REPORT ON CURRENCY AND FINANCE 2003-04

RESERVE BANK OF INDIA

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In India - Rs.200 (Normal)
- Rs.225 (Inclusive of Registered Book-Post Charges)
- Rs.150 (Concessional)

Abroad - US $ 25 (Inclusive of Air Mail Courier Charges)

ISSN 0972-8759

Published by Muneesh Kapur for the Reserve Bank of India, Mumbai-400 001
and designed and printed by him at Alco Corporation, A-2/72, Shah & Nahar Industrial Estate, Lower Parel, Mumbai-400 013

FOREWORD

The structural reforms process was initiated in India in the early 1990s in order to place the economy on a higher growth path on a sustainable basis. These reforms encompassed almost all sectors of the Indian economy and, among others, necessitated changes in the monetary policy framework. This Report undertakes a detailed assessment of key issues related to Monetary Policy. The Report is in many ways a continuation of the analysis attempted in the previous two Reports. The Report on Currency and Finance, 2001-02 undertook a comprehensive assessment of a decade of economic reforms in India, whereas the Report for the year 2002-03 focused on management of the external sector in an open economic framework.

The conduct of monetary policy has been changing in response to the process of financial liberalisation. The increasing volume of cross-border trade in goods and services along with that of financial flows have enhanced inter-dependence in monetary policy formulation across countries. Sharp swings in capital flows and volatile exchange rate movements have emerged as key concerns in monetary management in the emerging market economies. Accordingly, all central banks are paying greater attention to financial stability considerations in their overall design of monetary policy formulation. Financial innovations have also induced significant transformation in the operating procedures of monetary management. Concomitantly, there is now a growing recognition of the need to impart to central banks a greater degree of independence, especially from the budgetary compulsions of the Governments, in order to stabilise inflationary expectations for ensuring price stability.

In India, the conduct of monetary policy during the 1990s has been shaped by wide-ranging structural reforms during this period. This necessitated significant changes in the monetary policy framework in terms of objectives, instruments and targets. The changes had to be dovetailed with a simultaneous process of evolution of financial markets in consonance with the aim of enhancing allocative efficiency through the process of price discovery. At the heart of monetary reforms lay the containment of the fiscal dominance of monetary policy. In contrast, with the opening up of the economy, monetary management had to contend increasingly with challenges emanating from the large volume and sudden switches in capital flows and episodes of volatility in the financial markets. In this milieu, while price stability and credit availability remained twin objectives of monetary policy, financial stability has gradually emerged as a key consideration in the conduct of monetary policy.

Against this backdrop, the Report is focused on the theme of "Monetary Policy" and focuses on the developments since the early 1990s. The Report begins by addressing the changes in the monetary policy framework in terms of objectives, intermediate targets and operating procedures of monetary policy. This is followed by a discussion on monetary management in an open economy, especially in view of the multiple external shocks impacting the economy during the period of reform. The Report then attempts an assessment of the effectiveness of monetary policy in achieving its key objectives, *viz.*, inflation and credit availability. Issues relating to the monetary transmission mechanism are also addressed in the context of the financial sector reforms and the concomitant shifts in the operating procedures of monetary policy. Finally, the Report examines issues related to financial stability. An overall assessment of the conduct of monetary policy in India indicates that the Reserve Bank has been successful in maintaining price and financial stability, even in an environment characterised by repeated shocks, both domestic and external. Efforts to improve credit delivery mechanism have also started yielding dividend in recent years.

The Report has been prepared in the Department of Economic Analysis and Policy (DEAP) under the overall guidance, supervision and editing by Dr. Narendra Jadhav, Principal Adviser and Chief Economist.

The Report was drafted by a core team of economists led by Muneesh Kapur. The core team comprised Indranil Bhattacharyya, Binod B. Bhoi, Saibal Ghosh, Rajeev Jain, A. Karunagaran, Arun Vishnu Kumar, S. M. Lokare, Rekha Misra, M. Ramaiah, Satyananda Sahoo, Indranil Sen Gupta, S. Suraj, and Amar Nath Yadav.

The Report had the benefit of extensive comments from Rajiv Ranjan, Partha Ray, Arindam Roy, Sunando Roy and Bhupal Singh. Valuable support was provided by P.K.Bhoite, B.S. Dekate, Radhika Menon and Rajesh Salvi.

Almost every officer of the Department was associated in the preparation of Chapter II of the Report, dealing with recent economic developments.

I hope that the analyses presented in this Report would not only encourage further research in monetary economics, but also lead to constructive debate in the country, thereby contributing to the future conduct of monetary policy.

I take this opportunity to place on record my deep appreciation of the outstanding professional skills in the Reserve Bank of India, in the design and in the conduct of monetary policy by all officers in the Reserve Bank of India and in preparation of the Report by officers of the Department of Economic Analysis and Policy. I would also like to express my appreciation to Governor Reddy for giving me the opportunity to oversee the final stages of completion and publication of the Report, even though I demitted the office of Deputy Governor a few weeks ago.

Rakesh Mohan
Secretary,
Department of Economic Affairs,
Ministry of Finance,
Government of India.
Deputy Governor, RBI (until October 31, 2004)

December 23, 2004

CONTENTS

(Contd...)

LIST OF BOX ITEMS

(Contd...)

LIST OF BOX ITEMS

LIST OF CHARTS

(Contd...)

LIST OF CHARTS

(Contd...)

LIST OF CHARTS

LIST OF TABLES

(Contd...)

LIST OF TABLES

(Contd...)

LIST OF TABLES

(Contd...)

LIST OF TABLES

(Contd...)

LIST OF TABLES

ABBREVIATIONS

ADB	–	Asian Development Bank
ADs	–	Authorised Dealers
ADRs	–	American Depository Receipts
AFS	–	Available for Sale
AIFIs	–	All India Financial Institutions
ARDL	–	Autoregressive Distributed Lag
ASEAN	–	Association of South East Asian Nations
ATM	–	Automated Teller Machine
BEI	–	Business Expectation Index
BFS	–	Board for Financial Supervision
BIS	–	Bank for International Settlements
BNM	–	Bank-Negara Malaysia
BoP	–	Balance of Payments
BoK	–	Bank of Korea
BPLR	–	Benchmark Prime Lending Rate
BPO	–	Business Process Outsourcing
BSE	–	The Stock Exchange, Mumbai
CAAP	–	Capital Adequacy Assessment Programme
CAS	–	Credit Authorisation Scheme
CBLO	–	Collateralised Borrowing and Lending Operations
CCL	–	Contingent Credit Line
CCIL	–	Clearing Corporation of India Limited
CDs	–	Certificates of Deposit
CDR	–	Corporate Debt Restructuring
CIB	–	Capital Indexed Bonds
CIBIL	–	Credit Information Bureau of India Limited
CII	–	Confederation of Indian Industry
CLF	–	Collateralised Lending Facility
CNB	–	Czech National Bank
CoR	–	Certificate of Registration
CP	–	Commercial Paper
CPI	–	Consumer Price Index
CPI-IW	–	Consumer Price Index for Industrial Workers
CPSS	–	Core Principles for Systematically Important Payment Systems
CRAR	–	Capital to Risk-Weighted Assets Ratio
CRISIL	–	Credit Rating and Information Services of India Limited
CRR	–	Cash Reserve Ratio
CSGL	–	Constituents' Subsidiary General Ledger
CSO	–	Central Statistical Organisation
DA	–	Doubtful Assets
DCA	–	Department of Company Affairs
DFIs	–	Development Finance Institutions
DGCI&S	–	Directorate General of Commercial Intelligence and Statistics
DICGC	–	Deposit Insurance and Credit Guarantee Corporation
DNS	–	Deferred Net Settlement
DSRE	–	Deposit Scheme for Retiring Employees
ECB	–	European Central Bank
ECBs	–	External Commercial Borrowings
ECB GAAP	–	European Central Bank Generally Accepted Accounting Principles
ECGC	–	Export Credit Guarantee Corporation
ECS	–	Electronic Clearing Service
EFP	–	External Finance Premium
EFT	–	Electronic Funds Transfer
ELA	–	Emergency Liquidity Assistance
EMEs	–	Emerging Market Economies
EMBI	–	Emerging Market Bond Index
ERM	–	Exchange Rate Mechanism

ESA	–	Emergency Solvency Assistance
EU	–	European Union
FCA	–	Foreign Currency Assets
FCCBs	–	Foreign Currency Convertible Bonds
FCNR(B)	–	Foreign Currency Non-Resident (Banks)
FDI	–	Foreign Direct Investment
FEMA	–	Foreign Exchange Management Act
FI	–	Financial Institution
FII	–	Foreign Institutional Investor
FIPB	–	Foreign Investment Promotion Board
FMC	–	Financial Market Committee
FMCG	–	Fast Moving Consumer Goods
FoB	–	Free on Board
FOMC	–	Federal Open Market Committee
FoR	–	Free on Rail
FRA	–	Forward Rate Agreement
FRBs	–	Floating Rate Bonds
FRBM	–	Fiscal Responsibility and Budget Management Act
FRL	–	Full Reservoir Level
FSA	–	Financial Services Authority
FSR	–	Financial Stability Review
FTPL	–	Fiscal Theory of the Price Level
FVR	–	Funding Volatility Ratio
GATT	–	General Agreement on Tariffs and Trade
GCC	–	General Credit Card
GCF	–	Gross Capital Formation
GDCF	–	Gross Domestic Capital Formation
GDP	–	Gross Domestic Product
GDS	–	Gross Domestic Savings
GDRs	–	Global Depository Receipts
GFD	–	Gross Fiscal Deficit
GoI	–	Government of India
HFT	–	Held for Trading
HICP	–	Harmonised Index of Consumer Prices
HLCCFCM	–	High Level Coordinaton Committee on Financial and Capital Markets
HTM	–	Held to Maturity
IAS	–	International Accounting Standards
IBA	–	Indian Banks' Association
IDL	–	Intra-Day Liquidity
IFI	–	International Financial Institution
IFR	–	Investment Fluctuation Reserve
IIBI	–	Industrial Investment Bank of India Ltd.
IIP	–	Index of Industrial Production
ILAF	–	Interim Liquidity Adjustment Facility
IMD	–	India Meteorological Department
IMF	–	International Monetary Fund
IOSCO	–	International Organisation of Securities Commission
IPAs	–	Issuing and Paying Agents
IPO	–	Initial Public Offer
IRDA	–	Insurance Regulatory and Development Authority
IRFC	–	Indian Railway Finance Corporation
IRS	–	Interest Rate Swap
IT	–	Inflation Targeting/Information Technology
KCC	–	Kisan Credit Card
LAF	–	Liquidity Adjustment Facility
LIBOR	–	London Inter-Bank Offered Rate
LIC	–	Life Insurance Corporation
LILICS	–	Less Indebted Low-Income Countries

LOLR	–	Lender of Last Resort
LPA	–	Long Period Average
LTCM	–	Long Term Capital Management
LVPS	–	Large Value Payment Systems
M_1	–	Narrow Money
M_3	–	Broad Money
MBS	–	Mortgage Backed Securities
MCI	–	Monetary Conditions Index
MIBOR	–	Mumbai Inter-bank Offered Rate
MIFOR	–	Mumbai Inter-bank Forward Offered Rate
MoU	–	Memorandum of Understanding
MPC	–	Monetary Policy Committee
MPI	–	Macro Prudential Indicators
MSP	–	Minimum Support Price
MSBs	–	Market Stabilisation Bills/Bonds
MSS	–	Market Stabilisation Scheme
MTFRP	–	Medium Term Fiscal Restructuring Policy
NABARD	–	National Bank for Agriculture and Rural Development
NASDAQ	–	National Association of Securities Dealers Automatic Quotation System
NAV	–	Net Asset Value
NBER	–	National Bureau of Economic Research
NBFCs	–	Non-Banking Financial Companies
NBP	–	The National Bank of Poland
NCAER	–	National Council of Applied Economic Research
NCDs	–	Negotiable Certificates of Deposit
NCDs	–	Non-Convertible Debentures
NDA	–	Net Domestic Assets
NDS	–	Negotiated Dealing System
NDTL	–	Net Demand and Time Liabilities
NEER	–	Nominal Effective Exchange Rate
NFA	–	Net Foreign Assets
NFEA	–	Net Foreign Exchange Assets
NHB	–	National Housing Bank
NOF	–	Net Owned Funds
NPA	–	Non-Performing Asset
NPL	–	Non-Performing Loan
NRBICG	–	Net RBI Credit to Central Government
NR(E)RA	–	Non-Resident (External) Rupee Account
NRI	–	Non-Resident Indian
NR(NR)RD	–	Non-Resident (Non-Repatriable) Rupee Deposits
NSE	–	National Stock Exchange
NSE-MIBOR	–	National Stock Exchange - Mumbai - Inter-Bank Offer Rate
NSSF	–	National Small Savings Fund
OD	–	Overdraft
OECD	–	Organisation for Economic Co-operation and Development
OMO	–	Open Market Operations
OMS	–	Open Market Sales
OWS	–	Other Welfare Schemes
PACS	–	Primary Agricultural Credit Societies
PBC	–	The Peoples Bank of China
PCA	–	Prompt Corrective Action
PDs	–	Primary Dealers
PDS	–	Public Distribution System
PFC	–	Power Finance Corporaton
PFI	–	Public Financial Institution
PLR	–	Prime Lending Rate
PPP	–	Purchasing Power Parity

PSBs	–	Public Sector Banks
PSCFC	–	Post-Shipment Export Credit in Foreign Currency
PSS	–	Payment and Settlement System
PSUs	–	Public Sector Undertakings
PTLRs	–	Prime Term Lending Rates
QFCs	–	Quasi-Fiscal Costs
QFII	–	Qualified Foreign Institutional Investor
QRs	–	Quantitative Restrictions
RBI	–	Reserve Bank of India
RBS	–	Risk Based Supervision
REC	–	Rural Electrification Corporation
REER	–	Real Effective Exchange Rate
RIDF	–	Rural Infrastructure Development Fund
RNBCs	–	Residuary Non-Banking Companies
RoA	–	Return on Assets
RRBs	–	Regional Rural Banks
RTGS	–	Real Time Gross Settlement
RTP	–	Reserve Tranche Position
SACP	–	Special Agriculture Credit Plans
SARFAESI	–	Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest
SBI	–	State Bank of India
SCBs	–	Scheduled Commercial Banks
SDRs	–	Special Drawing Rights
SDRM	–	Sovereign Debt Restructuring Mechanism
SEBI	–	Securities and Exchange Board of India
SENSEX	–	BSE Sensitive Index
SFCs	–	State Financial Corporations
SHGs	–	Self-Help Groups
SIA	–	Secretariat of Industrial Assistance
SIDCs	–	State Industrial Development Corporations
SIFIs	–	Systemically Important Financial Intermediaries
SLR	–	Statutory Liquidity Ratio
SME	–	Small and Medium Enterprises
SPVs	–	Special Purpose Vehicles
SSEs	–	Systematic Scale Economies
SSI	–	Small Scale Industries
STT	–	Securities Transaction Tax
TBs	–	Treasury Bills
TPDS	–	Targeted Public Distribution System
UCBs	–	Urban Co-operative Banks
UIP	–	Uncovered Interest Parity
UMA	–	Unpleasant Monetary Arithmetic
URR	–	Unremunerative Reserve Requirement
UTs	–	Union Territories
UTI	–	Unit Trust of India
VAR	–	Vector Auto Regression
WMA	–	Ways and Means Advances
WPI	–	Wholesale Price Index
WTO	–	World Trade Organisation
YTM	–	Yield To Maturity

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URL : www.rbi.org.in

I THEME OF THE REPORT

1.1 The process of financial and external liberalisation during the last couple of decades worldwide has impacted upon the conduct of monetary policy in a significant manner. Increasing trade openness, higher volume and sharp swings in capital flows as well as greater volatility in exchange rates are some of the key stylised facts of the 1990s. As a result, economic developments abroad have an increasingly high degree of influence on domestic output and prices. Simultaneously, risks of contagion have increased manifold, posing threats to macroeconomic and financial stability. Consequently, these developments have necessitated refinements in objectives, strategies and tactics of monetary policy, even though central banks have had a noteworthy success in terms of their inflation objective.

1.2 In India, structural reforms were initiated in the early 1990s. These reforms encompassed all sectors of the economy and involved reorientation towards a market-based economy to foster greater efficiency and growth. Concomitantly, these reforms also impacted upon the monetary policy framework. The opening up of the economy posed a number of challenges to monetary management. Nonetheless, the period has witnessed significant gains in terms of reduction in inflation as well as in containing inflation expectations. Efforts to improve credit availability have also paid rich dividends. Finally, financial stability was maintained in India, even when many other developing and emerging market economies witnessed episodes of financial instability. This Report undertakes a detailed discussion of all these issues. While the focus of the Report is on the evolution of monetary policy in India and the challenges facing it, different Chapters present these developments against the recent theoretical developments in the field of monetary economics and the accumulated cross-country empirical evidence.

1.3 As a prelude to the substantive theme based discussions, Chapter II of the Report titled "Recent Economic Developments" provides an analytical account of macroeconomic developments in the Indian economy during the year 2004-05 so far.

1.4 In the theme-based discussions, Chapter III titled "Monetary Policy Framework: An Analytical Overview" covers issues relating to objectives, intermediate targets and operating procedures of monetary policy. It explores the rationale for price stability objective of monetary policy and discusses the trade-offs between inflation and growth that a central bank faces. The role of institutional developments - central bank independence and fiscal rules - in contributing to monetary stability is also addressed. It is followed by a discussion on strategies and tactics of monetary policy, with a focus on key changes during the 1980s and 1990s in the intermediate targets, instruments and operating procedures to meet the evolving challenges. Issues in liquidity management to ensure stable conditions in money markets are also covered. The Chapter also revisits issues related to stability of money demand.

1.5 Chapter IV of the Report – "Monetary Policy in an Open Economy" - focuses on the challenges that external openness imposes upon the conduct of monetary policy. The Chapter presents stylised facts on key aspects of globalisation and its implications on the conduct of monetary policy. During the 1990s, capital flows to emerging markets have exhibited a highly volatile behaviour – witnessing a sharp rise in the quantum till the Asian crisis followed by massive reversals in the aftermath of the Asian crisis and a recovery in recent period. Implications of the volatility in capital flows and its impact on exchange rate and monetary management are addressed. It examines factors that have led emerging economies in the recent years to become net exporters of capital to the mature economies. A cross-country survey of policy responses to manage capital flows is presented to draw policy lessons for India. In view of the threat posed by existing global macroeconomic imbalances, a key feature is the recognition that increased financial openness requires monetary policy to pursue orderly conditions in financial markets. An attempt is made to measure synchronicity of business cycles in India with its trading partners to examine temporal changes in co-movement. The need to manage the quantum of capital flows and its associated volatility and to innovate constantly in terms of instruments, as borne out by the Indian experience, is also highlighted.

1.6 Chapter V entitled "Monetary Policy and Inflation" undertakes an assessment of monetary policy in achieving its primary objective, *viz*., inflation. It examines the global inflation record of the last half-

century. This is followed by an assessment of various factors that led to the initial build-up of inflation during the 1960s and 1970s and its subsequent containment in the 1980s and 1990s. The experience with inflation targeting framework is critically analysed and its relevance for an emerging economy like India is assessed. The need for fiscal prudence in maintaining price stability is highlighted. Issues such as the conduct of monetary policy in a low inflation environment, exchange-rate pass-through to domestic prices and the impact of oil shocks on economic activity are also addressed. The Chapter also attempts to model inflation process in India and provides estimates of the degree of pass-through of exchange rate to domestic inflation.

