in recent years, should continue so as to avoid any disorderly adjustment in global imbalances. Unless there is a co-ordinated policy response that supports global demand, the possibility of further exacerbation of global imbalances cannot be ruled out. In this context, the UN Report (2009) argues that for countries facing the threat of high volatility in export earnings and global financial flows, it is rational to increase precautionary savings so as to insure themselves against future potential calamities. While it is rational for individual countries to have a self-insurance mechanism in place against another crisis through the build-up of external surpluses and foreign reserves, it weakens aggregate demand. Thus, there is a need to develop alternate ways of providing insurance so that not only is aggregate demand in surplus countries strengthened but also global financial stability is ensured in the long run by gradually narrowing global imbalances.

VI. LESSONS FOR FISCAL POLICY

7.72 Whilst Keynesian policies had an enormous impact on post-war economic policy, the oil crisis during the 1970s led policymakers to perceive inflation targeting as more suitable to deal with high inflation and unemployment from a supply shock. It was also acknowledged that Keynesian policies were, at best, a short-term remedy as governments running deficits for too long may result in an adverse impact on aggregate demand. Notwithstanding these academic debates regarding the short-term or long-term effectiveness of the Keynesian policies that emerged in response to the Great Depression, these policies seem to have significantly influenced the response of policymakers to the recent crisis. During the phase of a steep downturn, various governments had to take over substantial amounts of private-sector liabilities and implement countercyclical fiscal policy (see Chapter IV).

7.73 In this context, it is pertinent to discuss an important lesson from the Japanese experience of the 1990s that Keynesian policy *per se* may not always work. While Japan undertook huge fiscal stimulus packages repeatedly in the 1990s, the banking sector was unable to dispose of its non-performing loans. As a result of payment uncertainty, economic shrinkage persisted for many years (Kobayashi, 2008). Thus, it is important that fiscal policy is accompanied by policy measures towards making the banking and financial system more resilient. Drawing a central lesson from the Great Depression and from Japan in the 1990s, Costello *et al.* (2009) also emphasised that policymakers have to ensure that the financial sector is reformed and recapitalised so that it can resume performing its vital intermediation function. However, from a short-run perspective, it seems that Keynesian policies do work. It has been

observed that countries like Australia that initiated well-designed fiscal stimulus programmes earlier are likely to emerge from the crisis faster. Even during the aftermath of the East Asian crisis, it was observed that the fiscal response of the Korean government focusing on improving the balance sheets of the financial and corporate sectors enabled the economy to recover much faster than others. Interestingly, the orthodox strategies of cutting the deficit by raising taxes or curtailing public expenditures to restore confidence were often prescribed to EMEs whenever they faced a crisis. In contrast, in the recent crisis, it has been observed that rather than undertaking fiscal tightening measures to revive confidence, governments in both advanced and emerging market economies had to undertake discretionary fiscal policy measures that could better help tackle the recession by generating aggregate demand.

7.74 The pursuance of an active discretionary fiscal policy during the recent crisis has shown the importance for countries to consolidate during good economic times and to build a 'fiscal reservoir' from which they can draw in periods of 'drought'. Experience shows that many countries including the US and euro area failed to do so. The financial crisis, therefore, suddenly burdened them with further high fiscal deficits and debt ratios. Their room for fiscal manoeuvre, particularly in the euro area countries, was very limited, as was their capacity to adopt effective counter-cyclical measures when they were most needed. The need for a more prudent fiscal policy is clearly manifested in recent episode of Greek debt crisis. It is important that countries contain their fiscal deficits to a level which is consistent with their ability to meet debt-service obligations.

7.75 According to IMF (2009c), the crisis highlighted two important lessons for fiscal policy. First, those countries which could not limit their fiscal deficits during the boom period might find it difficult to initiate counter-cyclical fiscal measures due to limited fiscal space. The second issue is with regard to the structure of taxation. In most countries, the tax system is biased toward debt financing through deductibility of interest payments. The bias to higher leverage increases the vulnerability of the private sector to shocks, and should be eliminated. Thus, fiscal buffers should be established in good times and a rule-based framework can reinforce this principle, especially since asset price increases can conceal a less robust underlying fiscal position by temporarily boosting tax revenues. Similarly, tax policy also encouraged debt financing in recent years. It is found that tax distortions can lead to high leverage. Such tax rules could usefully be changed. In short, the crisis has underscored the need for putting the fiscal policy on a stronger footing during the boom period. In addition, according to Stark (2009), developments in government bond yield spreads since September 2008 have shown that, in uncertain times, financial markets increasingly discriminate between countries on the basis of their creditworthiness, including fiscal fundamentals. Thus, unless countries focus on undertaking a fiscal consolidation process during the upturn of their economic cycle, any additional fiscal measures undertaken during the downturn would not only aggravate the issue of fiscal sustainability but would also have implications for the behaviour of market players in cross-border financial markets. As mentioned above, concerns about sovereign solvency and liquidity in Greece and their impact on financial market conditions provide ample evidence in this regard.

VII. ROLE OF CREDIT RATING AGENCIES

7.76 An analysis of the crisis provides evidence that credit rating agencies failed to detect the worsening of the financial market conditions and to adapt their ratings in time. They also failed to adapt to the new risks of the credit market, *e.g.,* structured credit products (derivatives) and hedge funds. With the emergence of the crisis, therefore, the role of credit rating agencies which were involved in the process of designing the complex derivative products as well as providing credit rating for such products became questionable. Thus, an issue of conflict of interest was clearly discernible,

which requires proper regulation and supervision, and a re-examination of the role of credit rating agencies. To begin with, the International Organisation of Securities Commission (IOSCO) issued its revised Code of Conduct for credit rating agencies in May 2009. In the most recent episode of Greek crisis, the assessment of credit rating agencies has once again become debatable. It is perceived that rating agencies took a longer time to ascertain the correct fiscal position of Greece.

7.77 Regulatory policy measures should be geared towards reducing conflicts of interest at the rating agencies and encouraging investor due diligence, especially of large institutions. This can be addressed by introducing prohibitions against structuring advice on products they rate and more transparent disclosure of rating methodologies. In addition, it is found that long-lasting relationships with the same rated entities may compromise the independence of analysts who are in charge of approving credit ratings. Thus, as envisaged under the new legislation for credit rating agencies in the European Union, analysts and persons approving credit ratings should be subject to a rotation mechanism. Furthermore, it is increasingly felt that rating agencies should be regulated and not just function as profit-making entities. A certain element of social responsibility needs to be introduced into the functioning of rating firms.

VIII. BALANCING THE SIZE OF FINANCIAL AND REAL SECTORS

7.78 The fact that a well-developed financial sector is necessary to act as the intermediary between entrepreneurs/investors and savers can hardly be overstated. An efficient financial sector reduces the cost and risk of producing and trading goods and services and, thus, makes an important contribution to raising standards of living. The recent crisis, however, showed that the financial sector had apparently taken a quasi-autonomous existence without close connection with the financing requirements of the real economy. The financial industry, indeed, grew oversized in the preceding years reflected in rapid credit creation, asset price bubbles and high levels of indebtedness, particularly in advanced financial systems. The disproportionate growth in the global financial sector was largely due to the aggressive search for yield, engendered by the easy liquidity in the global system that triggered a wave of financial innovation. Complex financial products were created by structuring and hedging, originating and distributing, all under the belief that real value could be created by sheer financial engineering. As mentioned earlier, there were hardly any signs of growing capital formation due to the growing and increasingly complex financial sector. In this context, Turner (2010) argued "[t]he crucial issue which we now need to address, after two terrible crashes in just 12 years, is whether this increasing scale of financial activity truly has been beneficial, which elements are beneficial and which harmful, and what trade-offs are required in public policy between any benefits of increased financial liberalisation and sophistication and the instability which seems at times to accompany it. And there does not appear to be any compelling proof that increased financial innovation over the last 30 years in the developed world has had a beneficial effect on output growth."

7.79 In short, as a result of the excess liquidity that permeated the global economy, particularly in the US but also in other countries, there was excessive 'financialisation'. The financial sector grew more rapidly than other goods and services. In a way, that made growth of finance an end in itself and not a means to meet human needs such as food, fuel, health and education. Given that the busting of the oversized financial sector has a devastating impact on the real sector, it becomes important to (i) examine the optimal size of the financial sector relative to growth and development needs and (ii) make financial sector innovations more meaningful to cater to the needs of the real sector.

IX. LESSONS FOR EMERGING MARKET ECONOMIES INCLUDING INDIA

7.80 The lessons for advanced economies are broadly clear. As mentioned above, they need to strengthen supervision and regulation and address

agency problems in their financial markets. When growth momentum accelerates, they need to address their elevated levels of budget deficit and debt. Despite the fact that the impact on EMEs has been relatively muted, there appears to be some element of ambiguity about the policy lessons for them. For instance, should emerging markets modify their terms of engagement with global trade and finance? Similarly, should practices adopted in advanced economies, once considered as role models in international standard setting, continue to be always followed as broad guidelines for EMEs? In short, the issue is whether everything considered suitable for advanced markets is always suitable for EMEs as well. Moreover, recent developments have provided an opportunity to EMEs to influence the reform of the international financial architecture. Thus, it is important for EMEs to examine the specific changes they should push forward.

7.81 Even though the issues highlighted in the previous sections are most immediately applicable to the advanced economies, they also have a broader relevance for the EMEs. Undoubtedly, the regulatory and supervisory issues that came to light during the recent crisis provide a sound background to emerging market and developing economies which are still in the process of achieving a more sophisticated and advanced financial system. Thus, it is important that what has been learned about financial sector regulation and supervision during the recent crisis should guide the EMEs while designing their financial regulatory systems. In addition, a number of issues need to be reviewed in the context of EMEs although they were not the source of the recent crisis. Against this background, the following sections highlight the key lessons which can be broadly drawn from the crisis in the context of EMEs, including India.

Invalidation of Decoupling Hypothesis

7.82 Major EMEs have shown consistently remarkable growth performance in the post-2002 period compared to advanced industrial economies. This led to a new wisdom that emerging markets had become masters of their own destiny and "decoupled" from business cycles in industrial countries. In fact, the EMEs remained largely insulated from the first-round effects of the turbulence at the epicentre of global financial markets. However, as the crisis deepened in advanced economies, the complex and wide-ranging interaction between the financial and the real economy began to have an impact on emerging economies. As the crisis entered the second stage, the impact on the real sector also began to appear. Hence, the decoupling hypothesis proved to be a myth as even countries whose financial sector was not or hardly exposed to "toxic assets" have been impacted (also see Chapter 6).

7.83 The intensity and spread of the current global financial turmoil and consequent overall economic crisis was very extensive, affecting all, irrespective of advanced or emerging countries. The crisis which started with loan delinquencies in the housing mortgage market of the US – the country with the most sophisticated financial system – engulfed the entire world with startling rapidity through channels of finance, foreign trade and confidence. Thus, almost every country across the world was affected by the crisis through different channels, *albeit* to varying degrees. Despite the cautious approach in managing its external sector in the post-Asian crisis, export-led Asia witnessed plummeting economic growth through a sharp decline in the demand for exports. Similarly, large-scale capital importing Eastern Europe was hit by the reversal of capital flows through banking channels while African and South American economies suffered from the drop in commodity prices and deterioration in their terms of trade (Subbarao, 2009b). Thus, there was no distinction in terms of macroeconomic fundamentals and the health of the financial sector. Emerging economies which had strengthened domestic financial institutions and accumulated massive forex reserves guided by the experience of the financial crises of the 1990s were not spared. A country like India, notwithstanding its sound banking system and smoothly functioning financial system, also suffered from the spillover effects of the financial

crisis through sudden capital flow reversals, as part of the global deleveraging process, and liquidity hiccups, mainly through the confidence channel. Gradually, the real sector was hit by the slowdown in exports, job losses in IT and BPO companies as also the lack of demand appetite in the real estate, automobile and consumer durables sectors with a squeeze in credit as the result of a cautious approach by several banks.

7.84 When the financial crisis first broke, it was perceived that developing countries in general would not be affected as (i) they had undertaken various reform measures to strengthen their domestic banking and financial system in recent years and (ii) their financial sector was not fully integrated in the global financial system. However, occasional bouts of shock on domestic equity markets became evident due to large capital withdrawals particularly in the post-Lehman scenario. This had implications for disruptions in the respective foreign exchange markets and increasing risk perceptions, causing credit squeezes. However, the second wave coming from the real economy, particularly depressing export demands with related job losses, gradually became a challenge. Although, build-up of forex reserves in the immediate past and the soundness of the domestic financial institutions juxtaposed with massive doses of fiscal stimulus and accommodative monetary policy put the emerging economies on a better footing to face the challenges emanating from global financial crisis, but it was difficult to avoid the contagion effects of the crisis.

7.85 In short, the broader lesson of this crisis for EMES including India is that with increasing globalisation of trade, finance and labour they are more strongly integrated with advanced economies than ever before. Consequently, any crisis that affects a major country or group of countries in the global economy or financial system will have implications for EMEs as well, sooner or later, depending on the nature and magnitude of the crisis. Thus, policymakers need to enhance their capacity to pre-empt the potential of such global shocks while formulating their policies.

Domestic Demand as a More Durable Source of Growth

7.86 The impact of the crisis on the external demand of EMEs has been clearly visible since the last quarter of 2008. In the first instance, the downturn in the US, Europe, and subsequently in Japan was manifested in a sharp contraction in exports from those emerging market countries that had become the largest exporters to the industrial world. Subsequently, exports declined from other emerging economies whose exports consisted of raw and intermediate goods that are shipped to those larger emerging market countries, particularly China, which have become key providers of final manufactured goods in the increasingly complex supply chains. The growth performance of emerging economies provides evidence that economies which are largely dependent on external demand, *i.e.,* exports, for their economic growth were severely affected. The synchronised fall in exports intensified in the first quarter of 2009, with a decline of around 25 per cent (y-o-y) in the case of larger EMEs. In some commodity-exporting countries, particularly Chile and Russia, exports fell by more than 40 per cent in the first quarter of 2009. Since prices fell sharply as world growth slowed, they led to declining incomes in EMEs which, in turn, tended to reduce demand and growth. In contrast, in economies where domestic demand dominated as a significant source of GDP, the impact was moderate. Thus, it is reasonable to conclude that a strategy of export-led growth entails greater risks than previously appreciated. It is not only because global demand is volatile but also because trade appears to be more elastic with respect to the cycle and more vulnerable in downturns. It is clear that domestic demand is a more durable source of growth. Realising the adverse impact of the crisis on domestic growth, EMEs may need to review their undue dependency on external demand and attempt to generate domestic demand within their economies. In short, there is a need to re-examine the growth strategies being pursued in some major emerging and developing countries. It is now increasingly felt that they should re-orient their growth strategies away from mercantilist trade

surpluses towards production for domestic demand and greater expansion of balanced trade among other emerging economies rather than industrial countries.

7.87 In the Indian context, a reasonably balanced macroeconomic management appears to have made the country more resilient to external shocks. India did not have excessive current account surplus or deficit; no excessive dependence on exports or external demand; no excessive reliance on investment or consumption expenditure; and, no excessive leverage in most households or corporates or financial intermediaries. Thus, it is worth highlighting that despite the widespread impact of the crisis, India was able to grow by 6.7 per cent during 2008-09 and 7.4 per cent during 2009-10.

Financial Sector Reforms

7.88 The role of the development of different segments of the financial system in the growth and development of any country can hardly be disputed. In emerging market and developing economies, financial development is particularly important for effective mobilisation and deployment of savings. Emerging market economies, still in the process of developing their financial systems, can take this opportunity to learn the correct lessons from the crisis to develop a robust financial sector with a sound systemic oversight framework.

7.89 The experience of the recent crisis shows that the financial system in most emerging Asian countries was relatively resilient to global shocks as reforms that have been put in place after the East Asian crisis fostered transparency and governance and strengthened regulation and supervision. It led to the development of healthier financial institutions across the region in terms of solvency, liquidity, and profitability. In fact, some argue that a cautious and calibrated approach towards financial sector reforms in most of the emerging Asian economies including India may have turned out to be a blessing in disguise during recent global crisis. Nonetheless, EMEs need to carry out their own due diligence to ensure that systemic risks are monitored within their countries. However, the crisis also raised the issue of whether home countries would now be as permissive in encouraging banks' foreign operations given the difficulties of multinational supervision. In other words, it still needs to be seen whether countries would tend to be more protectionist in opening up their financial sectors.