1.7 Bank credit is an important source of finance for growth, especially in developing and emerging economies. At the same time, bank credit is an important channel of monetary transmission. Furthermore, excessive increases in credit aggregates are believed to contain lead information on future financial vulnerability. These set of issues are discussed in Chapter VI entitled "Bank Credit". With a shift away from directed credit towards a market-oriented system of credit allocation, high information and transaction costs can have an adverse effect on credit availability for key sectors of the economy. In this context, the Chapter dwells upon the various measures taken by the Reserve Bank to improve the credit delivery mechanism in the Indian financial sector. An assessment of these efforts in augmenting the flow of credit to various sectors of the economy in the post-reforms period is undertaken. The issue of banks' preference for investment in Government securities, despite reductions in statutory preemptions, is also addressed.

1.8 Monetary policy is known to operate with long and variable lags. Chapter VII - "Monetary Transmission Mechanism" - undertakes a discussion of issues related to monetary transmission. A brief theoretical overview of various channels through which monetary policy influences output and prices is followed by a cross-country empirical evidence on transmission lags and pass-through from policy rates to market rates. The Chapter also covers various policy efforts initiated in India with a view to impart flexibility to the interest rate structure as well as movements in real interest rates. Finally, the Chapter undertakes empirical exercises to explore the monetary transmission channels in India including estimates of interest rate pass-through.

1.9 Given the increasing concerns on financial instability, Chapter VIII focussed on "Financial Stability" undertakes a discussion of key issues in regard to financial stability. The Chapter starts with a discussion as to why price stability is not sufficient for financial stability. The role of monetary policy *per se* in contributing to financial stability – in particular, responding to asset price misalignments – is critically analysed. Given the limitations of the traditional monetary instruments in achieving financial stability, the Chapter discusses other policies - regulation, supervision, payments and settlement systems, accounting and governance norms and lender of last resort facility – that are needed to curb excessive volatility in the financial markets and to maintain financial stability through building strong institutions. The Indian approach to ensuring financial stability is highlighted.

1.10 The final Chapter of the Report - "Assessment of Monetary Policy" - presents an overall assessment on the key issues and challenges in the conduct of monetary policy, with special reference to India.

II RECENT ECONOMIC DEVELOPMENTS

Introduction

2.1 The Indian economy continued to exhibit strong growth during 2004-05 with a noticeable improvement in macroeconomic fundamentals. Industrial growth gathered momentum, led by the manufacturing sector. A noteworthy aspect is the momentum gained in the growth of the capital goods sector signalling building up of capacity which should augur well for future growth prospects. Merchandise export growth has been quite robust, indicative of the growing global competitiveness of the Indian economy. Corporate results continue to be good and various business expectation surveys point to a reasonable optimism regarding growth. Non-food credit has recorded a strong and a fairly broad-based growth, indicative of a revival in the investment activity. Services sector continued its high growth path. An encouraging sign within the favourable macroeconomic environment is the incipient improvement in the Government finances. Notwithstanding the setback emanating from a less than satisfactory South-West monsoon, the Indian economy is poised for strong growth during the fiscal 2004-05 and is expected to remain one of the fastest growing economies in the world.

2.2 Although there has been an increase in the headline inflation in recent months, it is largely supply induced, driven mainly by external factors. More recently, the pressure of high international oil prices seems to have eased somewhat, although the problem of overhang of liquidity remains. Despite a large order of increase in oil imports, the balance of payments position remained comfortable. The current account is expected to remain in surplus for the fourth consecutive year enabled by continued strong inflows from private remittances. Capital flows remained buoyant, reflecting mainly foreign investors' growing confidence in the Indian economy. Foreign exchange reserves recorded a substantial increase on top of last year's record accretion. Financial markets have generally exhibited orderly conditions, notwithstanding some hardening of yields across the spectrum.

2.3 Against this brief overview, this Chapter provides an analytical account of macroeconomic developments during 2004-05 so far. Section I covers the developments in the real sector while Section II covers the Central and State Governments finances. Section III dwells on monetary and credit developments and the behaviour of inflation. Developments in the financial markets and the external sector are discussed in Sections IV and V, respectively. Concluding observations are presented in Section VI.

I. REAL SECTOR

National Income

2.4 The Indian economy recorded a strong growth performance during 2003-04. The recovery in agriculture from the previous year's drought was the main driver of the overall growth of the economy. This was supported by simultaneous and well-distributed firming-up of activity in industry and services. Industrial production benefited from buoyant external demand. Accordingly, the real GDP growth accelerated to 8.2 per cent during 2003-04 from 4.0 per cent in 2002-03. The growth in the industrial sector was led by manufacturing and 'electricity, gas and water supply'. The services sector also experienced an acceleration in growth rate mainly driven by the sub-sectors, namely, 'trade, hotels, transport and communication' and 'community, social and personal services' (Table 2.1 and Chart II.1).

2.5 The Indian economy entered the fiscal year 2004-05 on an optimistic note. The India Meteorological Department (IMD) forecasted a normal South-West monsoon during the year. The South-West monsoon had in fact set in ahead of schedule. Based on the assumption of a normal monsoon, sustained growth of the industrial sector and good performance of exports, the Reserve Bank (RBI) had, in its Annual Policy Statement for the year 2004-05 (May 2004), projected a real Gross Domestic Product (GDP) growth rate of 6.5 to 7.0 per cent. A number of other institutions also projected growth rates close to this range. However, the erratic behaviour of the South-West monsoon (temporally as well as spatially) and the uncertain global oil price movements prompted most of these institutions to revise downward their growth forecasts over the course of the year. The Reserve Bank, in its Mid-Term Review

Table 2.1: Real Gross Domestic Product

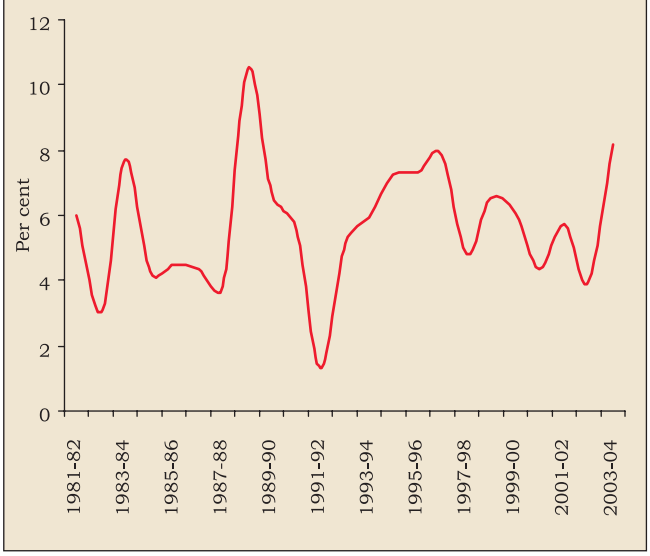
(Per cent)

Sector	1998-99	1999-00	2000-01	2001-02 P	2002-03 QE	2003-04 RE
1	2	3	4	5	6	7
Growth Rate						
1. Agriculture and Allied Activities	**6.2**	**0.3**	**-0.1**	**6.5**	**-5.2**	**9.1**
1.1 Agriculture	6.9	-0.1	-0.4	6.7	-6.0	..
2. Industry	**3.2**	**4.1**	**6.5**	**3.5**	**6.2**	**6.8**
2.1 Mining and Quarrying	2.8	3.3	2.4	2.2	8.8	4.4
2.2 Manufacturing	2.7	4.0	7.4	3.6	6.2	7.3
2.3 Electricity, Gas and Water Supply	7.0	5.2	4.3	3.6	3.8	5.5
3. Services	**8.1**	**9.9**	**5.6**	**6.4**	**7.2**	**8.5**
3.1 Construction	6.2	8.0	6.7	3.1	7.3	6.2
3.2 Trade, Hotels, Transport and Communication	7.7	8.5	6.8	8.7	7.0	11.2
3.3 Financing, Insurance, Real Estate and Business Services	7.4	10.6	3.5	4.5	8.8	6.8
3.4 Community, Social and Personal Services	10.4	12.2	5.2	5.6	5.8	6.0
4. GDP at factor cost	**6.5**	**6.1**	**4.4**	**5.8**	**4.0**	**8.2**
Sectoral Composition						
1. Agriculture and Allied Activities	26.4	25.0	23.9	24.1	22.0	22.1
2. Industry	22.0	21.6	22.0	21.5	22.0	21.7
3. Services	51.6	53.4	54.1	54.4	56.1	56.2
4. Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Memo:						
Real GDP at factor cost at 1993-94 prices (Rupees crore)	10,82,748	11,48,368	11,98,592	12,67,833	13,18,321	14,26,701

.. Not Available.
P : Provisional. QE : Quick Estimates. RE : Revised Estimates.
Source : Central Statistical Organisation.

of Annual Policy Statement (October 2004), also revised downward its projection of the economy's growth rate to 6.0 to 6.5 per cent (Table 2.2).

Chart II.1 : Annual Growth Rate of GDP at Factor Cost (at constant prices)



2.6 Notwithstanding this downward revision, as noted before, India will continue to be one of the fastest growing economies among the major emerging market economies during 2004-05 (Table 2.3).

2.7 Real GDP growth at 7.4 per cent in the first quarter of 2004-05 was along expected lines. The growth was driven by the buoyancy in industry and services. The prime movers were manufacturing, 'trade, hotels, transport and communication' and 'community, social and personal services' (Table 2.4).

Saving and Investment

2.8 The savings rate improved marginally to 24.2 per cent in 2002-03 although it still remains below the peak of 25.1 per cent achieved in 1995-96, a year coterminous with the phase of high growth in the Indian economy (Table 2.5 and Chart II.2). The improvement in savings rate during 2002-03 was entirely due to the reduced public sector dis-savings, reflecting improved Government finances. There was a marginal decline in the household financial savings

Table 2.2: Growth in Real Gross Domestic Product, 2004-05 : Forecasts for India

(Per cent)

Agency	Initial	Revised / Latest	Date of Projection
1	2	3	4
Asian Development Bank	7.4	6.5	(End September 2004)
Centre for Monitoring Indian Economy	6.3	6.2	(Mid-October 2004)
Confederation of Indian Industry	6.6 - 7.0	6.5	(Early November 2004)
Credit Rating Information Services of India Limited	6.2	5.6	(End November 2004)
National Council of Applied Economic Research	7.1	6.5 - 6.7	(Early August 2004)
Investment and Credit Rating Agency	6.4	6.3	(End November 2004)
International Monetary Fund	6.8	6.4	(September 2004)
Reserve Bank of India	6.5 - 7.0	6.0 - 6.5	(October 2004) *
Memo:			
Range	6.2 - 7.4	5.6 - 6.7	

* Mid-Term Review of Annual Policy Statement, 2004-05.

rate primarily on account of a sharp decline in deposits with non-banking companies. The savings rate of the private corporate sector continued its declining trend.

2.9 There was also an improvement in the investment rate in 2002-03, mainly due to an increase in the household sector investment (Chart II.3). The increase in the investment rate, however, was lower than that in the savings rate. Consequently, the overall saving-investment surplus increased further during 2002-03 and this was mirrored in the current account surplus of the balance of payments. The surplus of the private corporate sector continued to finance the resource gap of the public sector, although the resource gap of public sector declined marginally during the year (Table 2.6).

Table 2.3: Output Growth: Cross-Country Comparison

(Per cent)

Country	Average 1996-2004	1996	1997	1998	1999	2000	2001	2002	2003	2004 P
1	2	3	4	5	6	7	8	9	10	11
World	**3.8**	**4.1**	**4.2**	**2.8**	**3.7**	**4.7**	**2.4**	**3.0**	**3.9**	**5.0**
Advanced economies	**2.8**	**3.0**	**3.4**	**2.7**	**3.5**	**3.9**	**1.2**	**1.6**	**2.1**	**3.6**
Emerging Market and developing Countries	**5.0**	**5.6**	**5.3**	**3.0**	**4.0**	**5.9**	**4.0**	**4.8**	**6.1**	**6.6**
Argentina	1.5	5.5	8.1	3.8	-3.4	-0.8	-4.4	-10.9	8.8	7.0
Bangladesh	5.2	5.0	5.3	5.0	5.4	5.6	4.8	4.9	5.4	5.5
Brazil	2.0	2.7	3.3	0.1	0.8	4.4	1.3	1.9	-0.2	4.0
Chile	3.9	7.4	6.6	3.2	-0.8	4.5	3.4	2.2	3.3	4.9
China	8.4	9.6	8.8	7.8	7.1	8.0	7.5	8.3	9.1	9.0
India	**5.9**	**7.5**	**5.0**	**5.8**	**6.7**	**5.4**	**3.9**	**5.0**	**7.2**	**6.4 @**
Indonesia	2.4	8.0	4.5	-13.1	0.8	4.9	3.5	3.7	4.1	4.8
Malaysia	4.6	10.0	7.3	-7.4	6.1	8.9	0.3	4.1	5.3	6.5
Mexico	3.7	5.2	6.8	5.0	3.6	6.6	-0.2	0.8	1.3	4.0
Pakistan	3.9	2.9	1.8	3.1	4.0	3.4	2.7	4.4	6.2	6.3
Philippines	3.8	5.8	5.2	-0.6	3.4	4.4	1.8	4.3	4.7	5.2
Sri Lanka	4.3	3.8	6.4	4.7	4.3	6.0	-1.5	3.9	5.9	5.0
Thailand	2.6	5.9	-1.4	-10.5	4.4	4.8	2.1	5.4	6.8	6.2

@ RBI's projection for the financial year 2004-05, as indicated in the Mid-Term Review of Annual Policy Statement, 2004-05 is 6.0-6.5 per cent.
P : IMF Projections.
Source : World Economic Outlook, September 2004, IMF.

Table 2.4: Quarterly Sectoral Growth Rates of Real Gross Domestic Product

(Per cent)

Sector	2002-03				2003-04				2004-05
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
1	2	3	4	5	6	7	8	9	10
1. Agriculture and Allied Activities	**0.6**	**-2.9**	**-9.8**	**-6.3**	**0.1**	**6.8**	**16.5**	**10.5**	**3.4**
2. Industry	**4.8**	**6.7**	**6.7**	**6.7**	**6.0**	**6.3**	**6.8**	**7.9**	**7.6**
2.1 Mining and Quarrying	11.8	10.1	7.6	6.3	2.3	2.0	3.6	9.0	6.1
2.2 Manufacturing	4.0	6.7	6.9	7.3	6.6	7.4	7.5	7.6	8.0
2.3 Electricity, Gas and Water Supply	4.3	3.9	4.8	2.2	4.8	2.9	4.8	9.5	6.3
3. Services	**7.2**	**7.9**	**6.8**	**6.8**	**7.2**	**10.0**	**9.1**	**7.6**	**8.9**
3.1 Construction	7.1	9.5	7.4	5.5	5.9	6.4	4.8	7.6	3.6
3.2 Trade, Hotels, Transport and Communication	6.4	7.4	6.5	7.7	7.3	9.9	13.3	13.8	11.0
3.3 Financing, Insurance, Real Estate and Business Services	9.6	9.8	8.6	7.5	5.7	6.4	6.5	8.5	7.0
3.4 Community, Social and Personal Services	6.2	6.4	5.6	5.1	9.4	15.2	5.3	-3.1	9.3
4. GDP at factor cost	**5.1**	**5.5**	**2.0**	**3.7**	**5.3**	**8.6**	**10.5**	**8.2**	**7.4**

Source : Central Statistical Organisation.

Agriculture

2.10 Prospects for agriculture were bright in the beginning of the year in view of an optimistic forecast of a normal South-West monsoon by the IMD coupled with an ahead-of-schedule onset of the South-West monsoon. Thereafter, however, the monsoon was erratic with prolonged weakness/break over different parts of the country during late June, most of July (the main sowing month), late August and early September. The impact of deficient rainfall was acute during June 1 to July 28, 2004, when the deviation of the actual from the normal turned out to be 15 per cent. There was, however, a turnaround in rainfall during August and to some extent in September 2004. This provided respite from the moisture stress for late sown crops, besides replenishing the reservoirs.

Table 2.5: Gross Domestic Saving and Investment

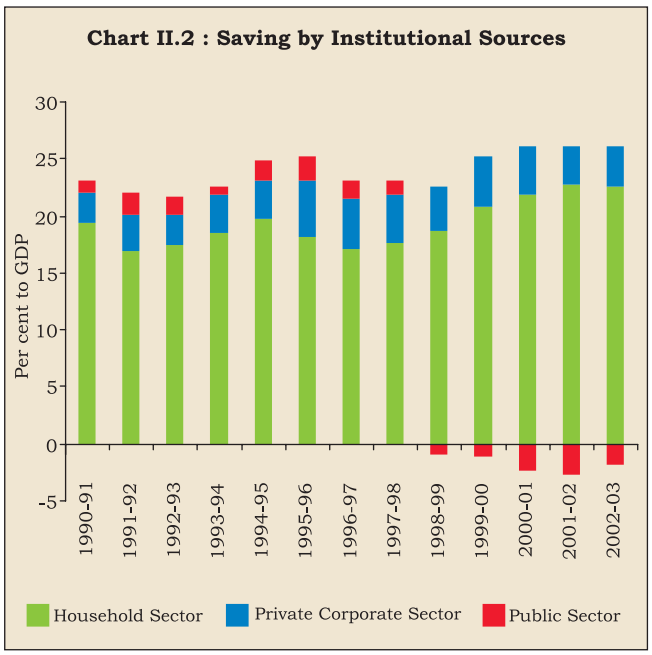
(Per cent of GDP at current market prices)

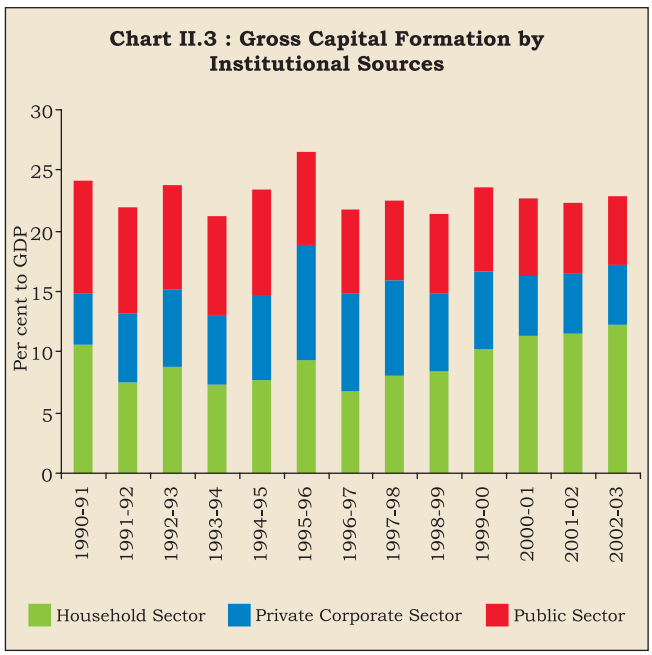
Item	1998-99	1999-00	2000-01	2001-02 P	2002-03 QE
1	2	3	4	5	6
1. Gross Domestic Saving (GDS) (1.1+1.2+1.3)	21.5	24.2	23.7	23.5	24.2
1.1 Household Sector	18.8	20.9	21.9	22.7	22.6
a) Financial Assets	10.4	10.6	10.7	11.1	10.3
b) Physical Assets	8.4	10.3	11.3	11.6	12.3
1.2 Private Corporate Sector	3.7	4.4	4.1	3.5	3.4
1.3 Public Sector	-1.0	-1.0	-2.3	-2.7	-1.9
2. Saving-Investment Balance	-1.1	-1.1	-0.6	0.3	0.9
3. Gross Domestic Capital Formation (GDCF)#	22.6	25.3	24.4	23.1	23.3
4. Gross Capital Formation (GCF) (4.1+4.2+4.3)	21.4	23.7	22.6	22.3	22.8
4.1 Household Sector	8.4	10.3	11.3	11.6	12.3
4.2 Private Corporate Sector	6.4	6.5	5.1	4.9	4.8
4.3 Public Sector	6.6	6.9	6.3	5.8	5.7

Adjusted for errors and omissions.