7.90 Emphasising the need to ensure an optimum balance of liberalisation and regulation, Subbarao (2009c) argued that "[w]hile liberalisation is important for the growth process, it should be managed to avoid forces of destabilisation. One reason of the crisis was the excess liquidity in the system and the resultant search for yield, based on the notion that real value could be added through financial engineering. This had resulted in build-up of imbalances and excesses in the system which was ignored by lax regulation. However, the crisis lessons do not make any case for overregulation as it could suppress growth impulses and conservative policies could prove to be costly. It would, therefore, be desirable to balance the costs and benefits of regulation." In India, a judicious approach while formulating financial liberalisation measures turned out to be extremely effective as reflected in the strengthening of public sector banks by recapitalisation; preventing some of the financial ''innovations'' that allowed risk to be disguised rather than actually reduced; taming the overexposure of domestic banks to what are now seen as toxic assets globally; restraining the excessive bullishness of financial investors in real estate; regulating the activities of systemically important non-bank financial institutions; and speaking out against hasty and potentially risky attempts to liberalise the capital account of the balance of payments. All these measures stood India in good stead not only by preventing over-enthusiastic responses during the global boom, but also reducing the negative impact of the global slump. Thus, countries should self-insure against future crises by putting in place, as best as they can, robust economic and financial policy

frameworks that help minimise their vulnerabilities. However, this does not mean that there should be over-regulation, as this can have significant costs. In short, EMEs need to ensure the right balance between regulation and liberalisation of the financial sector so that their long-term growth prospects do not suffer.

7.91 In the context of the Indian financial system, it is important to note that it avoided any major stress on account of contagion from the global financial crisis, even though the real economy later exhibited a slowdown in activity in tandem with the trend observed elsewhere. Macro variables such as aggregate credit growth, sectoral credit growth and the incremental credit-deposit ratio of banks have historically been integral components of macro policy framework. Much before the crisis, these variables were dovetailed into the prudential regulatory framework for banks. Both, macro-prudential and micro-prudential policies adopted by the RBI have ensured the financial stability and resilience of the banking system. The timely prudential measures instituted during the high growth period, especially in regard to securitisation, additional risk weights and provisioning for specific sectors, measures to curb dependence on borrowed funds, and leveraging by systemically important NBFCs have stood us in good stead. The reserve requirements through CRR and SLR acted as natural buffers, preventing excessive leverage. The important difference was that the Indian approach entailed sector-specific prescriptions, unlike others. The relatively low presence of foreign banks also minimised the impact on the domestic economy. Thus, the appropriate regulatory framework in place along with specific prudential measures taken from time to time played an important role in preventing instability in the Indian banking system during the global financial crisis.

Management of Capital Flows

7.92 Large capital inflows are considered to be a key contributing factor in many financial crises in EMEs in the past. It is clear that whether the crisis originates in emerging economies or advanced economies, capital flows generally reverse from EMEs. In the context of the recent crisis, it may be noted that in response to the strong capital inflows and abundant liquidity, banks tended to relax their underwriting standards, which gave rise to the formation of asset price bubbles. Although large volatility in capital flows to EMEs has also been witnessed since the early 1980s, it is increasingly becoming dependent on the stance of monetary policy in the advanced economies, a factor over which domestic authorities have no control. Periods of large capital inflows, well above the financing need, have been followed by a sudden drying up of capital flows. In fact, there is a firm view that during the recent crisis the 'sudden stops' were largely due to failures and shortcomings in international capital markets rather than lack of a sound policy framework in EMEs. Such large swings in capital flows over a very short period of time impose significant adjustment costs and large output and employment losses on EMEs. The recent crisis once again underscored the potential dangers of large capital inflows in EMEs. At the same time, it is, apparent that capital account management and prudent regulation of financial sector go hand in hand. It is evident that EMEs like India which followed a calibrated and well-sequenced approach could minimise the adverse impact of exogenous shocks unlike those (*e.g.*, eastern European economies) who did not use prudential regulatory measures to limit intermediation of foreign inflows through domestic banks and financial institutions. In view of the above, the issue of imposition of capital control is being discussed at several levels in international fora.

7.93 On the issue of management of capital flows, the Bretton Woods institutions also seem to have drifted somewhat from their earlier approach. The IMF Managing Director, Dominique Strauss-Kahn (2009b), remarked that "[a] related challenge to exit strategies is managing capital flows to emerging markets... Countries have a number of policy options in their toolkits. In many countries, appreciation should be the key policy response. Other tools include lower interest rates, reserves

accumulation, tighter fiscal policy, and financial sector prudential measures. Capital controls can be part of the package of measures. We are completely open minded. But we should recognise that all tools have their limitations. Again, we should be pragmatic." In fact an IMF study by Ostry *et al.* (2010) argues that capital controls are a "legitimate" tool in some cases for governments facing surges in investment that threaten to destabilise their economies.

7.94 Recommending the use of both macro and structural policies to steer saving and investment, IMF (2009b) called for re-examining the timing and nature of pre-emptive policy responses to large imbalances and large capital flows. According to the World Bank (2009), "[c]apital restrictions might be unavoidable as a last resort to prevent or mitigate the crisis effects…Capital controls might need to be imposed as a last resort to help mitigate a financial crisis and stabilise macroeconomic developments." Nijathaworn (2009) recommended that, given the risk of formation of asset price bubbles associated with large capital flows, risk management of banks must continue to be strengthened and regulators must be prepared to use macro-prudential measures proactively as necessary to reduce such risk. This means credit standards and bank capital rules must remain vigilant, regardless of the abundance of liquidity. Emphasising greater caution in the liberalisation of debt flows. Mohan and Kapur (2010) argue for a calibrated and well-sequenced approach to opening up the capital account and its active management, along with complementary reforms in other sectors. Subramanian and Williamson (2009b) prescribe that institutions like the IMF must recognise that capital inflows can pose serious macroeconomic challenges that may require a different cyclical response. For emerging markets, the policy arsenal against future crises must cover measures to counter-cyclically restrict credit growth and leverage, particularly, capital flows.

7.95 The recent experience of EMEs with capital flows seems to point towards the potential role for prudential measures to reduce systemic risk associated with large capital inflows, *e.g.*, through constraints on the foreign exchange exposure of domestic institutions and other borrowers. In view of the volatility in capital flows seen recently, it is now widely perceived that the need to introduce a tax on international financial transactions can be explored. In fact, such eminent persons in finance as the former U.S. Fed Chief, Paul Volcker, and Lord Turner (Chief of the UK Financial Services Authority) suggested such a tax even for domestic financial transactions. In the Indian context, Reddy (2009) suggested that this idea could be examined for the forex market, and also suitably modify the securities transaction tax system and extend it to transactions in participatory notes, though they are traded abroad. Similarly, issues of tax arbitrage and residency are being revisited globally. In fact, on October 20, 2009, Brazil announced that it would impose a 2 per cent tax on capital flowing into the country to invest in equities and fixed income instruments, while direct investment in the productive economy would not be affected. In short, the issue of capital control is being revisited and debated as it has emerged as one of the important lessons from the crisis for EMEs.

7.96 Thus, it can be concluded that with the prior experience of crisis, emerging Asian and Latin American countries appear to have managed their current accounts and external financing requirements more carefully. In contrast, Central and Eastern Europe, with excessive dependence on foreign finance, were severely hit as foreign investors deleveraged and capital flows dried up. Thus, recent experience suggests a cautious approach to the pace and scope of capital account liberalisation as there is a strong linkage among capital account liberalisation, domestic financial sector reform, and the design of monetary and exchange rate policy.

Funding of Banking Sector in Emerging Market Economies

7.97 It is evident from the crisis that banks – whether foreign or local – played a major role in the origination or in the transmission of the crisis.

According to BIS (2009b), "[w]eakness in major foreign banks, and their need to retrench, was certainly a factor. The presence of local banks funded by domestic deposits, by contrast, generally seems to have helped the diversification of risk and made banking systems more resilient to a foreign shock." It has been found that banks that rely heavily on wholesale funding are naturally more vulnerable to any shock to market liquidity. Excessive dependence of entities on wholesale funding markets is an issue of systemic concern and needs a cautious approach. When loans are larger than deposits, banks may resort to funding from foreign parents or domestic and international wholesale markets to finance the gap. Thus, it is not a surprise that in the eastern European EMEs, *viz*., Hungary, Romania and the Ukraine, where the stress has been more acute, the loan-to-deposit ratios were all greater than one. Likewise, it has been observed that foreign bank presence was associated with currency mismatches. For instance, in central and eastern Europe foreign banks extended euro- and Swiss franc-denominated corporate, home, and car loans to firms and households with incomes in local currency, which eventually aggravated the corporate and household financial distress when local currencies depreciated. This indicates that emerging markets, while encouraging foreign bank entry, should simultaneously strictly regulate their local lending practices.

Need for Development of Local Bond Market in EMEs

7.98 The issues with regard to banking-sector intermediation during recent crisis highlight the need for further development of local bond markets in EMEs. As the financial crisis curtailed the ability of borrowers in emerging markets to find funds abroad, they had to turn to domestic markets in order to raise funds. Local-currency bond markets had already grown tremendously since the crisis of the 1990s. It is emphasised that deepening local-currency bond markets should now be a top priority for emerging economies. Bond markets provide an alternative to bank intermediation. According to Eichengreen (2009c), there is evidence that countries with better developed bond markets experienced less negative fallout from the crisis as large firms, in particular, retained access to non-bank sources of finance. These firms were able to finance their operations at longer term tenors, thus obviating the need to go back to the markets once conditions deteriorated. It is evident that local-currency bond markets are becoming an alternative funding source in several emerging economies. These markets have grown rapidly, doubling in size from US$ 2.2 trillion in 2003 to US $5.5 trillion at the end 2008. In fact, learning from the previous crises of the 1900s, emerging markets' governments have sought to develop local-currency bond markets to help prevent a re-run of the string of financial crises, particularly like the 1997 Asian financial crisis. East Asian countries have been at the forefront of bond market development (Dalla and Hesse, 2009). These markets are playing an important role in the provision of finance to emerging-market governments and corporations, which were largely shut out of international financial markets during the global financial crisis, and in reducing their dependence on the banking sector.

7.99 With reduced currency mismatches, most Latin American and Asian economies did indeed prove to be resilient during the crisis. According to Braasch (2009), local-currency bond markets served as a "spare tyre" in some EMEs and developing countries. In many emerging markets, by helping to correct currency and maturity mismatches, local-currency bond markets contributed to financial stability. Even though some progress has been made in EMEs in terms of developing corporate bond markets, there are still issues with regard to size, lack of market-based yield curve, difficulties with proper disclosure of accounting information and weakness in corporate governance. Thus countries which are still at an early stage of domestic bond market development should focus on building the market infrastructure of the primary market while those at an advanced stage of corporate bond market development need to undertake efficiency-based reforms. With deeper local markets, more

borrowing and lending can take place within a country's borders, perhaps reducing the incentive to go abroad. It is, thus, argued that further deepening of local-currency bond markets would help reduce the probability that currency depreciation can transform into a full-blown financial crisis.

Need for a Counter-cyclical Fiscal Policy Framework

7.100 One of the consequences of the financial crisis has been the transfer of financial risks to fiscal authorities, combined with the financing burden of fiscal stimulus. However, it still remains to be seen as to what extent the fiscal stimulus packages undertaken by various advanced and emerging economies produce an impact beyond the short-term support to demand and generate a positive impact on long-term potential growth. In addition, expansionary fiscal policies have raised concerns over the crowding out of investment in the private sector and the sustainability of public sector finances in a number of countries. This, in turn, may have implications for the nascent recovery that seems to be taking place. Furthermore, the possibility cannot be ruled out that a vicious circle, with rising debt levels holding back growth and pushing interest rates up, will develop over the medium term. Thus, many countries could face the challenge of mitigating this risk by designing and articulating medium-term fiscal consolidation plans that take into account their financial sector stabilisation policies and contingent liabilities.

7.101 It has been observed that fiscal deficits have surged in most of the economies as policymakers have sought to counteract weakness in aggregate demand and revive their financial systems. For instance, in case of advanced economies, fiscal authorities have responded to the crisis by offering capital to support central bank programmes, purchasing illiquid assets (for instance, in the US) and providing guarantees to encourage securities origination (as in the UK). Such measures, along with aggressive monetary policy easing during the crisis, helped contain the rise in the cost of borrowing for the private and public sectors. In fact, most mature market economies running significant fiscal deficits have been able to limit the increases in domestic interest rates by tapping foreign savings from emerging market central banks, oil exporters, and sovereign wealth funds. As a result, it is widely expected that the major advanced as well as emerging economies will emerge from the crisis with heavy public deficits and rapidly mounting debt. According to an estimate by the IMF (2009e), the average fiscal deficit of the advanced G-20 countries is projected to be around 10 and 8.5 percent of GDP in 2009 and 2010, respectively. If foreign investors become concerned about long-term fiscal sustainability in these countries, interest rates on government securities would need to adjust higher and the exchange rate would depreciate. More recently, the belief that a country can borrow without any limits was questioned after the episode of Greece. This is a reminder that fiscal space cannot be overextended.

7.102 In order to attenuate the impact of the financial crisis, emerging economies have also been supported by large fiscal stimulus measures. EMEs that entered the crisis with more policy space and less binding financing constraints were able to react more aggressively with fiscal and monetary policy. Even the recovery process was faster in EMEs that gave a bigger fiscal stimulus, had stronger pre-crisis fundamentals, and had faster growing trading partners (IMF, 2010b). In fact, Asia's fiscal response (in terms of GDP) has been larger than in the average G-20 country (Kato, 2009). One of the major findings from the research on the crisis is that countries which were able to conduct counter-cyclical policies were also able to withstand the crisis better. However, many emerging and developing countries lacked the 'policy' and 'fiscal' space to deal with the global economic crisis. As a result, there are large asymmetries in global economic policies. According to Cavallo (2009), "the lucky ones that earned the chance of conducting countercyclical policies were those that had previously resisted the temptation of taking comfort in favourable tailwinds and had prepared for a rainy day." It has been observed that countries which

could not create fiscal space for counter-cyclical policies during the upturn had little room for independent policy actions during the crisis. Thus, the crisis presents a case for further strengthening their fiscal correction and consolidation process during the boom period so as to create fiscal space for undertaking effective counter-cyclical fiscal measures during a downturn or recessionary phase. The re-creation of fiscal and policy space for emerging and developing countries on a sustainable basis needs to be a central feature of their reform agenda. This is now more clear after the recent events in some parts of Europe.

Need for Social Security System in EMEs

7.103 Although the major emerging market economies like China and India have been moderately affected, by the recent crisis, it is perceived that the pace of reduction in poverty alleviation programmes may suffer in many other developing countries. Undoubtedly, these countries affected first by rising food and oil prices and then by recent crisis, could have played a key role in boosting global demand and supporting global recovery, but they need access to finance for years to come. Taking cognisance of the potential demand that these countries have, policymakers in these countries need to initiate measures towards setting up and strengthening social safety nets. It may be noted that some of the best social protection programmes in the world have emerged during times of macroeconomic stress. For instance, countries like the UK, Canada and New Zealand developed large-scale unemployment benefit programmes for the first time after experiencing such crises, and the present US Social Security system owes its origins to the Great Depression. Had there been no such social security systems in place in these advanced countries, the impact of the recent crisis would have been definitely more pronounced. It is important to note that during past financial crises, poverty issues did not get sufficient attention. The World Bank Group also suggests that it is crucial to factor in the implications for social safety nets from the beginning of the crisis rather than later.

7.104 As mentioned above, EMEs like China and India might not have been affected much during the recent crisis due to a number of reasons, but in the period ahead their trade and financial integration with advanced markets is expected to grow further. Thus, such resilience to external shocks is unlikely to be guaranteed. In such a scenario, it becomes important, *albeit* challenging, for emerging and developing countries to gradually put in place an effective social security system. Not only will it help the automatic stabilisers to work better but it will also attenuate the need for undertaking sudden large-scale discretionary fiscal policy measures leading to long-term fiscal sustainability concerns. Besides these, pursuing such structural policies in countries that have excessive current account surpluses can help to hold global imbalances at a sustainable level. An improvement in the social security system and financial markets may decrease private savings in such countries in the long run.