P : Provisional estimates. QE : Quick Estimates.

Source : Central Statistical Organisation.





2.11 The spatial distribution of rainfall during the South-West monsoon was uneven with 23 out of 36 meteorological sub-divisions recording normal rainfall and 13 receiving deficient/scanty rainfall. While none of the sub-divisions experienced severe drought conditions (wherein the seasonal rainfall deficiency exceeds 50 per cent), Himachal Pradesh, West Uttar Pradesh, Punjab, West Rajasthan, Vidarbha and Telengana experienced moderate drought conditions (with the seasonal rainfall deficiency between 25 and 50 per cent). Among the broad regions, North-West India was the worst affected with a seasonal rainfall deficiency of 22 per cent. Seasonal rainfall deficiency in Central India, North-East India and South Peninsula was 11 per cent, 6 per cent and 15 per cent, respectively. Of the 524 meteorological districts, 25 per cent of the districts experienced moderate drought, while 7 per cent of the districts experienced severe drought conditions during the season.

2.12 The cumulative area-weighted rainfall during the South-West monsoon (June 1 to September 30, 2004) was 13 per cent below the Long Period Average (LPA) as compared with two per cent above the LPA during the last season. However, as the total area of the sub-divisions experiencing drought conditions was only 18 per cent, the year was not declared as an all-India drought year. This is also evident from the fact that the number of sub-divisions experiencing deficient/scanty rainfall during the South-West monsoon 2004 was 13 as compared with 21 during 2002, which was declared as a drought year. A positive development has been the satisfactory progress of the North-East monsoon so far (Table 2.7).

Table 2.6: Saving-Investment Balance

(Per cent of GDP at current market prices)

Item	1990-91	1994-95	1999-00	2000-01	2001-02 P	2002-03 QE
1	2	3	4	5	6	7
Saving-Investment Balance (GDS-GDCF)	-3.2	-1.2	-1.1	-0.6	0.3	0.9
Private Sector Balance*	7.3	8.5	8.5	9.7	9.7	8.9
Public Sector Balance*	-8.2	-7.0	-8.0	-8.6	-8.6	-7.5
Current Account Balance	-3.1	-1.0	-1.0	-0.8	0.2	0.8

* Private and Public investments refer to gross capital formation (GCF), unadjusted for errors and omissions.

GDS : Gross Domestic Saving. GDCF : Gross Domestic Capital Formation. P : Provisional. QE : Quick Estimates.

Note : Derived from CSO and the Reserve Bank data. Components do not add up to totals because of errors and omissions.

Table 2.7: Cumulative Rainfall

Category	No. of Sub-Divisions					
	South-West Monsoon (June 1 to Sept. 30)			North-East Monsoon (Oct. 1 to Dec. 8)		
	2002	2003	2004	2002	2003	2004
1	2	3	4	5	6	7
Excess	1	7	0	3	8	12
Normal	14	26	23	7	9	8
Deficient	19	3	13	12	4	15
Scanty/no rain	2	0	0	14	15	1
Memo:						
Cumulative rainfall during the season above (+) / below (-) normal	- 19	+ 2	- 13	..	+ 3	- 4
Live Water Storage*	53	59	64	41	51	54

* As per cent of Full Reservoir Level; the data are as on October 1 during South-West monsoon season and as on December 10 during North-East monsoon season of the relevant year.

Source : India Meteorological Department.

Kharif 2004

2.13 The crop production prospects during the *kharif* season, as a consequence, have been somewhat subdued. Given the fact that there is little scope for increasing the area under crops and any increase in production has to come through only by way of increasing the productivity levels, strategies were drawn for *kharif* 2004. These included: promotion of cropping system approach for augmenting the productivity of field crops as a whole as against the individual crop approach; ensuring timely pre-positioning of inputs like seeds, fertilisers, pesticides and improved implements in adequate quantities; adoption of timely and adequate weed control measures; and encouraging the cultivation of pulses and oilseeds as inter-crop in rainfed farming systems.

2.14 According to the First Advance Estimates of the Ministry of Agriculture (September 18, 2004), the production of foodgrains during *kharif* 2004-05 is placed at 100.3 million tonnes, a decline of around 10 per cent over that achieved in the preceding year. This decline is mainly due to the slippage in the production of coarse cereals. Among non-foodgrains, while the production of sugarcane and cotton is expected to remain closer to the previous year's level, the output of oilseeds is likely to receive a setback (Table 2.8).

Table 2.8: Season-wise Agricultural Production

(Million Tonnes)

Crop	*Kharif*			*Rabi*		
	2002-03 A	2003-04 A.E.@	2004-05 A.E. $	2002-03 A	2003-04 A.E. @	2004-05 Target
1	2	3	4	5	6	7
Rice	63.7	73.9	71.1	9.0	13.1	..
Wheat	..	..	..	65.1	72.1	..
Coarse cereals	20.0	31.8	24.5	5.3	6.0	..
Pulses	4.1	6.3	4.7	7.0	8.9	..
Total Foodgrains	**87.8**	**112.1**	**100.3**	**86.4**	**100.0**	**111.3**
Oilseeds	9.1	17.0	15.5	6.0	8.1	..
Sugarcane	281.6	236.2	235.5			
Cotton*	8.7	13.8	13.9			
Jute & Mesta**	11.4	11.2	10.8			

.. Not Available. * In million bales of 170 kilograms each. ** In million bales of 180 kilograms each.
A : Achievement.
A.E. @ : Fourth Advance Estimates as on September 18, 2004.
A.E. $: First Advance Estimates as on September 18, 2004.
Source : Ministry of Agriculture, Government of India.

Rabi 2004

2.15 The revival of the South-West monsoon towards the end of the season and the satisfactory progress of the North-East monsoon together with a *rabi* strategy announced by the Government are expected to lead to a recovery in *rabi* production. The total live water storage as on December 10, 2004 in the 71 major reservoirs[1] was 54 per cent of the Full Reservoir Level (FRL), higher than that in the corresponding period of preceding year. This is expected to recoup the losses in *kharif* production to some extent (Table 2.9). Incidentally, the contribution of *kharif* crops in the overall production has been coming down in the recent years. The Ministry of Agriculture has set the target for foodgrains production during the *rabi* 2004-05 at 111.3 million tonnes. A series of measures have been announced to increase *rabi* production, which include: launching of a nation-wide campaign to provide seeds of new varieties of crops, other inputs, and timely information so that farmers are able to make best use of moisture present in the soil; crop-specific strategies with a renewed emphasis on ensuring timely and adequate availability of inputs; propagation of soil ameliorants; promotion of water saving devices; promotion of zero-till seed drills, seed-cum-fertiliser drills, strip drills and raised bed planter in rice-wheat cropping system; promotion of integrated weed, pest, and disease management system; monitoring the progress of States in their work plans under Macro-Management Scheme; and promotion of Technology Missions on various crops. Reinvigorating the flow of credit to agriculture continues to be an important constituent of the overall strategy to augment the agricultural production. The initiatives in this direction included: announcing a package to double the flow of credit to agriculture; advising the States to closely monitor credit disbursements and the progress of the recently announced debt-restructuring package; deputing teams to States to take stock of availability of inputs including credit distribution; rewarding the States achieving the targets with additional plan outlay; and, honouring the officials showing good results with cash and office facilities. Furthermore, States were advised to enhance the coverage under Kisan Credit Card (KCC) Scheme, besides allowing them to expand the scope of KCC to include the component of consumption credit and term loans for investment purposes in agriculture and allied activities.

Procurement, Off-take and Stocks of Foodgrains

2.16 The procurement of foodgrains (mainly rice, wheat and some coarse cereals) during 2004-05 (upto end-November 2004) was higher by around three million tonnes over the comparable period of the previous year. The off-take during April-September 2004, however, was lower by eight million tonnes over the preceding year. The decline was mainly due to a sharp fall in the off-take under Open Market Sales (OMS) which could be attributed to the comfortable supply situation in different parts of the country. Although the total stocks of foodgrains with the Food Corporation of India and other Government agencies as on October 1, 2004 were lower than the previous year, they continued to be higher than the buffer stock norms (Table 2.10).

Table 2.9: Crop-wise Targets/Achievements

(Million Tonnes)

Crop	2002-03		2003-04		2004-05
	T	A	T	A.E @	T
1	2	3	4	5	6
Rice	93.0	72.7	93.0	87.0	93.5
Wheat	78.0	65.1	78.0	72.1	79.5
Coarse cereals	33.0	25.3	34.0	37.8	36.8
Pulses	16.0	11.1	15.0	15.2	15.3
Total Foodgrains	220.0	174.2	220.0	212.1	225.1
Oilseeds	27.0	15.1	24.7	25.1	26.2
Sugarcane	320.0	281.6	320.0	236.2	270.0
Cotton*	15.0	8.7	15.0	13.8	15.0
Jute & Mesta**	12.0	11.4	12.0	11.2	11.8

* In million bales of 170 kilograms each. ** In million bales of 180 kilograms each.
T : Target. A : Achievement.
A.E @ : Fourth Advance Estimates as on September 18, 2004.
Source : Ministry of Agriculture, Government of India.

[1] These reservoirs monitored by the Central Water Commission account for 62 per cent of the total reservoir capacity of the country.

Table 2.10: Management of Foodstocks

(Million Tonnes)

Year/Month	Opening Stock of Foodgrains	Foodgrains Procurement	Foodgrains Off-take				Closing Stock	Buffer Stock Norms #
			PDS	OWS	OMS - Domestic	Exports		
1	2	3	4	5	6	7	8	9
2003								
April	32.8	13.1	1.6	0.9	0.2	0.8	41.3	15.8
May	41.3	3.7	2.0	1.6	0.01	0.9	39.8	
June	39.8	0.9	1.7	2.5	0.2	1.3	35.2	
July	35.2	0.2	2.3	1.4	0.01	2.2	30.5	24.3
August	30.5	0.2	1.9	0.8	0.01	0.9	27.9	
September	27.9	0.2	2.2	1.0	0.01	0.9	23.7	
October	23.7	6.4	1.8	0.7	0.01	0.9	22.1	18.1
November	22.1	2.4	2.1	0.7	0.01	0.6	25.4	
December	25.4	2.9	1.9	0.7	0.2	0.5	25.0	
2004								
January	25.0	2.3	2.4	0.9	0.2	0.4	24.0	16.8
February	24.0	2.6	1.9	1.1	0.1	0.5	22.8	
March	22.8	2.1	2.4	1.2	0.1	0.4	20.7	
April	20.7	15.7	2.0	0.5	0.0	0.3	32.4	15.8
May	32.4	3.1	2.2	0.6	0.0	0.1	32.3	
June	32.3	1.3	2.3	1.0	0.0	0.1	30.6	
July	30.6	0.5	2.3	1.0	0.0	0.1	27.2	24.3
August	27.2	0.2	2.3	1.0	0.0	0.01	23.0	
September	23.0	0.2	2.2	1.0	0.0	0.1	20.3	
October	20.3	6.5	..	..	..	..	..	18.1
November	..	2.7	..	..	..	..	..	
Memo:								
2003-04 April - September		27.1 *	11.7	8.2	0.6	7.0		
2004-05 April - September		30.2 *	13.2	5.1	0.1	1.0		

.. Not Available. * Pertain to April-November.

The total minimum stocks to be maintained on the first day of the quarter by the public sector agencies under New Buffer Stocking Policy with effect from October 30, 1998.

PDS : Public Distribution System. OWS : Other Welfare Schemes. OMS : Open Market Sales.

Note : Closing stock figures may differ from those arrived at by adding the opening stocks and procurement and deducting off-take as stocks include coarse grains also.

Source : Ministry of Consumer Affairs, Food and Public Distribution, Government of India.

Industry

2.17 Industrial growth has strengthened further during 2004-05 so far (up to October 2004) (Chart II.4 and Table 2.11). The growth was led by all the three sectors, namely manufacturing, mining and electricity. The electricity sector showed an impressive growth mainly due to higher generation in thermal and hydro power plants on the back of higher demand emanating both from agriculture and industrial sectors. Higher growth in mining was largely contributed by the coal sector, which, in turn, was due to higher demand from the industrial sector and lesser interruption in mining activities during the monsoon.

2.18 During April-October 2004, 14 manufacturing industry groups (according to 2-digit level classification) recorded positive growth (Table 2.12). Notably, two industries, machinery and equipment, and chemicals and chemical products, constituting around 24 per cent of weight in the Index of Industrial Production (IIP) recorded more than 17 per cent growth up to October 2004.

Chart II.4 : Sectoral Growth of IIP (April - October)

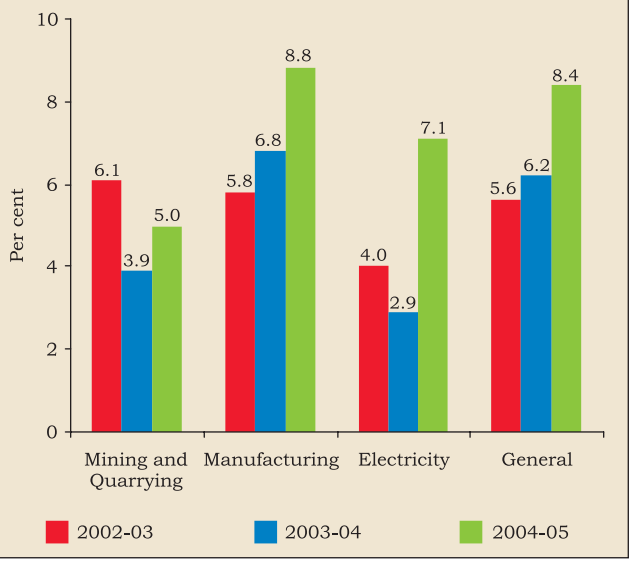


Table 2.11: Index of Industrial Production - Monthly Growth

(Per cent)

Month / Weight	General		Electricity		Mining & Quarrying		Manufacturing	
	(100.00)		(10.17)		(10.47)		(79.36)	
	2003-04	2004-05	2003-04	2004-05	2003-04	2004-05	2003-04	2004-05
1	2	3	4	5	6	7	8	9
April	4.2	8.9	1.9	10.3	6.3	9.1	4.3	8.8
May	6.4	6.8	5.2	3.1	4.7	5.3	6.7	7.5
June	6.7	7.3	5.4	4.5	5.7	2.7	6.9	8.1
July	6.6	8.5	-1.4	13.7	2.9	4.2	8.0	8.4
August	5.7	8.0	1.2	7.4	1.3	4.4	6.7	8.4
September	7.5	8.8	6.0	7.7	4.5	4.9	8.0	9.2
October	6.2	10.1	2.6	3.8	2.4	4.7	7.1	11.3
November	8.2	..	4.8	..	5.2	..	8.9	..
December	7.4	..	5.4	..	5.6	..	7.8	..
January	8.0	..	6.1	..	8.7	..	8.2	..
February	8.3	..	12.9	..	10.7	..	7.6	..
March	8.1	..	10.6	..	5.1	..	8.1	..
April-October	**6.2**	**8.4**	**2.9**	**7.1**	**3.9**	**5.0**	**6.8**	**8.8**

.. Not Available.
Source : Central Statistical Organisation.

2.19 In terms of the use-based classification, all sectors, *viz.,* basic, capital, intermediate and consumer goods registered higher growth during April-October 2004 as compared with the corresponding period of the previous year. However, consumer non-durables sector slowed down due to a decline in production mainly of food products and some industries in the basic chemicals and chemical products sector. On the other hand, consumer durables sector exhibited strong performance on account of increased demand both from rural and urban segments enabled by a significant increase in the retail credit. The improved growth performance of intermediate goods sector can be attributed to the surge in imports and higher capacity utilisation. The performance of the basic goods sector improved

Table 2.12: Growth of Manufacturing Industries (2-digit level Classification) - April-October 2004

Above 20 per cent	11-20 per cent	0-10 per cent	Negative
1	2	3	4
1. Machinery and equipment other than transport equipment (24.6)	1. Basic chemicals and chemical products except products of petroleum and coal (17.3)	1. Cotton textiles (8.7)	1. Jute and other vegetable fibre textiles (-3.2)
2. Other manufacturing industries (21.0)		2. Textiles products (including wearing apparels) (8.6)	2. Food products (-3.7)
		3. Beverages, tobacco and related products (7.1)	3. Wood and wood products, furniture and fixtures (-10.8)
		4. Metal products and parts (6.6)	
		5. Wool, silk and man-made fibre textiles (5.5)	
		6. Leather and leather & fur products (4.7)	
		7. Rubber, plastic, petroleum and coal products (4.1)	
		8. Transport equipment and parts (3.2)	
		9. Paper and paper products (2.1)	
		10. Basic metal and alloy (0.8)	
		11. Non-metallic mineral products (0.0)	

Note : Figures in brackets are growth rates.
Source : Central Statistical Organisation.

Table 2.13: Sectoral Contribution to IIP Growth

(Per cent)

Industry Group	Weight in IIP	Growth				Relative Contribution			
		April-March		April-October		April-March		April-October	
		2002-03	2003-04P	2003-04P	2004-05P	2002-03	2003-04P	2003-04P	2004-05P
1	2	3	4	5	6	7	8	9	10
Basic Goods	35.57	4.9	5.4	4.3	5.4	27.4	25.0	22.6	21.1
Capital Goods	9.26	10.5	13.1	9.2	15.1	16.2	18.0	13.7	17.1
Intermediate Goods	26.51	3.9	6.3	5.2	7.6	19.3	25.4	24.0	25.9
Consumer Goods (a+b)	28.66	7.1	7.1	8.4	10.0	37.0	31.0	39.7	35.9
a) Consumer Durables	5.36	-6.3	11.5	7.7	15.9	-8.9	11.9	9.2	14.3
b) Consumer Non-durables	23.30	12.0	5.7	8.6	8.1	45.9	19.2	30.4	21.6
IIP	**100.00**	**5.7**	**6.9**	**6.2**	**8.4**	**100.0**	**100.0**	**100.0**	**100.0**

P : Provisional.
Source : Central Statistical Organisation.

despite a slowdown in the growth of steel sector. For the second consecutive year, the industrial recovery has been mainly driven by intermediate goods and capital goods sectors and, therefore, their relative contribution to the overall industrial growth increased. It also signifies the building up of capacity and better prospects for expansion in investments (Table 2.13).

2.20 A noteworthy aspect of the present phase of industrial upturn is that the growth in capital goods sector is very robust indicating the positive nature of the growth momentum. The capital goods sector registered a growth of 13.1 per cent in 2003-04, which is the highest growth achieved during any financial year since the revision of the IIP in 1993-94. The recovery in the capital goods sector has been underway since May 2002 after a negative performance for more than a year. The demand for capital goods is on the rise due to capacity creation taking place across the basic goods, consumer goods and intermediate goods sectors.