Self-Insurance against Future Crisis

7.105 The recent crisis and its impact on EMEs has led to a debate on whether countries should seek to self-insure against future crises by building up their foreign exchange reserves in order to better prepare for future crises. According to IMF (2010b), higher international reserves holdings, by reducing external vulnerability, helped buffer the impact of the crisis. But reserves had diminishing returns: at very high levels of reserves there is little discernable evidence of their moderating impact on output collapse. In this context, there are two contrasting arguments. Blanchard *et al.* (2009) are of the view that it is difficult to conclude whether this self-insurance was indeed successful. Although most emerging markets survived the recent crisis better than in the past, it could be attributed to the fact that, first, the crisis originated in advanced economies, and second, to much better macroeconomic policies and frameworks in emerging economies than in the past. Highlighting this, they argue that even though Brazil has much higher reserves than Mexico, even in terms of GDP,

there has been very little difference in the performance of credit default swap spreads. In short, markets did not see Mexico as more vulnerable than Brazil despite its huge reserves.

7.106 Truman (2009) is of the opinion that seeking self-insurance through reserve accumulation could be a wrong lesson to learn from the global crisis. In his view, countries should self-insure against future crises by putting in place, as best as they can, robust economic and financial policy frameworks. One element of that type of self-insurance should be adequate holdings of foreign exchange reserves, but that alone is insufficient. Large holdings of foreign exchange reserves provide an expensive buffer against a global financial crisis. Citing the case of South Korea which had foreign exchange reserves of US$ 264 billion in February 2008, he concludes that building up foreign exchange reserves does not guarantee self-insurance. During the crisis, it was the gross inflows together with gross outflows that mattered rather than the net surplus on the current account or the net accumulation of international reserves. Further, the sources of foreign exchange reserves are an important factor in determining their durability as an instrument of self-insurance. However, Truman agrees that Korea would have suffered more if it had large current account deficits in the period before the crisis, or if it had held negligible foreign exchange reserves when the crisis hit, but its huge reserve holdings alone were inadequate to self-insure Korea from the crisis. In short, building up of foreign exchange may not be the sole factor for self-insurance. It should accompanied by putting in place a sound economic and financial policy framework. The Global Financial Safety Net (GFSN) Expert Group is delibrating these issues under the G-20 forum.

7.107 India's comfortable foreign exchange reserves provided confidence in its ability to manage balance of payments notwithstanding lower export demand and dampened capital flows (Subbarao, 2009a). In the absence of a sufficient cushion of foreign exchange reserves, perhaps arresting the pressure on the exchange rate would have been very challenging. In this context, it may be noted that the tendency towards self-insurance by accumulating foreign currency reserves in EMEs has its roots in a less-than-adequate response from multilateral financial institutions like the IMF. Experiencing a lack of financial support during the East Asian crisis, EMEs tended to accumulate foreign exchange reserves in order to gain some insulation from future crises. During the recent crisis, the willingness of the Federal Reserve to extend swaps to central banks around the world, ensuring provision of liquidity directly to other central banks, perhaps indirectly, implies the need for large foreign exchange reserves built up by individual central banks as a buffer in times of crisis. The need for self-insurance can, however, be reduced with more effective mechanisms for liquidity provisioning and reserve management at the international level, both regionally and multilaterally. Another important lesson for EMEs from the crisis is that the corner hypothesis postulating that countries should be moving to one or another corner in the choice of exchange rate regimes, *viz*., fully flexible or fixed exchange rates, is out and intermediate regimes are the order of the day.

7.108 To conclude, recent developments clearly raise an issue whether EMEs can protect themselves against the transmission of a large financial shock in advanced economies. It appears that reducing individual country vulnerabilities by improving current account and fiscal balances may not have fully insulated them from the transmission of financial stress but improvement on these parameters along with strong policy frameworks definitely provides greater headroom for implementation of an appropriate domestic policy response in such situations and facilitates faster recovery. Similarly, the crisis has taught the important lesson that forex market intervention to contain sharp and disruptive depreciation is no longer a sin and reserves are a new virtue. Thus, it is felt that any framework of global financial safety net should have three principal pillars. One, domestic financial safety net comprising a robust

international reserve position and prudential framework. Two, regional financial safety nets consisting of regional swap pools and bilateral swap pools. Finally, global safety net encompassing a wider role for multilateral institutions.

X. MAJOR CHALLENGES FOR POLICYMAKERS

7.109 The above lessons suggest a wide range of measures that need to be examined in the light of recent crisis. All policy lessons and measures suggested in that context aim towards reducing vulnerabilities and maintaining financial stability. However, by its very nature, the responsibility for financial stability has to be shared by the government, the central bank and other regulators. Thus, assessing the weaknesses unravelled by the crisis and putting suitable practices in place would be a challenging task for policymakers. In this context, some of the major challenges are highlighted below.

Future of Financial Regulation

7.110 Among the various causes of the recent crisis, a widely recognised cause is related to certain failures in financial regulation. Obviously, this called for launching an ambitious agenda to reform financial regulation so as to enable the regulatory framework to stem the recurrence of such crises. Eminent economists, central bankers, financial regulators and experts are pondering over key areas of the regulatory framework that need to be improved in the medium to long-term horizon. However, policymakers may face the following challenges while carrying forward the agenda of reforms.

7.111 One important challenge for policymakers is with regard to assessment of their regulatory models. For instance, the issue whether central banks should also be doing bank regulation and supervision is being widely debated. It is argued that a central bank can discharge its LOLR function more efficiently if its mandate extends beyond merely monitoring financial institutions to taking preventive action. This becomes possible if the central bank also has responsibility for bank supervision. Further, a natural synergy between monetary policy which is macro-prudential and bank supervision which is micro-prudential bodes well for ensuring financial stability of the financial system. On the other hand, some do not favour central bankers to be acting as banking regulators as it can lead to a moral hazard problem while conducting monetary policy. It is argued that the central bank would take a "softer" stance against inflation, since interest rate hikes may have a detrimental effect on banks' balance sheets. Further, with more complex mandates, central banks may easily escape their accountability. Thus, it is important and may be a challenging task for authorities to examine the regulatory models in their financial system as a whole and go for changes if needed in light of their country-specific circumstances. Even if the present regulatory models are found to be more suitable, the importance of a smooth and efficient relationship between the central banking and supervisory functions cannot be undermined. In financial stress situations, supervisory information remains essential for the effectiveness of the central bank's financial stability assessments. Conversely, supervisors should benefit from the systemic perspective of central banks when considering their actions *vis-à-vis* individual institutions.

7.112 The second challenge pertains to the resistance that policymakers and international standards-setting bodies may face while convincing financial market players about the desired future agenda of reforms. According to Claessens *et al*. (2010), "[v]ested interests in the financial services industry are large in most countries and political lobbying will therefore be a key determinant of the final outcome of this process." The recent crisis underscored that prevailing micro-prudential supervision under the Basel framework is not adequate to prevent systemic risk. The need for incorporating macro-prudential measures into the supervisory framework cannot be overemphasised. Perhaps, the prescriptions being recommended are not entirely new and many central banks and

financial regulators have been engaging in financial stability assessments and exercises with subtle reference to macro-prudential aspects. The need is to formalise and strengthen this process. Potential macro-prudential tools that could be explored further include contemplating risk-based capital measures with simpler indicators aimed at measuring the build up of leverage, with enhanced sensitivity of off-balance sheet exposures; capital requirements that adjust over the financial cycle; loan-loss provisioning standards that incorporate all available credit information; the use of longer historical samples to assess risk and margin requirements; and greater focus on loan-to-value ratios for mortgages. The real challenge in this context would be to convince the market participants about such an ambitious reform agenda. In fact, it is being perceived in various quarters that the urgency and momentum for reform of the financial system is gradually waning. The easing conditions have provided the comfort and space for dissenting voices. There are now much more vociferous voices from market participants, who have been bailed out either implicitly through system-wide guarantees and liquidity or specific bailouts against some of the crucial reform measures. As in the past, there are two key arguments being made: first, the risk of short-term economic growth being adversely impacted and second, the fear of a uniform level playing field among major financial centres, resulting in loss of business opportunities and competitiveness for the first movers. However, national and international policy-making bodies need to take a circumspect view on the future reform agenda taking cognisance of their implications in a short as well as long-term perspective.