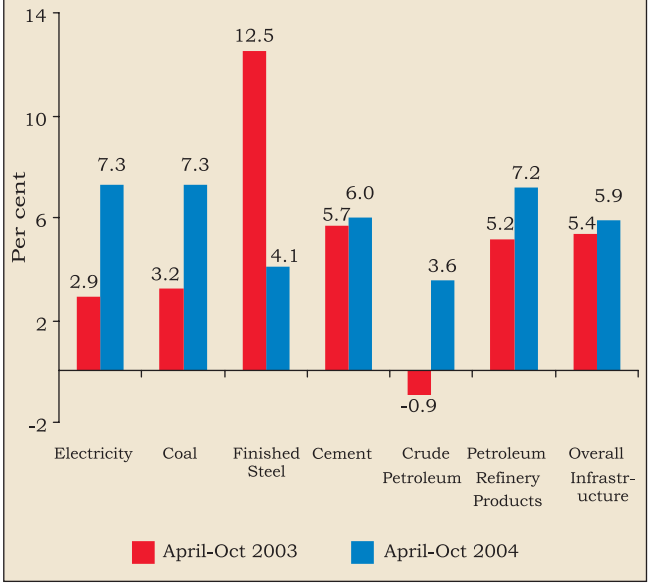
Infrastructure

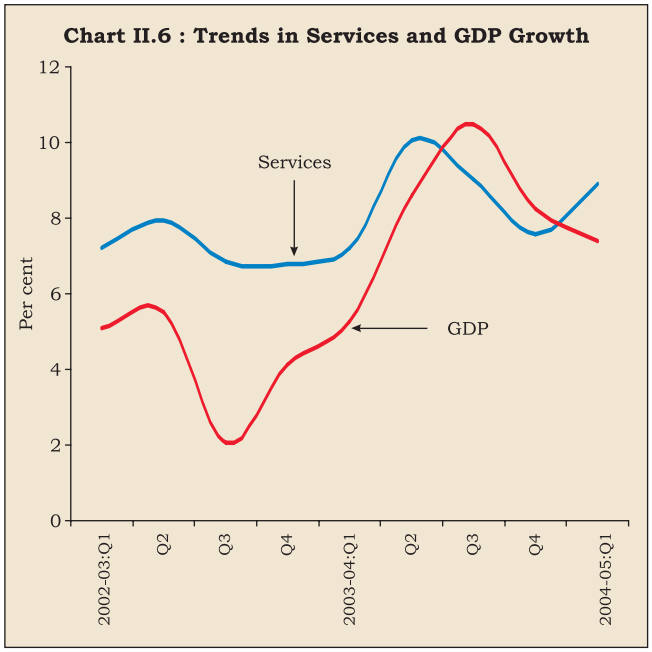
2.21 The subdued performance of the infrastructure industries during 2003-04 has been reversed during the current financial year due to better performance of electricity, coal and petroleum sectors. During April-October 2004, the overall growth of infrastructure industries accelerated to 5.9 per cent from 5.4 per cent in the corresponding period of 2003. All the core infrastructure industries, except finished steel, recorded higher growth as compared with the previous year. Both electricity and coal registered a high growth of 7.3 per cent. Increased power generation in thermal and hydro power plants and improved plant load factor at thermal power plants led to higher generation of electricity. Crude petroleum output made a turnaround during April-October 2004. The finished steel sector witnessed a steep deceleration in output, mainly due to higher input prices, supply bottlenecks in coking coal and a fall in the exports of steel (Chart II.5).

Services Sector

2.22 Services sector, as the main source of growth for the economy, sustained its momentum during the first quarter of the current financial year. According to the Central Statistical Organisation, the services recorded a growth of 8.9 per cent during April-June 2004 as compared with 7.2 per cent during April-June 2003 (Chart II.6 and Table 2.4). This was mainly led by the 'trade, hotels, transport and communication' sector (11

Chart II.5 : Growth of Infrastructure Industries





per cent) and 'community, social, and personal services' sectors (9.3 per cent). The expansion in the trade sector can be attributed to the increase in both exports and imports. Transport sector benefited from a number of factors such as the building up of new highways; the cut in customs duty on the inputs of auto components, which boosted the production of tractors and commercial vehicles; increase in cargo handled at major ports and harbours; and increase in freight and passenger traffic of railways. The growth of hotel industry was facilitated by a record increase in tourist inflows into the country. Lower tariffs in the cellular segment due to intense competition among the operators and higher penetration into the rural areas have led to substantial growth in the telecommunication sector.

2.23 Despite slowdown in global IT spending, jobless recovery in major markets and protectionist tendencies exhibited by the prominent developed markets, India continues to attract a large share of offshore business from major markets like the United States, European countries and Asia-Pacific regions. During the year 2003-04, Indian software and services exports generated revenues to the tune of US $ 12.5 billion by registering a spectacular growth of 30.5 per cent. This reflects the ability of the Indian firms to execute larger and more complex projects as well as high value added services.

Industrial Outlook

2.24 The continued broad-based recovery in industrial growth since April 2002 indicates that the industry is consolidating its performance and gathering momentum to move to a high growth trajectory. The current phase of industrial rebound could be attributed to improved investment climate, expanding external demand, improved domestic demand, ease in availability of finance and increasing capacity additions in the industrial sector. The robust performance of the capital goods sector coupled with the increased imports of capital goods indicate the possibility of capacity expansion in a large number of industries and point to a promising outlook for the industrial sector (Table 2.14). Export growth of manufactured goods has continued to remain strong.

Table 2.14: Performance of the Industrial Sector – Selective Indicators

(Growth in Per cent)

Year	IIP	Manufacturing IIP	Capital Goods	Consumer Goods	Non-Food Credit	Import of Capital Goods	Export of Manufactured Goods
1	2	3	4	5	6	7	8
1994-95	9.1	9.1	9.2	12.1	29.8	22.5	22.5
1995-96	13.0	14.1	5.4	12.8	22.5	44.1	16.4
1996-97	6.1	7.3	11.4	6.2	10.9	1.9	3.6
1997-98	6.7	6.7	5.8	5.5	15.1	3.4	7.9
1998-99	4.1	4.4	12.6	2.2	13.0	16.3	-2.8
1999-00	6.7	7.1	6.9	5.7	16.5	-8.2	15.2
2000-01	5.0	5.3	1.8	8.0	14.9	5.1	15.6
2001-02	2.7	2.9	-3.4	6.0	13.6	15.4	-2.8
2002-03	5.7	6.0	10.5	7.1	18.6	38.6	20.6
2003-04	6.9	7.3	13.1	7.1	18.4	20.5	18.3
2003-04 (April - October)	6.2	6.8	9.2	8.4	17.1	30.7 @	7.1 @
2004-05 (April - October)	8.4	8.8	15.1	10.0	26.1	30.1 @	28.6 @

@ Pertains to April - July period.

Source : Central Statistical Organisation and DGCI&S, Government of India.

Export of engineering goods, constituting about one-fifth of the total merchandise exports of the country, has been a fast growing sector in the industrial production. The liberalisation measures announced in the new foreign trade policy towards imports and exports of various industrial goods are expected to provide a further fillip to the industrial growth. The pick up in the core infrastructure sector growth during the current financial year so far is likely to continue through the rest of the year, which may give further boost to the industrial growth.

2.25 Business expectation surveys support an upbeat outlook. According to the 'Industrial Outlook Survey' of the Reserve Bank, the expectations on overall business situation for the quarter October-December 2004 show a higher level of confidence (47.4 per cent) as compared with the previous quarter (44.4 per cent). The Business Expectation Index (BEI) for October-December 2004 stands at 121.5 points, marking a rise of 1.3 per cent over the previous quarter. While the Confederation of Indian Industry's (CII's) Business Confidence Index for October 2004-March 2005 at 64.8 points exhibits a decline of 1.2 points as compared with April-September 2004, its Business Outlook Survey for October 2004-March 2005 reveals improved capacity utilisation and higher capital investment in the ensuing period.

II. FISCAL SITUATION

Central Government Finances

Union Budget 2004-05

2.26 The Union Budget (Regular) for 2004-05 was presented to the Parliament on July 8, 2004 against the backdrop of sound macroeconomic fundamentals as reflected in the highest GDP growth over the past 15 years and robust balance of payments position. The Union Budget seeks to carry forward the process of fiscal consolidation while sustaining the growth momentum with a renewed thrust on welfare programmes. Fiscal prudence, transparency, accountability and credibility have been institutionalised against the backdrop of implementation of fiscal rules. The Budget adopted a forward-looking approach providing, for the first time, a medium-term fiscal outlook. The Government's commitment to prudent financial policies was demonstrated by notifying the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 and the FRBM Rules, 2004 with effect from July 5, 2004. The FRBM Rules lay down a road map towards elimination of revenue deficit and a reduction of fiscal deficit to a level not more than three per cent of GDP by end-March 2008.

2.27 In accordance with the FRBM Rules, 2004, the Union Budget, 2004-05 adopted a strategy of revenue-led and front loaded fiscal consolidation for 2004-05. The emphasis has been on withdrawing the various exemptions and rationalising the tax structure so as to eliminate subjectivity in the tax system. Given the downward rigidities characterising the revenue expenditure, the attainment of the goals set out in the FRBM Rules depends on the realisation of the revenue buoyancy. The revenue deficit is budgeted to decline by nearly 24 per cent in 2004-05 as compared with a decline of around 7 per cent in the previous year. The reduction in revenue deficit is more than twice the envisaged reduction of 0.5 per cent of GDP per annum in the FRBM Rules, 2004, and is based mainly on the expectations of a higher growth in tax receipts. As a proportion of GDP, Gross Fiscal Deficit (GFD) is also set to decline by 0.4 percentage point to 4.4 per cent in 2004-05 with the revenue deficit constituting 55.4 per cent of GFD in 2004-05. Primary deficit, as a proportion of GDP, is however, expected to remain unchanged (Table 2.15 and Chart II.7).

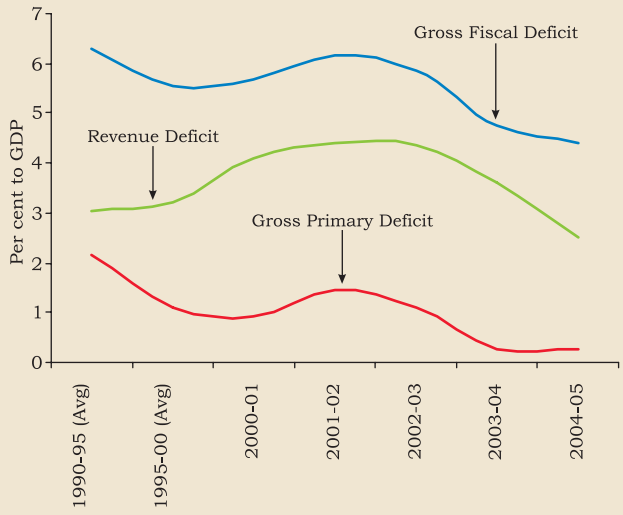
Table 2.15: Key Deficit Indicators of the Union Government

(Rupees crore)

Item	2002-03 (Accounts)	2003-04 (RE)	2004-05 (BE)	Variation (Per cent)	
				2003-04	2004-05
1	2	3	4	5	6
Gross Fiscal Deficit	1,45,072 (5.9)	1,32,103 (4.8)	1,37,407 (4.4)	-8.9	4.0
Revenue Deficit	1,07,880 (4.4)	99,860 (3.6)	76,171 (2.5)	-7.4	-23.7
Gross Primary Deficit	27,268 (1.1)	7,548 (0.3)	7,907 (0.3)	-72.3	4.8

RE : Revised Estimates. BE : Budget Estimates.
Note : Figures in parentheses are percentages to GDP.

Chart II.7 : Key Fiscal Indicators of the Centre



2.28 A series of measures announced in the Union Budget are expected to boost the tax revenue by about 25 per cent during 2004-05. These measures, *inter alia*, are: imposition of an education cess of two per cent, the introduction of Securities Transaction Tax (STT), a wider coverage of services under the tax net, an increase in the service tax rate and a special drive for collection of tax arrears. As a proportion of GDP, gross tax revenue is expected to increase by one percentage point to 10.2 per cent over the previous year's level.

2.29 Aggregate expenditure adjusted for National Small Savings Fund (NSSF) repayments is projected to grow by 11.7 per cent mainly on account of a strong growth in capital expenditure as compared with 6.8 per cent in 2003-04. Growth in revenue expenditure during 2004-05 is expected to decelerate, reflecting a sharp reduction of 45.9 per cent in petroleum subsidies. Furthermore, growth in interest payments is also expected to decelerate in 2004-05 in the absence of any prepayment premium for retiring debt (Table 2.16).

Table 2.16: Important Fiscal Parameters of the Union Government

(Rupees crore)

Item	2002-03 (Accounts)	2003-04 (RE)	2004-05 (BE)	Percentage Variation	
				2003-04	2004-05
1	2	3	4	5	6
I Total Receipts (1+2)	**4,14,162**	**4,74,255**	**4,77,829**	**14.5**	**0.8**
	(16.8)	**(17.1)**	**(15.3)**		
1 Revenue Receipts	2,31,748	2,63,027	3,09,322	13.5	17.6
	(9.4)	(9.5)	(9.9)		
i. Tax Revenue (Net)	1,59,425	1,87,539	2,33,906	17.6	24.7
	(6.5)	(6.8)	(7.5)		
ii. Non-Tax Revenue	72,323	75,488	75,416	4.4	-0.1
	(2.9)	(2.7)	(2.4)		
2 Capital Receipts	1,82,414	2,11,228	1,68,507	15.8	-20.2
	(7.4)	(7.6)	(5.4)		
II Total Expenditure (1+2)=(3+4)	**4,14,163 ***	**4,74,255 ***	**4,77,829**	**14.5**	**0.8**
	(16.8)	**(17.1)**	**(15.3)**		
1 Revenue Expenditure	3,39,628	3,62,887	3,85,493	6.8	6.2
	(13.8)	(13.1)	(12.3)		
of which: Interest Payments	1,17,804	1,24,555	1,29,500	5.7	4.0
	(4.8)	(4.5)	(4.1)		
2 Capital Expenditure	74,535 *	1,11,368 *	92,336	49.4	-17.1
	(3.0)	(4.0)	(3.0)		
3. Non-Plan Expenditure	3,02,708	3,52,748	3,32,239	16.5	-5.8
	(12.3)	(12.7)	(10.6)		
4. Plan Expenditure	1,11,455	1,21,507	1,45,590	9.0	19.8
	(4.5)	(4.4)	(4.7)		
Memo : (Expenditure net of NSSF repayments)					
IIa. Total Expenditure	4,00,397	4,27,653	4,77,829	6.8	11.7
	(16.2)	(15.4)	(15.3)		
2a. Capital Expenditure	60,769	64,766	92,336	6.6	42.6
	(2.5)	(2.3)	(3.0)		

* Includes NSSF repayments.
RE : Revised Estimates. BE : Budget Estimates.
Note : Figures in parentheses are percentages to GDP.

2.30 The Finance Bill, 2004 giving effect to the tax proposals was passed by the Parliament in August 2004 with certain amendments such as changes in the proposals relating to income tax and the STT. Marginal relief was provided to income tax assesses by ensuring that an individual having total income exceeding Rs. one lakh was not left with a post tax income below Rs. one lakh. The STT is being levied at moderated and varied rates based on the type of transactions.

Developments during April-October 2004

2.31 During the current fiscal so far (April-October 2004), the Union Government finances have shown signs of improvement. This was mainly on account of higher revenue receipts which, in turn, were due to a sharp growth in corporate tax collections in the wake of the industrial recovery, sizeable contribution from service tax and better personal income tax collections. Notwithstanding the significant growth in tax revenues, the proportion of revenue receipts to its full year budget estimates was lower than that in the previous year. Non-debt capital receipts declined over the corresponding period of the preceding year reflecting lower loan recoveries from the State Governments. Aggregate expenditure constituted 48.9 per cent of the budget estimates and this ratio was lower than that in the corresponding period of the previous year. Growth in revenue expenditure decelerated on account of lower subsidies and lower grants-in-aid to States/UTs. Capital expenditure registered a decline reflecting the discharge of liabilities to the NSSF in the previous year, which has not been done during the current year so far. The decline in the capital expenditure was also on account of lower disbursements of loans and advances in the current fiscal year (Table 2.17).

Table 2.17: Finances of the Centre during 2004-05

(Rupees crore)

Item	2003-04 (BE) (Amount)	2004-05 (BE) (Amount)	April-October					
			Amount		Percentage to BE		Growth Rate (Per cent)	
			2003-04	2004-05	2003-04	2004-05	2003-04	2004-05
1	2	3	4	5	6	7	8	9
I. Revenue Receipts (1+2)	**2,53,935**	**3,09,322**	**1,20,190**	**1,32,790**	**47.3**	**42.9**	**9.9**	**10.5**
1. Tax Revenue (Net)	1,84,169	2,33,906	79,589	93,568	43.2	40.0	12.7	17.6
2. Non-Tax Revenue	69,766	75,416	40,601	39,222	58.2	52.0	4.7	-3.4
II. Aggregate Expenditure (1+2)	**4,38,795**	**4,77,829**	**2,53,770**	**2,33,615**	**57.8**	**48.9**	**30.4**	**-7.9**
1. Revenue Expenditure	3,66,227	3,85,493	1,91,046	1,96,669	52.2	51.0	15.0	2.9
of which								
Interest Payments	1,23,223	1,29,500	60,355	63,116	49.0	48.7	4.8	4.6
Defence	44,347	43,517	21,835	22,633	49.2	52.0	7.9	3.7
Major Subsidies	48,930	42,214	30,526	28,366	62.4	67.2	36.2	-7.1
2. Capital Expenditure	72,568	92,336	62,724	36,946	86.4	40.0	119.8	-41.1
III. Revenue Deficit	**1,12,292**	**76,171**	**70,856**	**63,879**	**63.1**	**83.9**	**24.9**	**-9.8**
IV. Fiscal Deficit	**1,53,637**	**1,37,407**	**85,978**	**62,135**	**56.0**	**45.2**	**23.2**	**-27.7**
V. Primary Deficit	**30,414**	**7,907**	**25,623**	**-981**	**84.2**	**-12.4**	**110.4**	**-103.8**
Memo:								
Gross Tax Revenue	**2,51,527**	**3,17,733**	**1,12,363**	**1,36,238**	**44.7**	**42.9**	**8.9**	**21.2**
Of which								
Corporation Tax	51,499	88,436	20,931	25,409	40.6	28.7	34.3	21.4
Income Tax	44,070	50,929	17,358	26,874	39.4	52.8	1.8	54.8
Customs Duties	49,350	54,250	27,843	30,744	56.4	56.7	8.1	10.4
Union Excise Duties	96,791	1,09,199	41,229	46,243	42.6	42.3	0.2	12.2

BE : Budget Estimates.

2.32 Revenue deficit during April-October 2004 was lower than its level in the corresponding period of 2003. Nonetheless, at 83.9 per cent of its budgeted level for the full fiscal, it was higher than that in the corresponding period of 2003. GFD was lower than previous year and continued to remain below revenue deficit on account of debt-swap receipts during the first seven months of 2004-05. GFD constituted 45.2 per cent of the budget estimates. While 27.4 per cent of the GFD was financed through draw down of cash balances, 61 per cent was financed through incremental internal debt and 12.9 per cent through incremental external assistance.

State Finances[2]

2.33 The unrelenting strain on the finances of the State Governments over the years is reflected in their persistent and growing fiscal imbalances. This deterioration in State finances has adversely affected their current and prospective developmental and welfare-oriented functions. In this milieu, a positive development has been the growing recognition of the urgent need for fiscal consolidation. A number of State Governments have initiated a wide spectrum of reforms in order to arrest the deterioration in their financial position. The process of reforms at the sub-national level is being driven by a unique twin-track strategy blending the Medium Term Fiscal Restructuring Policy (MTFRP) and an autonomous approach in the form of fiscal responsibility/legislation.

2.34 The State budgets for 2004-05 seek to carry forward the reform process initiated in the recent past. The States have laid emphasis on fiscal rectitude and institutional reforms. The major initiatives of the States include perseverance with fiscal reforms, *i.e.,* revenue augmentation and expenditure containment, reforms in tax administration, improvement in the recovery of user charges, restructuring of the State PSUs, enhancing transparency in budgetary operations, emphasis on infrastructure development and reduction and management of States' debt. All the major deficit indicators of the State Governments during 2004-05 are expected to be substantially lower than their levels in the previous year (Table 2.18). A part of the envisaged correction would, however, reflect the reduction in (revenue and capital) expenditures on the power sector consequent to an upsurge in the previous year. The sharp increase in expenditure on the power sector in the previous year occurred in conjunction with the issue of power bonds to the Central PSUs under the One-Time Settlement Scheme for the dues of the State Electricity Boards.

2.35 The States' own tax as well as own non-tax revenues, as a ratio to GDP, would remain unchanged in 2004-05 from their previous year's level. Current transfers from the Centre (comprising sharable tax revenue and grants), as a ratio to GDP, would record a marginal decline in 2004-05 from the levels in the past (Table 2.19).

2.36 The total expenditure, both revenue and capital components, as a ratio to GDP, is expected to be lower in 2004-05 than that in the previous year, although still higher than that in the first half of the 1990s. As noted earlier, a part of the fiscal correction during 2004-05 is envisaged through compression in expenditure on the power sector, which is recorded

Table 2.18: Major Deficit Indicators of State Governments

(Rupees crore)

Item	Average			2002-03	2003-04 BE	2003-04 RE	2004-05 BE	Percentage variation	
	1990-95	1995-00	2000-02					Col.7/6	Col.8/7
1	2	3	4	5	6	7	8	9	10
Gross Fiscal Deficit				1,02,058	1,16,110	1,40,407	1,12,251	20.9	-20.1
	(2.8)	(3.5)	(4.2)	(4.1)	(4.2)	(5.1)	(3.6)		
Revenue Deficit				55,173	48,824	72,240	48,259	48.0	-33.2
	(0.7)	(1.7)	(2.6)	(2.2)	(1.8)	(2.6)	(1.5)		
Primary Deficit				32,092	33,443	56,682	20,604	69.5	-63.6
	(1.6)	(1.4)	(1.1)	(1.3)	(1.2)	(2.0)	(0.7)		

BE : Budget Estimates. RE : Revised Estimates.

Note : Figures in brackets are percentages to GDP.

[2] The analysis of State Finances for 2004-05 is based on the budget documents of 27 State Governments, of which 6 are Vote-on-Account. All data are provisional.

Table 2.19: Total Receipts of State Governments

(Rupees crore)

Item	Average			2002-03	2003-04 BE	2003-04 RE	2004-05 BE	Percentage variation	
	1990-95	1995-00	2000-02					Col.7/6	Col.8/7
1	2	3	4	5	6	7	8	9	10
Total Receipts (1+2)				**4,23,819**	**4,77,313**	**5,39,635**	**5,42,295**	**13.1**	**0.5**
	(16.1)	(15.2)	(16.6)	(17.2)	(17.4)	(19.5)	(17.4)		
1. Total Revenue Receipts (a+b)				**2,77,389**	**3,30,688**	**3,27,302**	**3,67,428**	**-1.0**	**12.3**
	(12.1)	(10.9)	(11.3)	(11.2)	(12.1)	(11.8)	(11.8)		
(a) States own Revenue				1,76,479	2,04,804	2,03,114	2,30,991	-0.8	13.7
	(7.3)	(6.9)	(7.1)	(7.1)	(7.5)	(7.3)	(7.4)		
States own tax				1,42,006	1,64,838	1,62,700	1,82,982	-1.3	12.5
	(5.4)	(5.3)	(5.6)	(5.8)	(6.0)	(5.9)	(5.9)		
States own non tax				34,473	39,966	40,414	48,009	1.1	18.8
	(1.8)	(1.6)	(1.5)	(1.4)	(1.5)	(1.5)	(1.5)		
(b) Central Transfers				1,00,910	1,25,884	1,24,188	1,36,437	-1.3	9.9
	(4.9)	(4.0)	(4.2)	(4.1)	(4.6)	(4.5)	(4.4)		
Shareable taxes				56,457	64,049	65,044	77,343	1.6	18.9
	(2.6)	(2.4)	(2.4)	(2.3)	(2.3)	(2.3)	(2.5)		
Central Grants				44,453	61,835	59,144	59,094	-4.4	-0.1
	(2.3)	(1.6)	(1.8)	(1.8)	(2.3)	(2.1)	(1.9)		
2. Capital Receipts (a+b)				**1,46,430**	**1,46,625**	**2,12,333**	**1,74,867**	**44.8**	**-17.6**
	(4.0)	(4.2)	(5.3)	(5.9)	(5.3)	(7.7)	(5.6)		
(a) Loans from Centre@				26,348	33,634	32,203	33,852	-4.3	5.1
	(1.2)	(1.0)	(1.0)	(1.1)	(1.2)	(1.2)	(1.1)		
(b) Other Capital Receipts				1,20,082	1,12,991	1,80,130	1,41,015	59.4	-21.7
	(2.9)	(3.2)	(4.3)	(4.9)	(4.1)	(6.5)	(4.5)		

@ With the change in the system of accounting with effect from 1999-2000, States' share in small savings which was included earlier under loans from the Centre is included under internal debt and shown as special securities issued to National Small Savings Fund (NSSF) of the Central Government. The data for the years prior to 1999-2000 as reported in this Table, however, exclude loans against small savings, for the purpose of comparability.

BE : Budget Estimates. RE : Revised Estimates.

Note : Figures in brackets are percentages to GDP.

under 'Economic Services'. Consequently, the ratio of developmental expenditure to GDP would decline in 2004-05 whereas the non-developmental expenditure to GDP ratio would remain unchanged at its previous year's level (Table 2.20).

2.37 Small savings would continue to be the major source of financing of the States' GFD in 2004-05. The shares of market borrowings and 'others' including loans from banks and financial institutions are budgeted to decline in 2004-05 from the revised estimates of 2003-04 (Table 2.21).

2.38 Effective April 1, 2004, the formula-based aggregate normal Ways and Means Advances (WMA) limit for each State Government has been enhanced by 13.5 per cent to Rs. 8,140 crore on the basis of higher average revenue receipts in the previous three years. Since July 2004, the weekly average utilisation of WMA and Overdraft (OD) has been lower than that in the corresponding period of the previous year, (Chart II.8). The weekly average utilisation of WMA and OD during November 2004 was Rs.3,943 crore as compared with Rs.6,128 crore in the corresponding period of the previous year. The frequency of resort to overdrafts has also been, in general, lower during 2004-05 so far than that in the (full) previous year. During 2004-05 so far (up to December 8, 2004), 13 State Governments have resorted to overdraft as compared with 19 State Governments during 2003-04 (April-March).

Table 2.20: Expenditure Pattern of State Governments

(Rupees crore)

Item	Average			2002-03	2003-04 BE	2003-04 RE	2004-05 BE	Percentage variation	
	1990-95	1995-00	2000-02					Col.7/6	Col.8/7
1	2	3	4	5	6	7	8	9	10
Total Expenditure				**4,19,450**	**4,84,552**	**5,51,956**	**5,42,824**	**13.9**	**-1.7**
1+2 = 3+4+5	(16.0)	(15.3)	(16.6)	(17.0)	(17.7)	(19.9)	(17.4)		
1. Revenue Expenditure				3,32,563	3,79,513	3,99,541	4,15,687	5.3	4.0
of which	(12.8)	(12.6)	(13.9)	(13.5)	(13.8)	(14.4)	(13.3)		
Interest Payments				69,966	82,667	83,724	91,648	1.3	9.5
	(1.7)	(2.0)	(2.6)	(2.8)	(3.0)	(3.0)	(2.9)		
2. Capital Expenditure				86,887	1,05,039	1,52,415	1,27,137	45.1	-16.6
of which	(3.2)	(2.7)	(2.7)	(3.5)	(3.8)	(5.5)	(4.1)		
Capital Outlay				36,209	55,160	60,751	56,629	10.1	-6.8
	(1.6)	(1.4)	(1.5)	(1.5)	(2.0)	(2.2)	(1.8)		
3. Development Expenditure				2,27,034	2,67,030	2,99,357	2,80,823	12.1	-6.2
	(10.8)	(9.6)	(9.8)	(9.2)	(9.7)	(10.8)	(9.0)		
4. Non Development Expenditure				1,50,264	1,76,009	1,76,821	1,99,065	0.5	12.6
	(4.3)	(4.9)	(5.9)	(6.1)	(6.4)	(6.4)	(6.4)		
5. Others				42,152	41,513	75,778	62,936	82.5	-16.9
	(0.9)	(0.7)	(0.9)	(1.7)	(1.5)	(2.7)	(2.0)		

BE : Budget Estimates. RE : Revised Estimates.
Note : Figures in brackets are percentages to GDP.

Public Debt

2.39 Due to persistent fiscal deficits, the combined outstanding liabilities of the Centre and the State Governments (as a ratio to GDP) have been rising since mid-1990s (Table 2.22). This ratio is expected to increase further by around one percentage point during 2004-05 and is estimated to reach 77.5 per cent as at March 2005. The high level of debt of the Centre as well as the State Governments has resulted in a sizeable increase in interest payments, notwithstanding the softening of interest rate regime in recent years.

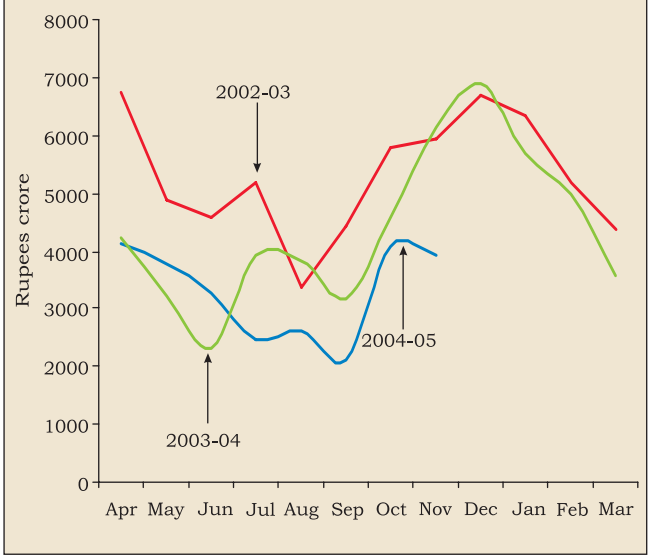
Table 2.21: Decomposition and Financing Pattern of Gross Fiscal Deficit of States

(Per cent)

Item	Average			2002-03	2003-04 BE	2003-04 RE	2004-05 BE
	1990-95	1995-00	2000-02				
1	2	3	4	5	6	7	8
Decomposition (1+2+3)	100	100	100	100	100	100	100
1. Revenue Deficit	24.7	44.7	60.7	54.0	42.1	51.5	43.0
2. Capital Outlay	55.3	43.2	34.2	35.5	47.5	43.3	50.4
3. Net Lending	20.0	12.1	5.1	10.5	10.4	5.2	6.6
Financing (1+2+3+4+5)	100	100	100	100	100	100	100
1. Special Securities Issued to the NSSF	..	5.8	36.8	49.7	43.2	41.6	53.5
2. Market Borrowings	16.0	16.1	16.0	27.9	14.5	32.1	23.0
3. State Provident Fund	14.3	13.4	10.2	9.6	9.3	8.2	10.9
4. Loans and Advances from the Centre	49.0	40.6	13.5	-1.8	6.7	-15.1	-6.5
5. Others	20.7	24.0	23.6	14.6	26.3	33.2	19.1

.. Not Applicable.
BE : Budget Estimates. RE : Revised Estimates.

Chart II.8 : Utilisation of RBI's WMA (Normal and Special) and Overdrafts by States (weekly averages)



III. MONETARY AND CREDIT SITUATION

Monetary Conditions

2.40 The Annual Policy Statement of May 2004 had indicated that, barring the emergence of any adverse and unexpected developments in the various sectors of the economy and assuming that the underlying inflationary situation does not turn adverse, the overall stance of monetary policy for 2004-05 will be:

- Provision of adequate liquidity to meet credit growth and support investment and export demand in the economy while keeping a very close watch on the movements in the price level.
- Consistent with the above, while continuing with the *status quo*, to pursue an interest rate environment that is conducive to maintaining the momentum of growth and, macroeconomic and price stability.

2.41 Consistent with the expected growth and inflation rates, the Annual Policy Statement placed the growth in broad money (M_3) and non-food credit (including non-SLR investments) at 14.0 per cent and 16.0-16.5 per cent, respectively, for 2004-05. The projection for non-food bank credit (including non SLR investments) growth during the year was revised upwards to around 19.0 per cent in the Mid-Term Review of October 2004. It was felt that the higher credit expansion could be accommodated without putting undue pressure on money supply because of the lower borrowing of the Government from the banking sector. In the eventuality of Government borrowings being larger, unwinding of MSS would facilitate such borrowings. Monetary management in the first half of 2004-05 was conducted broadly in conformity with the monetary policy stance announced in the Annual Policy Statement. In monetary management, the Reserve Bank faced challenges on two counts: overhang of liquidity and the surge in headline inflation. Accordingly, the Reserve Bank undertook calibrated measures. On a review of liquidity conditions, the Cash Reserve Ratio (CRR) was raised by 50 basis points to 5.0 per cent in two stages effective September 18, 2004 and October 2, 2004, even as the Reserve Bank indicated that it will continue to pursue its medium-term objective of reducing CRR to its statutory minimum of 3.0 per cent. This measure reduced the liquidity in the banking system by about Rs.9,000 crore. The Reserve Bank chose to increase the CRR, partly for absorbing liquidity in the system, but more importantly for signalling the Reserve Bank's concern at the unacceptable levels of inflation so that inflationary expectations are moderated while reiterating the importance of stability in financial market conditions. On the interest rate front, the Bank Rate was kept unchanged at 6.0 per cent. However, the fixed repo (now called reverse repo in accordance with international practice) rate was

Table 2.22: Combined Liabilities and Debt-GDP Ratio

Year (end-March)	Outstanding Liabilities (Rupees crore)			Debt - GDP Ratio (Per cent)		
	Centre	States	Combined	Centre	States	Combined
1	2	3	4	5	6	7
1990-91	3,14,558	1,10,289	3,50,957	55.3	19.4	61.7
1995-96	6,06,232	2,12,225	6,89,545	51.0	17.9	58.0
2001-02	13,66,408	5,86,686	16,28,972	59.9	25.7	71.4
2002-03	15,59,201	6,86,142	18,70,519	63.1	27.8	75.7
2003-04 RE	17,24,499	8,05,667	21,25,151	62.2	29.1	76.7
2004-05 BE	19,86,167	9,10,902	24,20,091	63.6	29.2	77.5

RE : Revised Estimates. BE : Budget Estimates.
Note : Data regarding States are provisional since 2002-03.

Table 2.23: Variations in Major Components and Sources of Reserve Money

(Rupees crore)

Item	2003-04	2004-05 (upto December 10)	2003-04				2004-05	
			Q1	Q2	Q3	Q4	Q1	Q2
1	2	3	4	5	6	7	8	9
Reserve Money	**67,451** (18.3)	**16,293** (3.7)	**16,342**	**-18,235**	**23,980**	**45,363**	**-6,813**	**-6,408**
Components								
1. Currency in circulation	44,555 (15.8)	30,235 (9.2)	17,882	-5,955	17,986	14,641	14,315	-4,166
2. Bankers' Deposits with RBI	21,019	-12,921	-1,606	-12,633	5,961	29,297	-19,665	-2,874
3. Other Deposits with the RBI	1,877	-1,022	65	352	33	1,426	-1,463	632
Sources								
1. RBI's net credit to Government Sector	-75,772	-39,807	-4,451	-53,146	-12,506	-5,669	-34,143	-6,179
of which: to Central Government	-76,065 (-67.3)	-32,294 (-87.5)	434	-53,744	-15,844	-6,911	-30,029	-4,499
2. RBI's credit to Banks and commercial sector	-2,728	-2,351	-1,564	-2,525	-796	2,156	-2,985	-740
3. NFEA of RBI	1,26,169 (35.2)	87,937 (18.2)	22,710	25,720	51,931	25,808	57,525	-5,260
4. Govts' Net Currency Liabilities to the Public	225	44	84	74	43	24	35	8
5. Net Non-Monetary Liabilities of RBI	-19,557	29,530	437	-11,642	14,692	-23,044	27,245	-5,762
Memo:								
1. Net Domestic Assets	-58,719	-71,644	-6,368	-43,955	-27,951	19,555	-64,338	-1,148
2. FCA, adjusted for revaluation	1,41,428	58,301	23,943	31,832	37,560	48,093	33,160	- 3,413
3. NFEA/Reserve Money (per cent) (end-period)	110.0	126.4	98.8	110.8	117.2	111.0	126.1	126.8

NFEA : Net Foreign Exchange Assets. FCA : Foreign Currency Assets.

Notes : 1. Data based on March 31 for Q4 and last reporting Friday for all other quarters.
2. Figures in brackets are percentage variations during the year.

increased, effective October 27, 2004, by 25 basis points to 4.75 per cent.

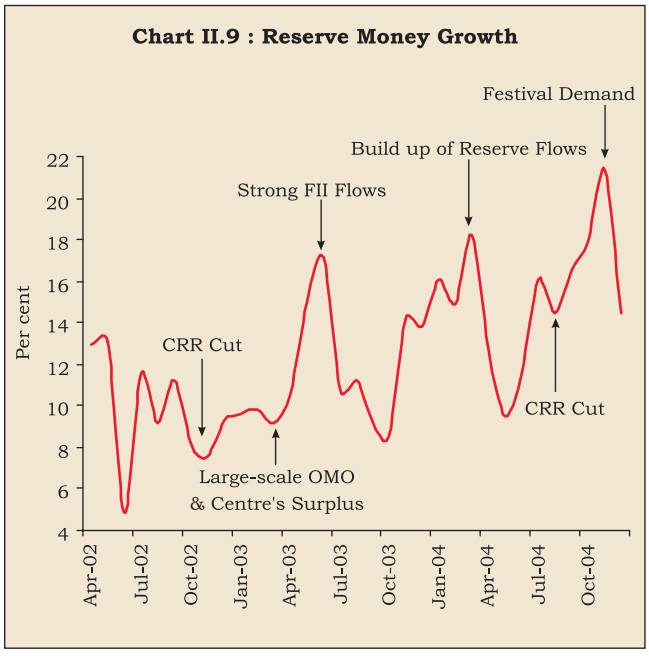
2.42 The overall stance of monetary policy for the second half of 2004-05, as the Mid-Term Review indicated, barring the emergence of any adverse and unexpected developments in the various sectors of the economy and keeping in view the inflationary situation, will be:

- Provision of appropriate liquidity to meet credit growth and support investment and export demand in the economy while placing equal emphasis on price stability.
- Consistent with the above, to pursue an interest rate environment that is conducive to macroeconomic and price stability, and maintaining the momentum of growth.
- To consider measures in a calibrated manner, in response to evolving circumstances with a view to stabilising inflationary expectations.

Reserve Money Survey

2.43 Reserve money growth during the current fiscal year 2004-05 (up to December 10, 2004), as in the past few years, primarily emanated from the accretion to the Reserve Bank's foreign currency assets (Table 2.23 and Chart II.9).

Chart II.9 : Reserve Money Growth



Box II.1

Market Stabilisation Scheme

On March 25, 2004 the Government of India signed a Memorandum of Understanding (MoU) with the Reserve Bank of India detailing the rationale and operational modalities of the Market Stabilisation Scheme (MSS). The scheme came into effect from April 1, 2004. The ceiling on the outstanding amount under MSS was fixed initially at Rs.60,000 crore which was, however, subject to an upward revision based on the liquidity assessment. The ceiling has been since enhanced to Rs.80,000 crore. An indicative schedule for the issuance of Treasury Bills/ dated securities under the MSS for the first quarter of the 2004-05 (April 1, 2004-June 30, 2004) was also announced to provide transparency and stability in the financial markets. It was proposed to issue an aggregate of Rs.35,500 crore (face value) of Treasury Bills/ dated securities under the MSS during the first quarter of 2004-05. As against this, Rs.39,730 crore was issued during the first quarter reflecting an unscheduled auction of dated securities amounting to Rs.5,000 crore on April 8, 2004 and acceptance of bids amounting to Rs.230 crore (as against the notified amount of Rs.1,000 crore in respect of 364-day Treasury Bills on June 23, 2004). The MSS schedule for the second quarter was issued on June 29, 2004 which indicated issuances of Rs. 36,500 crore (inclusive of rolling over of Rs.19,500 crore under 91-day Treasury Bills issued during the first quarter). On September 29, 2004, an indicative calendar for MSS issuances of Rs.25,500 crore was announced (including of rolling over of Rs.16,955 crore under 91-day Treasury Bills maturing during the quarter).