7.113 The third challenge for regulators relates to dealing with existing information asymmetries. In the past, the reluctance of regulators to undertake counter-cyclical measures was based on the argument that regulators do not have superior information about the market on whether asset prices were unsustainable or a bubble, or whether the buoyancy was the result of cycles or underlying productivity growth. The current thinking has stressed the need for taking counter-cyclical measures to prevent excessive risk-taking and asset bubbles. This is popularly termed as 'taking the punch bowl away', an unpopular act but perhaps necessary in light of the experience of the recent crisis. Consensus is building around the view that regulators may not have exact knowledge of the 'equilibrium' asset prices or business cycles, but they could observe indicators signifying build-up in vulnerability in various parts of the economy and financial markets. If the body of evidence points to a momentum towards instability, it is imperative for policy authorities to act in a forward-looking manner to moderate and ward off such momentum. In this context, technical work needs to be undertaken to improve the understanding of business cycles and identify turning points. The triggers need to be defined for changes in capital buffers. However, policymakers, particularly in EMEs, may face an additional problem of lack of adequate data for business cycle identification.

7.114 Fourth, many central bankers and financial sector regulators/experts have stressed the need to strengthen the current micro-prudential framework in three broad areas, *viz.,* capital adequacy framework, liquidity risk management and infrastructure for OTC derivatives. Going forward, it is important for regulators to strive towards finding the right balance between regulation and market innovation. A key objective will be to close gaps in the oversight of financial institutions and markets and to update and modernise the regulatory system to keep pace with market realities and global integration. On the one hand, regulators need to improve the capacity of supervisors to identify risks while curbing excessive leverage and risk-taking; on the other hand, they may face challenge of co-ordinating home-host supervision. Resistance by national authorities to the transfer of significant responsibilities to supranational bodies may again result in incoherent and vulnerable regulatory frameworks. Hence, some of the lessons appear to very clear and simple but in fact are quite challenging to implement.

7.115 In sum, policymakers face the challenge of carrying forward the task of restructuring the financial systems in a manner that fosters financial stability and growth. There is a need to overhaul the financial regulatory framework. In light of the weaknesses highlighted by the recent crisis, policymakers may have to carefully examine the adequacy of regulatory models being pursued in their countries. Similarly, regulators have to carefully assess the need for degree of regulation as the implementation of any new framework has to be calibrated cautiously, guarding off any possibility of hurting the recovery from the crisis. A careful cost-benefit analysis of any regulatory measure becomes all the more important when most major economies are still in incipient stages towards economic recovery. Ensuring that financial regulation and supervision keeps up with financial innovations would be a challenging task for policy authorities. To determine the appropriate level of regulation and role of government in the financial sector is likely to be a daunting task for policymakers. Similarly, it is difficult to define different models of financial development for countries at varying levels of economic development. The issues mentioned above call for an ambitious agenda and will require the active engagement not only of national regulators and supervisors but also of the relevant regional and international bodies such as the Basel Committees, the international standards-setting agencies, the Financial Stability Board, and others. It will also require a broadened surveillance mandate for the IMF.

Challenges for Monetary Authorities

7.116 One of the most challenging tasks for central banks is how to manage the challenges from globalisation to their macroeconomic policies. Understanding globalisation is very important for central banks since globalisation may affect key elements of the monetary policy framework through a number of channels, such as the inflation formation process and the monetary transmission mechanism. Experience shows that external developments interact with domestic macro variables in complex, uncertain and unpredictable ways, and central banks need to deepen their understanding of these interactions. However, the challenges of weighing external factors in monetary policy formulation would vary depending on the degree of openness and the nature of the mandate given to central banks. Obviously, central banks with wider mandates need to factor external developments into their domestic policy calculations. At present, it is a matter of debate whether central banks need to review their mandates in view of greater financial globalisation, for instance, whether the mandate of central banks should be broadened beyond pure inflation targeting and how they should take cognisance of the possibility of build-up of financial bubbles in the form of rising asset prices.

7.117 Among the various causes leading to the recent crisis, the fundamental one is related to accommodative monetary policy and the corresponding existence of low interest rates for an extended period in the major advanced economies preceding the crisis. The persistently accommodative monetary policy did not result in inflationary pressures due to strong worldwide macroeconomic growth, and the episode of 'great moderation' led central bankers to perceive success in terms of price stability. However, many ignored the fact that excessive liquidity has been reflected in rising asset prices, like housing prices in the US. Now one of the challenges for central banks is to consider carefully whether controlling asset price inflation should be added to their mandate. At the same time, authorities need to ensure that adding the objective of financial stability to their mandate does not erode the independence of central banks. Similarly, it needs to be assessed whether central banks are equipped with appropriate tools to pursue the expanded mandate. In this context, Smaghi (2009) argues that unless central banks are explicitly equipped with the appropriate macro-prudential supervisory instruments, they cannot be considered responsible for financial stability. Although there is no consensus on the issue, central banks would necessarily have to strengthen their macroeconomic assessment exercises. It may be noted that financial stability is seen as an

important prerequisite for better and efficient transmission mechanism of monetary policy. Thus, the issue boils down to how to incorporate financial factors in the standard models of the transmission mechanism used by central banks. Since there is no agency or regulator definitively mandated with financial stability, formulating a meaningful concept and measure of financial stability would be a challenging task for policy authorities like central banks.

7.118 Another issue that remains crucial while using unconventional monetary measures is its balance sheet implications for central banks and the moral hazard problem that it creates for market participants by increasing incentives to take on excessive risks. During the recent crisis, central banks' balance sheets in most advanced countries witnessed large expansion with a significant change in their composition with the inclusion of illiquid/ un-marketable assets. In particular, large excess reserves might result in rapid credit expansion fuelling inflationary pressures. They expose the central bank to interest rate risk and, at least in principle, credit risk. However, selling back assets may not be so simple. Substantial losses could be realised which could be politically awkward and might dent credibility. Furthermore, the lack of marketability of certain types of assets in the central bank balance sheet may not be useful in normal open market operations. This may hinder liquidity management operations and, thus, may dilute the ability of monetary policy as inflationary pressures re-emerge.

Challenge of Formulating Appropriate Exit Strategies

7.119 As in many past banking crises, the proposed solutions to the current financial solvency crisis have combined three main elements: guaranteeing liabilities; recapitalising the institutions; and separating out troubled assets. However, these policies are fraught with the challenges of trade-offs. On the one hand, restructuring mechanisms can help restart productive investment, while on the other hand, financial assistance is costly. Similarly, rescue packages can also generate costs through misallocations of capital or through the distortion of incentives and moral hazard risks. Measures entail distributional effects as they usually transfer resources from taxpayers to shareholders. According to an estimate by the IMF Staff, only one-fifth of the fiscal stimulus given by G-20 countries is permanent. Nevertheless, it becomes important for policymakers to contemplate an exit strategy which strikes a right balance between the potential cost and benefits of these policies by formulating appropriate reversal policies. Fiscal authorities, both in advanced and emerging economies, are likely to face challenges in designing fiscal adjustment strategies to bring government debt to prudent levels and strengthen fiscal institutions to support such adjustments while maintaining adequate social safety nets. Given the lower market tolerance for high debts in some emerging economies due to lower and more volatile revenue bases and greater reliance on short-term external debt, they may have to aim at lower debt ratios that are even below pre-crisis levels. Similarly, central banks which had to expand their operational framework for systemic liquidity provision by the sheer demand of market circumstances should not be left with the long-term consequences of credit problems that may arise from *ad hoc* measures. Otherwise, it may distort their policy choices in the immediate periods. Thus, policy makers have to take a circumspect view on the retention, timing and sequencing of withdrawal of measures.