2.44 The expansionary effect of forex purchases was neutralised through sterilisation operations. These operations were greatly facilitated by the introduction of the Market Stabilisation Scheme (MSS) in April 2004 to absorb liquidity of a more enduring nature (Box II.1). With the introduction of the MSS, the amounts tendered under the Liquidity Adjustment Facility (LAF) declined from an average of Rs.70,523 crore in April 2004 to Rs.10,805 crore in October 2004. There was, however, a net injection of Rs. 5,066 crore in November 2004. During the first quarter of 2004-05, sterilisation was done primarily through the MSS. In the second quarter (July-September), capital flows tapered off. In the subsequent period (October 2004 onwards), the revival of capital inflows in November were mainly offset by the seasonal pick up in cash demand (Table 2.24 and Chart II.10). The total stock of Treasury Bills and dated securities issued under the MSS amounted to Rs.51,334 crore as on December 10, 2004 inclusive of Rs.25,000 crore raised through dated securities with a residual maturity of upto two years. In addition to the MSS and LAF operations, surplus balances in the Central Government account with the Reserve Bank also helped in draining out excess liquidity from time to time.

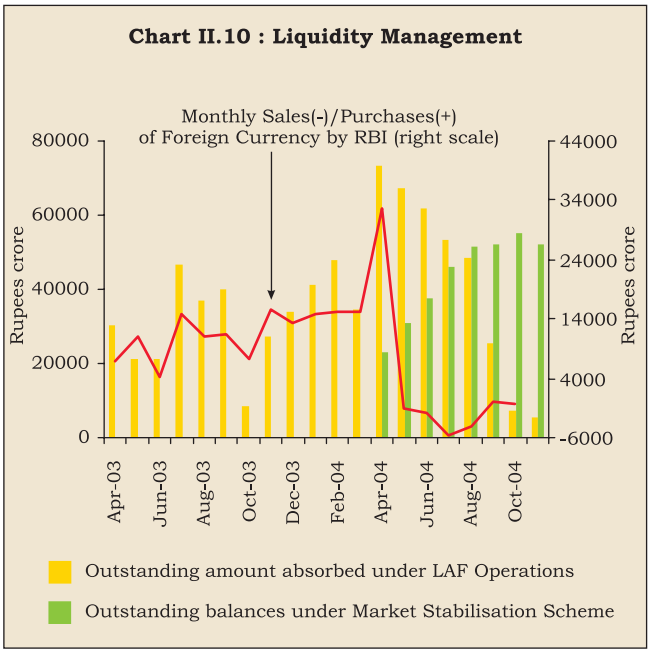
Table 2.24: Phases of Reserve Bank's Liquidity Management Operations

(Rupees crore)

Item	2003-04		2004-05		
	April 1 - December 26, 2003	December 27, 2003 - March 26, 2004	March 27 - June 25, 2004	June 26 - September 24, 2004	September 25 - December 10, 2004
1	2	3	4	5	6
1. RBI's Foreign Currency Assets (adjusted for revaluation)	93,334	46,171	34,971	-3,607	28,748
2. LAF (net repo/reverse repo)*	27,075	31,910	-35	-42,120	-3,425
3. OMO sales (net)	36,517	5,332	429	428	593
4. MSS	–	–	37,812	14,443	-921
5. Currency	29,914	14,641	14,315	-7,195	23,115
6. Others (residual)	8,106	-15,346	-17,547	25,302	8,177
6.1 Surplus Cash balances of the Centre with the Reserve Bank	13,135	-6,685	-18,577	25,139	4,106
Bank Reserves (1-2-3-4-5-6)	**-8,278**	**9,634**	**-3**	**5,535**	**1,209**

* Since October 29, 2004, repo and reverse repo indicates injection (+) and absorption (-), respectively.

Chart II.10 : Liquidity Management



2.45 Reflecting the market operations, the net Reserve Bank credit to the Centre continued to decline. Auctions under the MSS (Rs.51,334 crore) were largely offset by liquidity injections through net repos (Table 2.25). The Reserve Bank's credit to State Governments also declined during the fiscal year so far by Rs.7,268 crore on top of a decline of Rs.1,518 crore in the corresponding period of the previous year.

Monetary Survey

2.46 As on November 26, 2004, the year-on-year growth in broad money (M_3) was 13.5 per cent (net of the impact of the conversion of a non-banking entity into a banking entity) as compared with 12.4 per cent in the preceding year (Table 2.26). The year-on-year growth rate in M_3 was consistent with the indicative trajectory of 14.0 per cent. Both currency and aggregate deposits recorded a strong growth (Chart II.11).

Table 2.25: Variations in Net Reserve Bank Credit to the Centre

(Rupees crore)

Variable	2003-04	2003-04				2004-05		
		Q1	Q2	Q3	Q4	Q1	Q2	Q3 upto December 10, 2004)
1	2	3	4	5	6	7	8	9
Reserve Bank Credit to the Centre (1+2+3+4-5)	-76,067	435	-53,744	-15,845	-6,913	-30,028	-4,500	2,234
1. Loans and Advances	0	8,145	-8,145	0	0	3,222	-3,222	0
2. Treasury Bills held by the Reserve Bank	-3	-3	0	0	0	0	0	0
3. Reserve Bank's Holdings of Dated Securities	-72,227	-11,300	-45,530	-15,795	398	-2,901	22,176	-2,746
4. Reserve Bank's Holdings of Rupee Coins	20	163	-69	-51	-24	175	-11	-36
5. Central Government Deposits	3,856	-3,430	0	-1	7,287	30,525	23,443	-5,017
Memo Items*								
1. Market Borrowings of Dated Securities by the Centre #	1,21,500	44,000	36,000	15,000	26,500	43,000 **	36,000 ***	14,000
2. Reserve Bank's Primary Subscription to Dated Securities	-21,500	-5,000	0	0	16,500	0	847	0
3. Repos (-) / Reverse Repos (+) (LAF), net position £	-32,230	-25,052	1,557	-3,580	-5,155	26,720	-35,205	-10,340
4. Net Open Market Sales #	41,849	-48,160	16,672	14,225	5,332	429	429	593
5. Primary Operations $	-100	25,643	-32,608	2,304	4,560	10,825	-48,150	-923

* At face value. # Excludes Treasury Bills.
£ Includes fortnightly repos. ** Includes Rs. 15,000 crore under MSS.
*** Includes Rs. 10,000 crore under MSS. $ Adjusted for Centre's surplus investment.
Note : Quarterly variations are based on March 31 for Q4 and last reporting Fridays for other quarters.

Table 2.26: Monetary Indicators

(Rupees crore)

Variable	Outstanding as on November 26, 2004	Year-on-Year Variation 2003 (As on November 28)		2004 (As on November 26)	
		Absolute	Per cent	Absolute	Per cent
1	2	3	4	5	6
I. Reserve Money*	4,52,805	46,120	13.2	57,444	14.5
II. Broad Money (M_3)	21,35,552	2,08,254	12.4	2,53,760	13.5
a) Currency with the Public	3,43,100	38,547	14.9	45,948	15.5
b) Aggregate Deposits	17,91,780	1,69,277	12.0	2,10,501	13.3
i) Demand Deposits	2,58,756	29,208	15.8	44,606	20.8
ii) Time Deposits	15,29,454	1,40,069	11.4	1,62,326	11.9
Of which: Non-Resident Foreign Currency Deposits	76,306	-4,044	-4.3	-12,824	-14.4
III. NM_3	20,52,190	2,06,561	13.3	2,90,599	16.5
IV. a) L_1	21,31,858	2,20,373	13.7	3,08,003	16.9
Of which: Postal Deposits	79,668	13,811	28.5	17,404	28.0
b) L_2	21,38,106	2,19,480	13.6	3,08,221	16.8
Of which: FI Deposits	6,248	-893	-12.9	218	3.6
c) L_3	21,57,828	2,21,186	13.6	3,07,575	16.6
Of which: NBFC Deposits	19,722	1,706	9.1	-646	-3.2
V. Major Sources of Broad Money					
a) Net Bank Credit to the Government (i+ii)	7,33,849	79,636	12.3	6,324	0.9
i) Net Reserve Bank Credit to Government	18,204	-54,295	-46.0	-45,634	-71.5
Of which: to the Centre	14,052	-56,021	-49.1	-43,944	-75.8
ii) Other Banks' Credit to Government	7,27,838	1,33,931	25.3	64,151	9.7
b) Bank Credit to Commercial Sector	11,58,505	97,641	11.6	2,16,199	22.9
Of which: Scheduled Commercial Banks' Non-food Credit	9,31,247	1,03,427	16.4	1,98,497	27.1
c) Net Foreign Exchange Assets of Banking Sector	6,07,733	1,04,679	28.3	1,33,772	28.2

* Variations pertain to December 10, 2004 and corresponding period of previous year.

FI : Financial Institutions. NBFCs : Non-Banking Financial Companies.

Notes : 1. M_3, time deposits, net bank credit to government and bank credit to commercial sector are adjusted for the effect of conversion of a non banking entity to a banking entity since October 11, 2004.

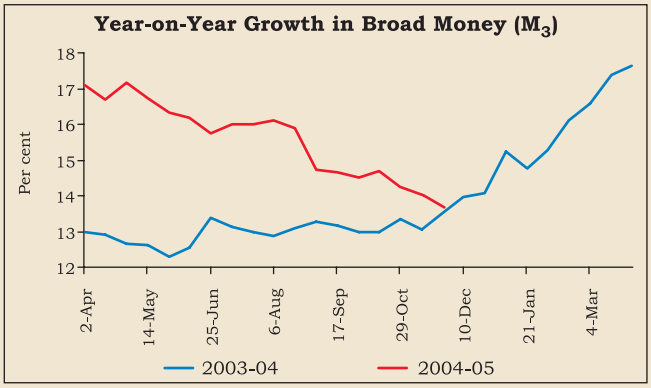
2. For items III, IV and non-resident foreign currency deposits variation figures pertain to end-September 2004.

3. Data are provisional.

Bank Credit

2.47 A positive feature of the current year has been the sharp increase in commercial credit off-take reflecting, *inter alia*, the strong industrial performance (Table 2.27 and Chart II.12). The pick-up in scheduled commercial banks' non-food credit

Chart II.11 : Movements in Broad Money (M_3)



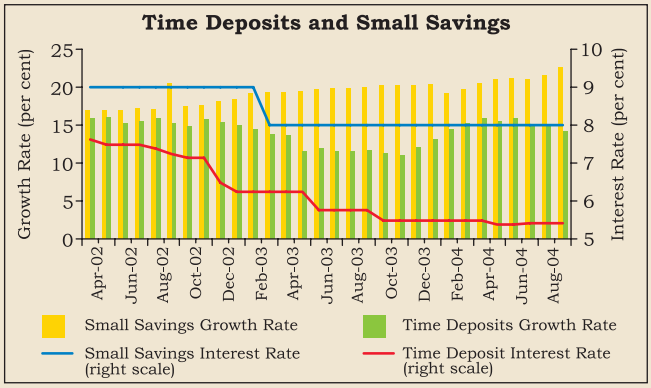


Table 2.27: Scheduled Commercial Banks: Variations in Select Banking Indicators

(Rupees crore)

Item	2002-03		2003-04		Year-on-Year Variation			
					2003-04 (up to Nov. 28)		2004-05 P (up to Nov. 26)	
	Absolute	Per cent	Absolute	Per cent	Absolute	Per cent	Absolute	Per cent
1	2	3	4	5	6	7	8	9
Aggregate Deposits	**1,47,822**	**13.4**	**2,23,563**	**17.5**	**1,48,391**	**11.8**	**2,00,894**	**14.3**
Demand Deposits	17,241	11.3	54,733	32.1	26,063	16.3	41,580	22.3
Time Deposits	1,30,581	16.9.	1,68,830	15.2	1,22,328	11.1	1,59,314	13.1
Bank Credit	**94,949**	**16.1**	**1,11,570**	**15.3**	**85,542**	**12.5**	**2,04,415**	**26.6**
Food Credit	-4,499	-8.3	-13,518	-27.3	-17,885	- 32.9	5,918	16.2
Non-food Credit	99,448	18.6	1,25,088	18.4	1,03,427	16.4	1,98,497	27.1
Investments	**1,09,276**	**24.9**	**1,30,042**	**23.8**	**1,20,035**	**22.9**	**44,456**	**6.9**
Government Securities	1,12,241	27.3	1,31,341	25.1	1,21,360	24.2	41,886	6.7
Other Approved Securities	-2,964	-10.9	-1299	-5.4	- 1,325	- 5.4	2,570	11.0

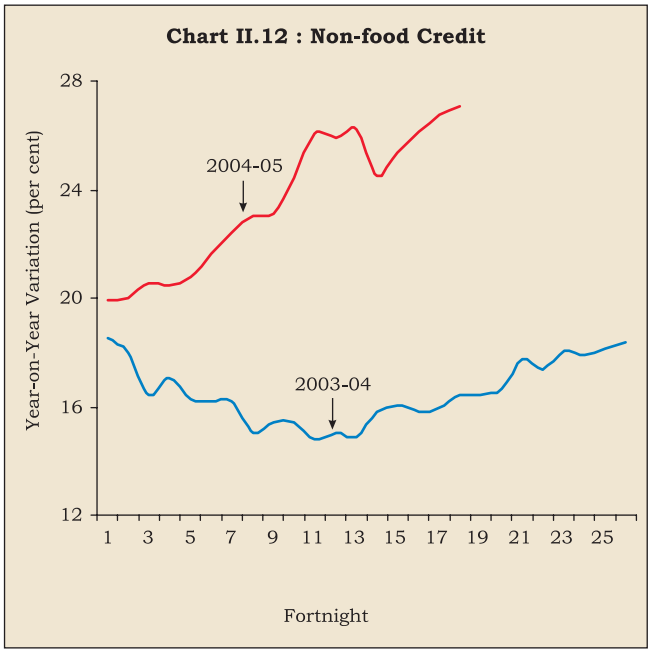
P : Provisional.

Notes : 1. Deposits are adjusted for the full impact of mergers while credit is adjusted for the initial impact of mergers during 2002-03.

2. Data exclude the impact of conversion of a non-banking entity into banking entity from October 11, 2004.

growth at 9.5 per cent during the first half of the year was, in fact, the highest in the 1990s aided partially due to base effects. Food credit reversed its declining trend of the previous year, reflecting higher procurement and lower off-take operations. In the face of the pick-up in credit demand, banks reduced their investments in government securities. Year-on-year growth of banks' investment in Government and other approved securities, therefore, decelerated sharply to 6.9 per cent (net of conversion effect) as on November 26, 2004 from 22.9 per cent a year ago. Nonetheless, the banks' investment in Statutory Liquidity Ratio (SLR) securities at around 40 per cent of net demand and time liabilities (NDTL) remained well above the stipulated 25 per cent.

Chart II.12 : Non-food Credit



2.48 Data on sectoral deployment show that priority sector continued to be the largest recipient of bank credit largely driven by the demand for housing loans below Rs.10 lakh. A noteworthy aspect is the turnaround in industrial credit. This was dominated by two sectors, *viz.,* infrastructure and petroleum, which accounted for as much as 86 per cent of the incremental off-take during April-September 2004. Credit off-take declined for industries such as coal, mining, sugar, tobacco and tobacco products, petro chemicals and computer software. Growth in credit to the housing sector continued to be strong and accelerated even further (Table 2.28).

2.49 The pick-up in industrial credit was supplemented by an increased recourse to external commercial borrowings (Table 2.29). In addition, improved corporate profitability and other internal sources remained a key source of funds for the industry.

Table 2.28: Sectoral and Industry-wise Deployment of Bank Credit of Scheduled Commercial Banks

(Rupees crore)

Sector / Industry	Outstanding as on September 17, 2004	Variation			
		2003 (April-September)		2004 (April-September)	
		Absolute	Per cent	Absolute	Per cent
1	2	3	4	5	6
Priority sector #	2,84,064	13,907	6.6	20,230	7.7
Of which: Agriculture	97,709	3,690	5.0	7,168	7.9
Small Scale	65,571	-990	-1.6	-284	-0.4
Others	1,20,784	11,207	14.4	13,346	12.4
Industry (Medium and Large)	2,65,316	-13,308	-5.7	18,106	7.3
Housing	64,903	5,337	14.6	12,922	24.9
Wholesale Trade	27,108	-147	-0.7	2,241	9.0
Rest of the sectors	1,50,504	7,838	6.9	9,974	7.1
Non-food Gross Bank Credit	**7,91,895**	**13,627**	**2.2**	**63,473**	**8.7**
Memo Items					
(i) Export Credit	56,798	759	1.5	-889	-1.5
(ii) Credit to Industry (Small, Medium and Large)	3,30,887	-14,298	-4.8	17,822	5.7
Petroleum	16,981	-5,552	-37.7	4,715	38.4
Infrastructure	47,795	2,089	7.9	10,571	28.4
Cement	5,698	-473	-7.4	9	0.2
Cotton Textiles	17,677	-918	-5.8	511	3.0
Iron and Steel	26,086	-2,160	-7.7	-209	-0.8
Electricity	15,711	322	2.9	1,621	11.5
Engineering	25,254	-973	-3.7	-1,094	-4.2
Fertilisers	6,180	-404	-5.8	-69	-1.1
Computer Software	2,241	87	3.3	-788	-26.0
Gems & Jewellery	10,295	1,069	14.2	1,117	12.2

Excluding investment in eligible securities.

Note : Data are provisional and relate to select scheduled commercial banks which account for about 90 per cent of bank credit of all scheduled commercial banks.

2.50 Reflecting the higher credit off-take, the excess liquid funds with the commercial banks have recorded a sustained decline since August 2004. Moderation in capital flows in the first-half of the year and the increase in the CRR also contributed to the reduction in excess liquid funds.

Table 2.29: Key Sources of Funds to Industry

(Rupees crore)

Item	April-September	
	2003-04	2004-05
1	2	3
1. Bank Credit to Industry	-14,298	17,822
2. Net profits	12,702	18,764
3. Depreciation Provision	7,456	8,380
4. Capital Issues * (i+ii)	115	4,730
i) Non-Government Public Ltd. Companies (a+b)	15	4,730
a) Bonds/Debentures	0	0
b) Shares	15	4,730
ii) PSUs and Government Companies	100	0
5. Euro Issues +	1,819	1,367
6. External Commercial Borrowings (April - June) $	6,113	12,458
7. Issue of CPs #	1,183	3,038
8. Financial assistance extended by FIs (net) @	-2,074	-8,171
9. Flow from Non-banks to Corporates (4 to 8)	7,156	13,422
Total Industry (1+2+3+9)	**13,016**	**58,388**

* Gross issuances excluding issues by banks and financial institutions. Figures are not adjusted for banks' investments in capital issues, which are not expected to be significant.

\+ Include Global Depository Receipts (GDRs)/American Depository Receipts (ADRs) and Foreign Currency Convertible Bonds (FCCBs) excluding issues by banks and financial institutions.

$ Including short-term credit.

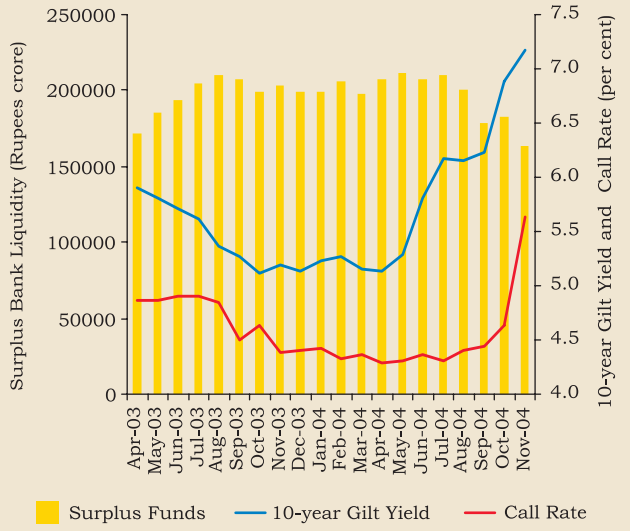
Excluding issuances by financial institutions and banks' investments in CPs.