7.120 Although the unprecedented dose of policy stimulus that was delivered by countries around the world in response to the global crisis was conditioned by the urgency of the situation and to a large extent helped avoid another Great Depression, the magnitude of the stimulus has been so large that while reverting to the 'new normal', the management of the exit will be critical to avoid a double-dip, market disruptions and future inflation. In this context, once the global economy starts gaining momentum, the timing and pace of reversing would assume crucial importance. The

sequencing of exit from the stimulus measures entails issues such as: (i) whether to first unwind monetary policies or fiscal policies, (ii) whether to exit first from conventional or unconventional policies and (iii) whether to exit in a co-ordinated manner. On the pace of exit, policy authorities face the issue of whether to unwind aggressively or gradually. Despite the fact that the global economy seems to be recovering at a faster pace than anticipated, it is increasingly perceived that the post-crisis management of exit could not be less complicated and challenging than during the crisis when the stimulus had to be delivered. The recovery process is perceived to be still fragile and not uniform across countries due to different countries operating in different stages of the cycles, having varying level of global integration and also not having the same extent of dependence on stimulus to sustain the recovery. Moreover, recent developments in Europe suggest that some weak spots are still remaining in the global economy. Although the design of exit strategies is most likely to be a country-specific phenomenon, there is a pressing need for international co-ordination of policy exits of systemically important countries. Lack of policy co-ordination in this respect could create adverse spillovers from one country to others through interest rate differentials, again posing challenges for central banks. The potential for spillovers from exit policy choices underscores the importance of international consistency, *albeit* not necessarily synchronicity. In addition, there could be a challenge with regard to the communication of exit strategies of various policy measures. For instance, early communication on exit of fiscal policy measures could undermine confidence in the market and aggravate recovery concerns. Thus, it would be a challenging task for policymakers to decide what and when to communicate exit strategies. Untimely or early communication regarding the exit of certain policy measures may not be desirable and, thus, needs careful assessment by policymakers.

7.121 The above discussion suggests that one of the concerns at the moment is devising a calibrated exit from the unprecedented monetary accommodation provided worldwide as part of the stimulus package. While early withdrawal of monetary accommodation may derail the recovery process, delayed actions may build up inflationary expectations. Therefore, balancing growth and inflation remains as a major challenge for central challenging banks while formulating exit strategy. It may be noted that some central banks (*e.g.*, Reserve Bank of Australia, Peoples Bank of China, Reserve Bank of India and Banco Central do Brasil) have started undertaking monetary tightening measures.

7.122 In the Indian context, the importance of co-ordination in the fiscal and monetary exits was reiterated in the third Quarter Review of Monetary Policy 2009-10 (January 29, 2010). The reversal of monetary accommodation cannot be effective unless there is also a roll-back of government borrowing. It was indicated that even as government borrowing increased abruptly during 2008-09 and 2009-10, it could be managed through a host of measures that bolstered liquidity. Those liquidity infusion options will not be available to the same extent during 2010-11. On top of that, there will be additional constraints. Inflation pressures will remain and private credit demand will be stronger with the threat of crowding out becoming quite real. Similarly, highlighting the importance of returning to the path of fiscal consolidation for both short-term economic management and medium-term fiscal sustainability reasons, it emphasised the need to (i) indicate a roadmap for fiscal consolidation; and (ii) spell out the broad contours of tax policies and expenditure compression that will define this roadmap. The Reserve Bank announced the first phase of exit from the expansionary monetary policy by terminating some sector-specific facilities and restoring the statutory liquidity ratio (SLR) of scheduled commercial banks to a pre-crisis level in the Second Quarter Review of Monetary Policy in October 2009. Against the backdrop of the current global and domestic macroeconomic conditions, outlooks and risks, it was indicated that one of the factors that shapes

current policy stance is that a consolidating recovery should encourage a clear and explicit shift in the monetary policy stance from 'managing the crisis' to 'managing the recovery', and it is necessary to carry the process of exit further. Accordingly, further monetary tightening measures were undertaken subsequently.

Challenges for International Monetary System

7.123 In the aftermath of the crisis, concerns about the role of the dollar as a reserve currency and potential alternative reserve currencies have been raised in various quarters. It is argued that economic and financial problems in the US, and in particular its large fiscal imbalances, present serious risks to the value of the dollar and, hence, of a disorderly adjustment in the international system. There have been a number of proposals for how to address concerns related to reserve currencies. At this juncture, the US dollar satisfies these conditions and continues to be the international reserve currency. The share of the US dollar in the official reserves of the countries has been very stable over the past 30 years despite large increases in the reserves of the EMEs. Globally, the bulk of foreign exchange transactions are denominated in US dollars. Similarly, a large proportion of trade of the EMEs is invoiced in US dollars. Thus, at present, there does not seem to be any alternative to the US dollar and it will continue to be the global reserve currency. Despite this, there seems to be increasing consensus about the shortcomings of the present system. The management of international liquidity is based on a fundamental asymmetry, *i.e.*, while the U.S. represents about 25 per cent of world GDP, the dollar represents 65-75 per cent of central bank international reserves. This implies that there is an undue reliance on national currencies to manage international liquidity. Thus, the recurrence of recent phases of instability does enhance uncertainties about sudden disruptive adjustments in the global monetary system. Global imbalances might have been reduced somewhat during this phase of the crisis but remain unresolved. A lot would depend on the monetary policies of the US and major emerging economies. According to Carney (2009), "(s)ince divergent growth and inflation prospects require different policy mixes, it is unlikely that monetary policy suitable for United States will be appropriate for most other countries... If this divergence in optimal monetary policy stance increases, the strains on the system will grow." This will have implications for exchange rates and, in particular, the dollar and will pose challenges for emerging markets. Thus, international monetary reform should be seen as an integral element for achieving a sustainable resolution of the recent crisis. The emergence of an alternate currency as the reserve currency, however, will have to emerge by its strength.

Challenge to Resist Trade Protectionism

7.124 Experience of the Great Depression of 1930s showed that major advanced economies resorted to protectionist measures. They undertook substantial currency devaluations, imposed exchange restrictions, increased import tariffs and introduced import quotas. As a result, global trade declined by 25 per cent between 1929 and 1933. During the recent crisis, even though there was a substantial decline of 17 per cent in world trade volume between October 2009 and January 2009, it could be attributed to reasons other than protectionist measures. Despite the fact that most of the countries refrained from significant protectionist measures in the wake of recent crisis, it is perceived that they may re-emerge if job losses in major advanced economies continue to persist. As high unemployment persists in advanced economies, a major concern, as highlighted by IMF (2010a) is that temporary joblessness will turn into long-term unemployment. As new crisis in Greece poised to spread across the Eurozone, trade protectionism may once again become a policy instrument for policymakers. Further depreciation of Euro would erode competitiveness of major trader countries like US and China which may also compel them to undertake some protectionist measures.

7.125 In this context, importance of timing of exit strategies is reiterated. According to Henn and McDonald (2010), "[w]hen fiscal, monetary, and financial sector stimulus measures are withdrawn, affected firms and industries may begin to call for trade protection. Higher commodity prices bring a risk that some countries will impose taxes or restrictions on their commodity exports - a risk that was demonstrated during the 2007–08 food price crisis. Finally, in some emerging markets a surge in capital inflows has brought significant currency appreciation. Regardless of the appropriateness of the new exchange rate, this can strain the competitive position of exporters and of the import-competing domestic sector and generate pressure for import protection and export support." It is perceived that such protectionist measures could weaken world economic recovery process. Thus, it is challenge for policy makers to resist any direct and indirect protectionist measures to the extent possible in the period ahead when unemployment in most advanced economies is likely to remain high.

XI. CONCLUDING OBSERVATIONS

7.126 The above discussion underscores that the origins of the global financial turmoil and the consequent 'great recession' were quite broad and complex. The literature analysing various causes of the recent crisis since its onset is quite abundant. It can be concluded that the causes of the crisis help us draw lessons, the implementation of which, however, could be a challenging task for policy-making bodies at the national and international levels.

7.127 The underlying factors held responsible for the crisis range from excessive leverages and risk appetite fuelled by an extended period of unusually low interest rates and large global imbalances, deficient risk management practices, uncontrolled financial innovation, lack of investor due diligence and weaknesses in the regulatory and supervisory arrangements. According to Caruana (2009), if history is any guide, herding behaviour is common and people tend to be overly myopic and euphoric when things go well. He cautioned that, when the bust is over, it is likely to be followed by another boom that is characterised by increased risk appetite, outright optimism and excessive focus on short-term gains, not least in the financial industry. Thus, it is pertinent to start contemplating the necessary corrective actions so as to reduce the probability of future recurrences of such crises and mitigate their impact when they occur.