@ Based on annual accounts, excluding ICICI Ltd. Comprises loans and advances, equity, other investments and bills of exchange and promissory notes discounted/rediscounted. Financial institutions include IDBI, IFCI Ltd., IDFC Ltd., EXIM Bank, IIBI Ltd., SIDBI and TFCI Ltd.

Note : Data are provisional.

Concomitantly, secondary market yields of Government securities increased across the maturity spectrum (Chart II.13). Reflecting these factors, some banks have raised their deposit rates and housing loan rates (Table 2.30).

Chart II.13 : Surplus Bank Liquidity and Interest Rates



Price Situation

2.51 Inflation is hardening worldwide, *albeit* from fairly low levels, on the back of elevated commodity, especially fuel, prices. Commodity prices have been driven by increased demand emanating from the global economic recovery led by the strong expansion of the Chinese economy. Although the base effects are beginning to moderate the metals price inflation, fuel prices have been quite volatile. Fuel prices hit their highest level in October 2004 crossing US $ 55 per barrel, amidst concerns over oil supply bottlenecks, low inventories, and very low spare output capacity as well as nervous market sentiment (Chart II.14). The increase in producer prices is beginning to pull up consumer price inflation in many countries, especially as exhaustion of slack available in capacity utilisation is now forcing producers to pass on higher input costs to consumers (Table 2.31 and Chart II.15).

2.52 Central banks in a number of economies have, therefore, started withdrawing their accommodative stance by raising key policy rates in a measured manner to stabilise inflationary expectations and yet at the same time support economic recovery. The Federal Open Market

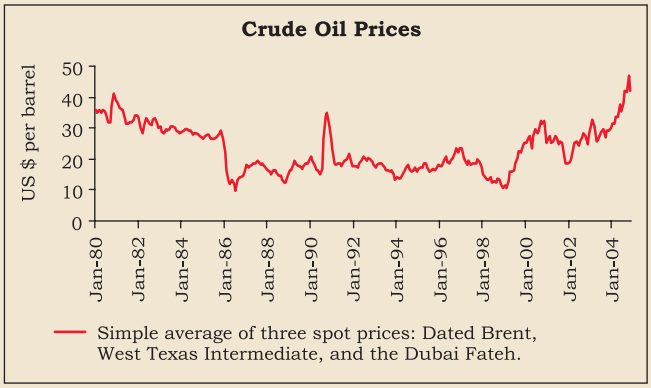
Table 2.30: Deposit and Lending Interest Rates

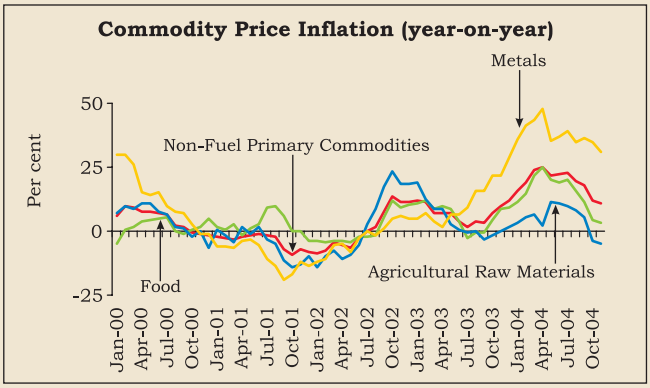
(Per cent)

Item	March 2002	March 2003	March 2004	September 2004	November 2004
1	2	3	4	5	6
Domestic Deposit Rates					
Public Sector Banks					
a) Up to 1 year	4.25 – 7.50	4.00 – 6.00	3.75 – 5.25	3.50 – 5.00	3.50 – 5.00
b) 1 year up to 3 years	7.25 – 8.50	5.25 – 6.75	5.00 – 6.75	4.75 – 5.75	4.75 – 5.50
c) Over 3 years	8.00 – 8.75	5.50 – 7.00	5.75 – 6.00	5.25 – 5.75	5.00 – 5.75
Private Sector Banks					
a) Up to 1 year	5.00 – 9.00	3.50 – 7.50	3.50 – 7.50	3.00 – 6.00	3.00 – 6.00
b) 1 year up to 3 years	8.00 – 9.50	6.00 – 8.00	5.75 – 7.75	5.00 – 6.50	5.00 – 6.75
c) Over 3 years	8.25 – 10.0	6.00 – 8.00	6.00 – 8.00	5.25 – 7.00	5.25 – 6.50
Foreign Banks					
a) Up to 1 year	4.25 – 9.75	3.00 – 7.75	3.00 – 7.75	2.75 – 7.50	3.00 – 5.75
b) 1 year up to 3 years	6.25 – 10.0	4.15 – 8.00	3.50 – 8.00	3.25 – 8.00	3.50 – 7.00
c) Over 3 years	6.25 – 10.0	5.00 – 9.00	4.75 – 8.00	3.25 – 8.00	3.50 – 7.00
Prime Lending Rates #					
a) Public Sector Banks	10.00 – 12.50	9.00 – 12.25	10.25 – 11.50	10.25 – 11.50	10.25 – 11.00
b) Private Sector Banks	10.00 – 15.50	7.00 – 15.50	10.50 – 13.00	9.75 – 13.00	9.75 – 13.00
c) Foreign Banks	9.00 – 17.50	6.75 – 17.50	11.00 – 14.85	11.00 – 14.85	11.00 – 13.00

Benchmark Prime Lending Rate from March 2004.

Chart II.14 : International Commodity Prices





Source : International Monetary Fund.

Committee (FOMC) in the US has raised the federal funds rate target by 125 basis points since mid-2004 through five successive increases of 25 basis points each. The Committee believes that the stance of monetary policy still remains accommodative, which along with robust growth in productivity is supportive of economic growth. The European Central Bank (ECB) expects that the Harmonised Index of Consumer Prices (HICP), at 2.2 per cent in November 2004, would rule above its target of around 2.0 per cent during the remaining part of the year. The ECB, nevertheless, maintained its present monetary policy stance, as it believed that the overall outlook remained consistent with price stability over the medium term despite the presence of certain upside risks that need to be monitored closely. In the UK, demand-side pressures are expected to push CPI inflation, at 1.5 per cent in November 2004, to the target 2.0 per cent in the coming two years. The Bank of England's Monetary Policy Committee, therefore, has raised the repo rate by 125 basis points in five tranches of 25 basis points each between November 2003-August 2004 and kept it unchanged thereafter (Table 2.32). In Japan, although domestic corporate goods' prices have been rising because of higher oil prices, the Bank of Japan continues with its bank reserves target of 30-35 trillion Yen, as consumer price inflation continues to be negligible. Consumer price inflation in China was 2.8 per cent in November 2004. The People's Bank of China has initiated several monetary measures in terms of higher reserve requirements and an increase in the benchmark lending and deposit rates.

2.53 Inflation in India has increased during 2004-05 so far (up to December 4, 2004) (Chart II.16). This essentially reflects supply side pressures emanating

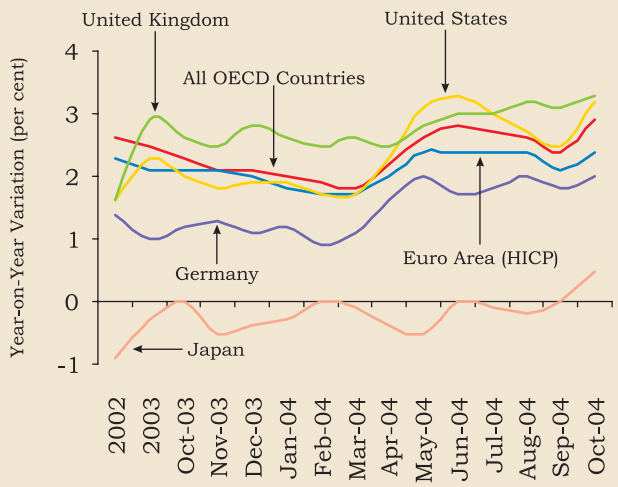
Table 2.31: Annual Consumer Price Inflation

(Per cent)

Country/Area	1996	1997	1998	1999	2000	2001	2002	2003	2004 P
1	2	3	4	5	6	7	8	9	10
Advanced Economies	**2.4**	**2.0**	**1.5**	**1.4**	**2.1**	**2.1**	**1.5**	**1.8**	**2.1**
US	2.9	2.3	1.5	2.2	3.4	2.8	1.6	2.3	3.0
Japan	..	1.7	0.6	-0.3	-0.9	-0.8	-0.9	-0.2	-0.2
Euro Area	2.2	1.6	1.1	1.1	2.0	2.4	2.3	2.1	2.1
Other Emerging Market and Developing Countries	**18.1**	**11.6**	**11.3**	**10.4**	**7.3**	**6.8**	**6.0**	**6.1**	**6.0**
Developing Asia	8.2	4.9	7.8	2.5	1.9	2.7	2.1	2.6	4.5
China	8.3	2.8	-0.8	-1.4	0.4	0.7	-0.8	1.2	4.0
India	**9.0**	**7.2**	**13.2**	**4.7**	**4.0**	**3.8**	**4.3**	**3.8**	**4.7**

.. Not Available
P : IMF Projections.
Source : World Economic Outlook, September 2004, IMF.

Chart II.15 : Consumer Price Inflation in Select Economies



Source: OECD.

from the failure of the South-West monsoon as well as a sharp rise in international commodity prices. Core inflation, based on WPI, excluding mineral oil, electricity, coal mining and urea-N-content, increased only marginally to 5.6 per cent on December 4, 2004 from 5.4 per cent as at end-March 2004. Besides the supply pressures, the overhang of liquidity emanating from the strong capital flows in the previous year continued to remain relevant to inflationary expectations.

2.54 The path of WPI inflation during the year reflected the influence of a number of supply-side pressures (Table 2.33). Domestic inflation rose from 4.6 per cent at end-March 2004 to the peak of 8.7 per cent by end-August. This reflected the lagged pass-through effects of the rise in prices of global steel, crude oil, coal and iron ore. This was

Table 2.32: Central Bank Policy Rates

(Per cent)

Country	January 1, 2003	January 1, 2004	October 1, 2004	December 15, 2004
1	2	3	4	5
Australia	4.75	5.25	5.25	5.25
Brazil	25.00	16.50	16.25	17.75
Canada	2.75	2.75	2.25	2.50
Euro Area	2.75	2.00	2.00	2.00
India	**6.25**	**6.00**	**6.00**	**6.00**
Indonesia	12.93	8.31	7.39	7.43
Israel	8.90	4.80	4.10	3.90
Japan	0.10	0.10	0.10	0.10
South Korea	4.25	3.75	3.50	3.25
Malaysia	2.72	2.71	2.69	2.69
New Zealand	5.75	5.00	6.25	6.50
Poland	6.50	5.25	6.50	6.50
Sweden	3.75	2.75	2.00	2.00
Switzerland	0.25 to 1.25	0 to 0.75	0.25 to 1.25	0.25 to 1.25
Thailand	1.75	1.25	1.50	2.00
United Kingdom	4.00	3.75	4.75	4.75
United States	1.25	1.00	1.75	2.25

Source : Central Bank websites.

exacerbated by a sharp increase in prices of vegetables in August 2004 in the wake of the uneven progress of the South-West monsoon. Sugar prices also increased during the year. Given the supply-induced nature of inflation, the Government responded with fiscal measures, particularly relating to oil. Inflation declined thereafter to 7.1 per cent by end-October 2004 partly facilitated by the easing of drought fears as well as the base effects. It, however, rose to 7.8 per cent on November 6, 2004 reflecting the hike in petroleum prices effective November 5,

Chart II.16 : Wholesale Price Inflation in India

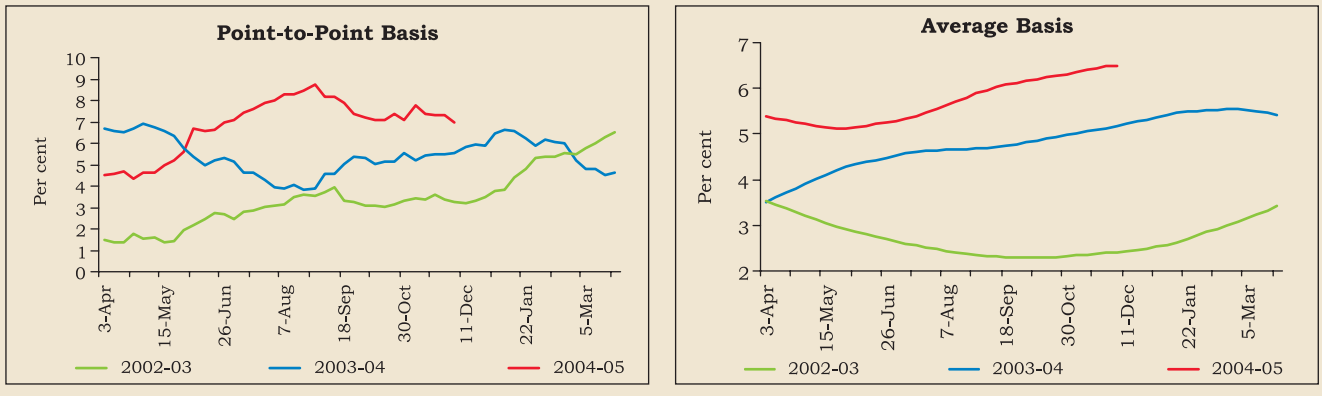


Table 2.33: Annual Point-to-Point WPI Inflation by Component
(Base 1993-94=100)

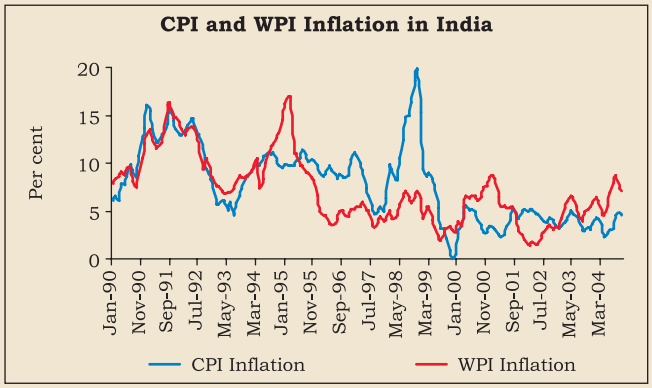
(Per cent)

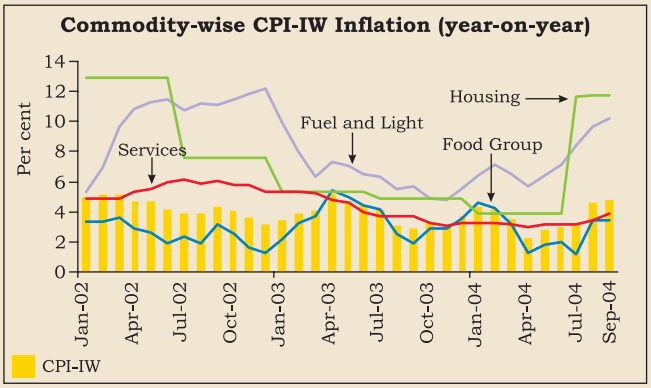
Group/ Item	Weight	Annual Variation			Variation		Weighted Contribution	
		2001-02	2002-03	2003-04	2003-04 (Dec. 6)	2004-05 (Dec. 4)	2003-04 (Dec. 6)	2004-05 (Dec. 4)
1	2	3	4	5	6	7	8	9
All Commodities	**100.0**	**1.6**	**6.5**	**4.6**	**5.6**	**7.0**	**100.0**	**100.0**
I. Primary Articles	**22.0**	**3.9**	**6.1**	**1.6**	**3.2**	**3.5**	**13.3**	**11.2**
i) Cereals	4.4	0.8	4.0	-0.3	-1.2	4.1	-1.0	2.5
ii) Pulses	0.6	-3.3	0.3	-2.6	-4.6	1.8	-0.6	0.2
iii) Fruits & Vegetables	2.9	14.4	-1.2	-4.9	7.0	3.9	4.1	1.8
iv) Raw Cotton	1.4	-21.3	34.3	12.3	22.3	-17.7	4.8	-3.5
v) Oilseeds	2.7	6.8	30.0	-1.2	5.3	1.4	2.5	0.5
vi) Sugarcane	1.3	6.2	11.5	6.5	6.5	-1.3	2.0	-0.3
II. Fuel, Power, Light and Lubricants	**14.2**	**3.9**	**10.8**	**2.5**	**7.2**	**13.0**	**26.2**	**38.2**
i) Mineral Oils	7.0	1.2	18.4	0.0	9.1	21.3	17.3	33.0
ii) Electricity	5.5	9.2	3.4	4.9	4.1	0.6	5.8	0.6
iii) Coal Mining	1.8	-1.9	0.0	9.2	9.2	16.2	3.1	4.5
III. Manufactured Products	**63.7**	**0.0**	**5.1**	**6.7**	**6.0**	**6.2**	**61.0**	**50.4**
i) Sugar	3.6	-3.8	-15.0	16.9	7.4	15.8	3.4	5.9
ii) Edible Oils	2.8	12.5	27.4	6.6	8.2	0.1	3.6	0.0
iii) Oil Cakes	1.4	15.0	40.3	5.0	-0.7	8.8	-0.2	1.9
iv) Cotton Textiles	4.2	-6.7	8.3	15.6	16.0	-4.0	10.8	-2.3
v) Man Made Fibre	4.4	-5.0	17.4	-0.4	3.0	5.8	1.3	1.9
vi) Fertilisers	3.7	3.6	2.1	-0.1	0.1	0.4	0.1	0.2
vii) Iron and Steel	3.6	0.0	9.2	34.6	28.6	25.8	16.4	14.3
viii) Cement	1.7	-4.7	1.1	1.3	0.9	0.9	0.2	0.2
ix) Non-electrical Machinery	3.4	5.4	2.5	4.7	3.0	9.8	1.7	4.3
x) Electrical Machinery	5.0	-1.1	-1.3	1.7	0.4	4.5	0.2	2.1
xi) Transport Equipment and Parts	4.3	1.3	-0.9	1.4	0.5	5.3	0.3	2.7

2004 before edging down to 7.3 per cent on November 13, 2004 and further to 7.0 per cent by December 4, 2004.

2.55 Although all measures of inflation have shown uptrend during the year, the increase in consumer price inflation has been relatively muted. The year-on-year variation in the consumer price index for industrial workers (CPI-IW) increased to 4.6 per cent in October 2004 from 3.3 per cent in October 2003 reflecting higher food and fuel prices (Chart II.17). On an annual average basis, consumer price inflation stood marginally lower at 3.7 per cent as compared with 3.8 per cent a year ago. The lower order of consumer price inflation *vis-a-vis* wholesale price inflation is due to two key factors. First, food prices,

Chart II.17 : Consumer Price Inflation in India





which have a much higher weight of 57 per cent in the CPI as against 27 per cent weight in the WPI basket, have risen moderately so far. Second, the main drivers of WPI inflation such as iron and steel and fuel prices have a low weight in the CPI basket.