7.128 The foregoing discussion focused on key issues that policymakers have to deliberate on. There may not be complete consensus on certain issues arising out of the recent crisis, but certain aspects are obvious enough to be addressed. As stated above, the lessons to be learned are implicit in the causes. But a great deal of work needs to be done to translate the lessons into specific measures that help avoid and mitigate the occurrence of such a crisis in future. It is essential that the lessons that have been identified from this experience are actually learnt and public policy and market behaviour adapt accordingly. Learning and adapting the right lessons from the global financial crisis would, indeed, be a challenge not only for policymakers of advanced economies but also for emerging economies, whose policies, individually and collectively, are expected to have a greater influence on the evolution of the global economy and the financial system in the period ahead.

7.129 Past experience suggests that crises create space and acceptance for necessary reforms. Although crises are painful in the sense that they result in output loss with its consequent welfare implications, at the same time they provide an opportunity to restructure and build resilience to such stresses in future. Thus, it is imperative to determine the areas in which the policy framework needs to be redesigned from the regulators' point of view as also to revisit the areas of problems best resolved by players from banking and finance. Given the extreme nature of the problem, there could be a demand for extreme actions. Reforms and new regulations, however, have to be rationalised with careful deliberations. The caution is to avoid major costs in terms of efficiency loss, arising from extreme control, and conserve market

structure from far-reaching and extensive regulations. Nevertheless, these issues need to be discussed carefully, both in India and at the international level, from the regulators' standpoint.

7.130 It is still a matter of debate whether the best response to the housing bubble would have been regulatory policy or monetary policy. The broad lesson, however, in the context of the new global policy environment is that policymakers should focus on an integrated approach targeted at reinforcing and possibly raising potential growth by better connecting macroeconomic, structural, and regulatory policies and enhancing international co-operation to prevent unsustainable imbalances. Unstable financial markets prompted central banks and governments to take a number of exceptional measures beyond their traditional role of LOLR. Central banks coming to the rescue of financial entities and going beyond their traditional concept of LOLR was warranted by deteriorating conditions in the financial markets. Although such extraordinary support by central banks undoubtedly proved to be a useful tool in crisis management, it also entails a moral hazard problem by increasing incentives for banks and market participants to take on excessive risk. With the broadened concept of LOLR, market participants may perceive that central banks would also stand ready to provide funding liquidity and assist their counterparties the next time they engage in even riskier operations aiming at higher yields. This poses a challenging task for central banks to ensure a balanced way to support the development and functioning of new, fast-growing financial markets.

7.131 Apart from the short and medium-term issues, the recent crisis has exposed substantial structural weaknesses in many areas of the financial system, both in the micro and the macro domains, which may be addressed in the medium term as the global economy evolves. Recent developments have clearly demonstrated how globalisation impacts financial stability, *i.e.*, the fall-out from the US sub-prime crisis spilled over rapidly to the EU market, channelled into the international capital markets through securitisation. Having realised how fast financial shocks can be transmitted in a globalised financial market, there is a greater need for better co-ordination of crisis prevention and management. Several developments played a role, including the proliferation of complex mortgage-backed securities and derivatives with highly opaque structures, high leverage, and inadequate risk management. The crisis has brought to the front the importance of macro-liquidity risk in the global financial system and underscored the need for regulating and supervising it on a continuous basis. Thus, both the private sector and financial regulators must improve their ability to monitor and control risk-taking. As noted by the Squam Lake Report (June 2010), the creation of information infrastructure, allowing governments to see crises building up, is important.

7.132 Central banks have to review their adequacy in respect of macroeconomic assessment exercises and their role in terms of policy response. A system-wide approach to regulation and supervision is warranted. In fact, many have argued that there is a need to examine whether all systemically important financial institutions must be subject to central bank regulation. Moreover, not only greater co-ordination among international standards-setting bodies at the global level but also among the regulators and supervisors at the national level is required. For instance, there is a need for a common set of accounting principles across borders. In global markets, it is no longer desirable to have global institutions that abide by the differing standards of accounting and disclosure of their host countries. As discussed in the previous sections, financial innovation has increased the opaqueness of the financial market. Thus, regulators and supervisors should focus on enhancing transparency in different segments of the financial system. In addition, there should be an increasing focus on strong institutional frameworks to ensure fiscal sustainability, both in advanced countries as well as in EMEs.

7.133 Even though there does not seem to be consensus regarding the exact contributions of easy monetary policy in building up the crisis, there is no denying the fact that monetary policy is assigned a bigger role in crisis resolution. It is now increasingly being realised that the relationship between monetary policy and asset prices needs to be revisited. Central banks may have to develop new measures of systemic risks so that the distinction between genuine and speculative booms is made more explicit. Other important challenges for the monetary policy authorities would be (i) ensuring financial stability, although price stability should continue as the primary objective of monetary policy; (ii) the size of the central bank balance sheet; (iii) co-ordination with fiscal policy; (iv) effective communication with different stakeholders; and (v) stabilising the financial sector and the real economy.

7.134 Looking ahead, devising a calibrated exit from the unprecedented monetary accommodation globally is now one of the most important challenges. Credible plans to wind down and reverse the stimulus and to restore long-term, sustainable fiscal positions should be elaborated. In this context, how fast the global economy recovers would be important. Otherwise, the risk of a continuing recession may aggravate vulnerability to sovereigns, particularly countries with high debt-to-GDP levels and significant contingent liabilities to the financial sector. In fact, sovereign debt problems are already evident in countries like Greece where debt-GDP ratio rose to 115 per cent caused by persistently growing fiscal deficit and declining GDP. There are concerns that such crisis may get spread to other vulnerable economies in EU. Such countries need to ensure that they make credible commitments towards debt sustainability. Therefore, other vulnerable countries need to ensure that their policy initiatives do not pose substantial solvency risks. It would be a challenging task for policymakers to develop at an early stage credible and coherent exit strategies to roll back crisis interventions when market conditions permit and the economic outlook is on a firm recovery path. In this context, there are two main challenges. First, it needs to be ensured that continued short-term support does not distort incentives and endanger public balance sheets, with damaging consequences in the medium term. Second, at the same time, fiscal authorities have to ensure that the timing and sequencing of their withdrawal measures do not hamper growth prospects. Towards this end, coherent sequencing and clear communications from monetary, regulatory, and fiscal authorities is warranted.

7.135 It seems that the lessons of earlier crises motivated some emerging economies to strengthen budgets, reduce public debts, limit current account deficits, and more carefully manage foreign currency exposures, resulting in reduced vulnerabilities and increased policy space. This proved to be profoundly advantageous during the recent crisis, Nonetheless, for the EMEs, the key message from the recent crisis is with regard to continuation of sound policy frameworks in the financial sector, generating adequate investment capacities to balance global demand, continued efforts towards fiscal consolidation to have better room for discretionary policy in future and reviewing their approach towards capital account liberalisation. Global developments in the recent period strengthened the argument that EMEs cannot immunise themselves from the repercussions of a crisis originating in advanced economies. However, the impact could be moderated by undertaking sound policy measures in the financial and fiscal sectors. In order to achieve better sustainability of their growth momentum, EMEs, *inter alia*, need to enhance the absorptive capacities of their economies. This is required not only for raising their growth potential but also for balancing global demand and better absorption of capital inflows. Furthermore, the crisis has drawn attention to the issue of capital account management by the EMEs.

7.136 The list of lessons from the crisis may not be exhaustive or fully conclusive. Nonetheless, they unravelled a number of issues that need to be debated by policymakers at the national and global

level. Whilst the recent crisis may prompt fundamental changes to economic regulation given the interconnection between markets beyond national boundaries, national solutions may no longer suffice. By requiring international co-operation on macroeconomic policies, trade and financial regulations, the recent financial crisis may more importantly provide an opportunity for countries to take the first step towards the consensus required to address far deeper global problems. Recent crisis also provides an opportune time to gather the political will to put in place long-needed structural reforms, nationally as well globally. Lessons drawn from the crisis need to be prioritised and translated into action by policymakers in a harmonised manner so as to minimise the possibility of such crisis in future.

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