2.56 Fuel prices continue to hold the key to the inflation outlook. Domestic prices are yet to catch up with past hikes in the prices of petroleum products and administered items such as coal and fertilisers (Table 2.34). Counterbalancing these upside risks are several mitigating factors. First, the inflationary impact of a lower *kharif* 2004 output due to the uneven South-West monsoon now appears to be restricted to a few commodities such as sugar. Although prices of fruits and vegetables continue to be volatile, primary articles prices are expected to moderate further in view of the expected *rabi* crop. Second, adequate foreign exchange reserves as well as food stocks should help contain inflationary expectations in the economy, especially as international prices of wheat and edible oil are softening. Third, metal price inflation has moderated in recent months on account of base effects and capacity expansion - although prices are likely to persist at elevated levels in the coming months. Fourth, the fiscal measures taken have been able to contain partly the impact of imported inflation in the economy. Finally, monetary measures to reduce the liquidity overhang are expected to check inflationary expectations. Pressures on inflation emanating from aggregate demand are thus muted at this stage.

2.57 Assuming there were no significant supply shocks and appropriate management of liquidity during the remaining part of the fiscal year, the Reserve Bank in its Annual Policy Statement (May 2004) had placed the WPI inflation rate for 2004-05, on a point-to-point basis, at around 5.0 per cent. While the overhang of excess liquidity was being managed, domestic as well as external supply shocks put pressure on prices by a magnitude and persistence greater than anticipated. In view of these developments, under the assumption of no further supply shocks and that liquidity conditions remain manageable, the Mid-term Review of Annual Policy (October 2004) revised the inflation projections relevant for monetary policy purposes to around 6.5 per cent for end-March 2005.

IV. FINANCIAL MARKETS

2.58 Financial markets during 2004-05 operated in an environment of uncertainty over the pace of reversal of the interest rate cycle and the impact of the spurt in oil prices on inflation and growth prospects. Notwithstanding these uncertainties, the Indian financial markets have remained generally stable during 2004-05 so far (Table 2.35). Interest

Table 2.34: Price Movements in Domestic and International Markets - Sensitive Commodities

(Per cent)

Item	Global Inflation		Domestic Inflation (WPI)	
	Year-on-Year (November 2004)	Fiscal Year (November over March 2004)	Year-on-Year (December 4, 2004)	Fiscal Year (December 4, over end-March 2004)
1	2	3	4	5
Agricultural Commodities				
1. Cotton	-36.2	-31.8	-17.7 * -4.0 **	-20.1 * -7.2 **
2. Soybean Oil	-9.4	-18.0	0.1 #	-0.6 #
3. Palm Oil	-14.1	-21.4	–	–
4. Rice	32.3	7.6	3.5	2.2
5. Wheat	-2.5	-5.8	1.6	-0.6
6. Sugar	34.3	26.3	15.8	10.3
Non-Agricultural Commodities				
1. Coal (Australia)	72.4	7.7	16.2	16.2
2. Crude Oil (Dubai)	26.8	14.5	21.3	16.1
3. Steel Products	55.3	10.5	25.8	17.6

* Raw cotton in India. ** Cotton textiles in India. # Edible oil in India.

Note : Domestic prices are comparable counterparts from WPI (Base: 1993-94).

Source : World Bank.

rates have witnessed a correction from the record lows seen in 2003-04 in consonance with the international trends and increase in inflation.

Money Market

2.59 Call money rates remained stable during the first half of 2004-05, reflecting the substantial overhang of liquidity in the system. As a result, call rates ruled below the reverse repo rate (earlier the repo rate)[3] during April-September 2004. The Reserve Bank continued to balance the money market through large-scale reverse repo operations, supplemented by the operationalisation of the MSS from April 2004 (Chart II.18). The scenario began to change in October with the pressures emanating from a number of factors: higher non-food credit off-take, upward pressure in inflation and increase in reserve requirements. As a result, call money rate ruled above the reverse repo rate during the second half of the year beginning October 17, 2004. Seasonal festival cash demand drove call rates to a high of 6.30 per cent on November 18, 2004. In order to stabilise the market, the Reserve Bank switched to LAF repo operations in mid-November 2004 to inject liquidity in the system. The call money market stabilised thereafter and the call rate was 4.8 per cent on November 30, 2004. With a view to further enhancing the effectiveness of the LAF and to facilitate liquidity management in a flexible manner, the 7-day and 14-day reverse repo have been discontinued effective November 1, 2004. The fixed repo (now reverse repo) rate was increased by 25 basis points to 4.75 per cent effective October 27, 2004.

2.60 In order to preserve the integrity of the money market and making it more efficient, the following

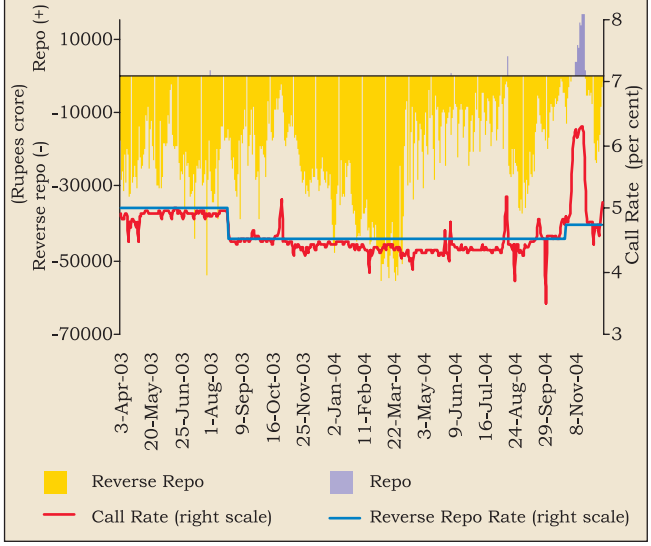
Table 2.35: Domestic Financial Markets - Select Indicators

Year/Month	Call Money		Gilt		Foreign Exchange				Liquidity Management		Equity			
	Average Daily Turnover (Rupees crore)	Average Call Rates (Per cent)	10-year Yield (Per cent)	Turnover in Govt. Securities (Rupees crore) +	Average Daily Inter-bank Turnover (US $ Million)	Average Exchange Rate (Rupees per US $)	RBI's net Foreign Currency Sales (-)/ Purchases (+) (US $ Million)	Forward Premia 3-month (Per cent)	Net OMO Sales(-)/ Purchases (+) (Rupees crore)	Net Average Daily Absorption under LAF Outstan-ding (Rupees crore)	Average Daily BSE Turnover (Rupees crore)	Average Daily NSE Turnover (Rupees crore)	Average BSE Sensex	Average S & P CNX Nifty
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2003-04														
April	17,338	4.87	5.90	2,26,803	5,585	47.38	1,432	2.08	-7	27,372	1,041	2,449	3037	965
May	18,725	4.87	5.80	2,99,933	5,960	47.08	2,342	1.10	-5,569	25,223	1,072	2,604	3033	963
June	20,544	4.91	5.72	3,00,504	5,837	46.71	896	2.76	-44	24,805	1,187	2,933	3387	1069
July	18,698	4.90	5.62	3,04,587	5,920	46.23	3,146	2.65	-57	42,690	1,434	3,429	3665	1150
August	19,556	4.83	5.36	4,09,539	5,983	45.93	2,352	2.25	-11,546	39,995	1,817	4,267	3978	1261
September	20,584	4.50	5.26	2,65,848	6,862	45.85	2,345	0.91	-5,107	31,373	2,032	4,698	4315	1369
October	23,998	4.64	5.11	3,89,968	7,672	45.39	1,593	0.02	-13,986	13,569	2,288	5,026	4742	1506
November	15,156	4.38	5.19	1,77,063	6,795	45.52	3,449	(-) 0.002	-69	21,182	2,252	4,644	4951	1580
December	15,276	4.40	5.14	1,81,991	6,207	45.59	2,888	(-) 0.30	-132	32,020	2,492	5,017	5425	1740
January	14,189	4.43	5.23	1,81,619	7,306	45.46	3,294	0.50	5,228	38,539	3,125	6,394	5494	1906
February	9,809	4.33	5.26	1,39,130	7,171	45.27	3,357	0.51	-35	46,244	2,709	5,722	5668	1800
March	12,422	4.37	5.15	2,22,685	8,018	45.02	3,382	0.62	-69	54,915	2,308	4,767	5613	1780
2004-05														
April	12,916	4.29	5.14	3,00,864	10,118	43.93	7,427	(-) 0.35	-253	75,006	2,243	5,048	5809	1848
May	10,987	4.30	5.29	1,92,264	8,521	45.25	-220	(-)1.33	-116	74,502	2,188	4,710	5205	1640
June	10,972	4.35	5.81	1,75,802	7,741	45.51	-413	0.93	-60	61,981	1,681	3,859	4824	1506
July	8,632	4.31	6.18	1,30,400	7,684	46.04	-1,180	2.25	-218	59,594	1,793	4,265	4973	1568
August	11,562	4.41	6.16	1,29,373	5,753	46.34	-876	2.85	-78	42,692	1,736	3,948	5144	1615
September	15,691	4.45	6.23	1,75,635	7,266	46.09	19	2.20	-131	31,589	1,800	4,023	5584	1746
October	16,667	4.63	6.89	1,12,709	7,039	45.78	-99	2.87	-189	10,805	1,730	3,785	5672	1787
November	13,764	5.62	7.18	78,225	9,808	45.13	..	2.20	-342	-5,066	1,787	4,102	5961	1874

.. Not Available. + Outright turnover in Central Government dated securities.
OMO : Open Market Operations. BSE : The Stock Exchange, Mumbai. NSE : The National Stock Exchange of India Limited.

[3] With effect from October 29, 2004, nomenclature of repo and reverse repo has been interchanged as per international usage. Prior to that date, repo indicated absorption of liquidity while reverse repo meant injection of liquidity. The nomenclature in this Chapter is based on the new use of terms even for the period prior to October 29, 2004.

Chart II.18 : Repo, Reverse Repo Auctions under LAF and Call Rates



measures were announced in the Mid-Term Review of the Annual Policy Statement for the year 2004-05.

- With the operationalisation of the Negotiated Dealing System (NDS)/Clearing Corporation of India Ltd. (CCIL), moving towards a pure inter-bank call/notice money market has become easier. Effective fortnight beginning January 8, 2005, non-bank participants would be allowed to lend, on average, in a reporting fortnight, upto 30 per cent of their average daily lending in call/notice money market during 2000-01.
- In order to provide an option to issuers to raise short-term resources through Commercial Paper (CP) as also an avenue to investors to invest in quality short-term papers, the minimum maturity period of CP was reduced from 15 days to 7 days.
- In order to provide transparency and also facilitate benchmarking of CP issues, issuing and paying agents (IPAs) would report issuance of CP on the NDS platform by the end of the day. The date of commencement of reporting would be finalised in consultation with market participants.
- Automated value-free transfer of securities between market participants and the CCIL was facilitated to further develop the Collateralised Borrowing and Lending Operations (CBLO).

2.61 In view of development of repo market as also to ensure balanced development of various segments of money market, Primary Dealers (PDs) have been allowed to borrow with effect from February 7, 2004, on average in a reporting fortnight, upto 200 per cent of their Net Owned Funds (NOF) as at end-March of the preceding financial year in the call/notice money market.

2.62 Amongst the key segments of the money market, there was increased recourse to issuances of Certificates of Deposit (CDs) as well as CPs. The spurt in the growth of CDs has been on account of a number of factors such as issuance of guidelines by the Reserve Bank on investments by banks in non-SLR debt securities, reduction in stamp duty on CDs effective March 1, 2004 and greater opportunity for secondary market trading. These developments have led to greater demand for investment in CDs by mutual funds particularly in the wake of their improved funds position. An encouraging development is that some of the top banks have been getting their CDs rated for better access to the market even when such rating is not required under the extant guidelines. Private banks continued to account for the largest share of CDs outstanding. In consonance with money market trends, the typical discount rates on both CDs and CPs have increased in recent months (Table 2.36).

Table 2.36: Commercial Paper and Certificates of Deposit

Year/ Month	Commercial Paper		Certificates of Deposit	
	Outstanding Amount (Rupees crore)	Weighted Average Discount Rate (Per cent)	Outstanding Amount (Rupees crore)	Interest Rate (Per cent)
1	2	3	4	5
2003-04				
April	5,994	5.98	1,485	5.25-7.40
May	6,820	5.58	1,996	3.94-7.00
June	7,108	5.47	2,183	3.74-6.50
July	7,557	5.45	2,466	5.25-6.75
August	7,646	5.39	2,961	4.75-5.68
September	7,258	5.05	3,098	4.25-6.00
October	6,845	5.18	3,321	4.25-6.50
November	7,956	5.15	3,666	3.75-6.10
December	8,762	5.05	3,830	3.75-6.00
January	9,562	5.04	4,419	3.57-6.11
February	9,379	5.02	4,856	3.75-6.00
March	9,131	5.11	4,461	3.87-5.16
2004-05				
April	9,706	5.04	4,725	3.50-4.45
May	10,328	4.85	4,860	1.09-4.73
June	10,910	4.83	5,438	3.96-6.75
July	10,848	4.86	5,478	4.02-6.75
August	10,956	5.17	4,480	4.50-5.00
September	11,319	5.26	5,112	4.09-5.09
October	10,266	5.40	4,785	4.50-6.26
November	10,150	5.98	5,425 *	3.90-7.00 *

* as on November 12, 2004.

2.63 Issuances of CP have increased in the recent period following large investments interest seen from mutual funds on account of the guidelines on non-SLR debt securities by banks. Furthermore, reduction in stamp duty on CP effective March 1, 2004 has also boosted its issuance. Though, the CP market is overwhelmingly dominated by first class prime rated issuers (*i.e.*, P1+ and above of CRISIL or its equivalent), it has been found that their share in issuances of CP has declined from as much as 92 per cent during 2002-03 to 85 per cent in April-November 2004. Correspondingly, that of medium rated issuers has increased from 8 per cent to 15 per cent over this period. This increase in investment in medium rated issuers could be on account of investors' search for higher returns.

2.64 There has been a sharp increase in the volume of Forward Rate Agreements/Interest Rate Swaps (FRAs/IRS) during the current financial year so far, both in terms of the number of contracts and outstanding notional principal amount (Table 2.37). Also, the participation in the market has been broad based and includes select public sector banks, PDs and foreign and private sector banks. In a majority of these contracts, the NSE-MIBOR and MIFOR were used as the benchmark rates. The other benchmark rates used included secondary market yields on the Government of India securities having residual maturity of one year and the primary cut-off yield on 364-day TBs.

2.65 CBLO was operationalised with effect from January 20, 2003 as a money market instrument through the CCIL. CBLO can have original maturity between one day and upto one year. Though regulatory provisions and accounting treatment for the CBLO are the same as those applicable to other money market instruments, it has been exempted from CRR subject to banks maintaining a minimum CRR of 3 per cent. Securities lodged in the Gilts Account of the banks maintained with the CCIL under the Constituents' Subsidiary General Ledger (CSGL) facility remaining unencumbered at the end of any day could be reckoned for SLR purposes by the concerned bank. By November 2004, 79 members had been admitted to the CCIL's CBLO segment. Of this, 42 were active members. The daily average turnover in CBLO increased from Rs.47 crore in April 2003 to Rs.2,506 crore during March

Table 2.37: Activity in Other Money Market Segments

(Rupees crore)

Year/Month	Average Daily Turnover in Term Money Market	Average Daily Turnover in Repo Market (Outside Reserve Bank)	Forward Rate Agreements/ Interest Rate Swaps		Average Daily Turnover in CBLO
			No. of Contracts	Notional Amount	
1	2	3	4	5	6
2003-04					
April	604	5,575	9,691	2,49,449	47
May	455	5,591	10,956	2,84,641	41
June	610	6,481	11,384	2,93,127	37
July	573	9,669	11,581	3,05,409	126
August	644	9,528	12,046	3,14,708	166
September	772	9,268	12,951	3,33,736	234
October	543	11,542	15,032	3,92,303	156
November	428	12,190	15,495	4,05,102	248
December	403	13,068	16,479	4,31,597	363
January	482	15,426	18,604	4,86,571	708
February	343	12,674	18,515	4,89,151	1,693
March	376	13,378	19,867	5,18,260	2,506
2004-05					
April	376	15,195	20,413	5,76,808	2,496
May	372	15,932	23,331	6,11,595	3,872
June	274	17,517	22,670	6,04,669	4,015
July	182	19,226	23,013	5,90,118	4,508
August	189	13,561	23,880	6,40,173	4,962
September	189	18,178	31,252	8,23,257	6,149
October	243	15,719	34,371	9,25,175	8,466
November	498	18,560	33,623 *	8,88,059 *	9,651

* as on November 12, 2004.

2004. It has further increased to Rs.9,651 crore with weighted average rate working out to 5.48 per cent in November 2004. Initially, only one insurance company and few cooperative banks had been supplying funds in this market. Now, mutual funds have emerged as the largest suppliers of funds. On the demand side, apart from cooperative banks, public and private sector banks, the composition has also been changing with regular participation of PDs on account of softer borrowing costs in CBLO *vis-à-vis* call market.

Government Securities Market

Central Government Borrowings - 2004-05

2.66 The gross market borrowings by the Central Government during the year so far (up to December 15, 2004) amounted to Rs.87,046 crore (Rs.68,000 through dated securities and Rs.19,046 crore by way of 364-day Treasury Bills), substantially lower than that during the corresponding period of the previous year (Table 2.38). As indicated in the calendar for the first half (April 1, 2004-September 30, 2004), Rs.59,000 crore were to be issued. However, only Rs.54,000 crore were raised through dated securities during the first half. On September 20, 2004, an indicative calendar for issue of dated securities for the second half of the year (October 1, 2004-March 31, 2005) amounting to Rs.44,000 crore was released. Of the total issuances amounting to Rs.32,000 crore of dated securities scheduled during October 1, 2004 to December 8, 2004, Rs.14,000 crore were raised while the balance scheduled auctions for Rs.18,000 crore were cancelled. The weighted average yield of the dated securities issued during the current year so far (up to December 15, 2004) at 5.96 per cent was marginally higher than that of 5.80 per cent during the corresponding period of the previous year. The weighted average maturity of the dated securities issued during 2004-05 so far at 13.92 years has been lower than that of 15.67 years during the corresponding period of the fiscal 2003-04. The weighted average yield on the outstanding stock of government securities continued its declining trajectory. It fell to 8.92 per cent as on November 30, 2004 from 9.30 per cent as at end-March 2004 and 10.44 per cent as at end-March 2003. The weighted average maturity on the outstanding securities declined marginally to 9.65 years as on November 30, 2004 as compared with 9.78 years as at end-March 2004 but higher than that of 8.9 years as at end-March 2003.

Floating Rate Bonds

2.67 Issuance of Floating Rate Bonds (FRBs), which serve as an instrument for management of interest rate risk by investors in the context of elongation of the maturity profile of Government debt, was continued in 2004-05. During the current year so

Table 2.38: Central Government's Market Borrowing

(Rupees crore)

Item		2003-04		2003-04 (April-December 15, 2003)		2004-05 (April-December 15, 2004)	
		Gross	Net	Gross	Net	Gross	Net
1		2	3	4	5	6	7
1.	Budget Estimates*	1,66,014	1,07,014	–	–	1,50,817	90,365
	Of which Dated Securities	1,40,014	1,07,140	–	–	1,24,817	90,501
	364-day T Bills	26,000	-126			26,000	-136
2.	Completed so far @	1,47,636	88,816	1,14,036	77,319	87,046	33,694
	Of which Dated Securities	1,21,500	88,807	95,000	77,316	68,000	33,684
	364-day T Bills	26,136	9	19,036	2	19,046	10
3.	Private Placements	21,500		5,000		–	
4.	Devolvements on						
	RBI	0		0		847	
	PDs	0		0		985	
5.	Weighted Average Yield on dated securities (Per cent)	5.71		5.82		5.96	
6.	Weighted Average Maturity of dated securities (Years)	14.94		16.13		13.92	

* For the full financial year. @ Actuals for 2003-04.

far (upto December 15, 2004), FRBs were issued in four tranches aggregating Rs.22,000 crore.

Treasury Bills

2.68 The notified amounts of 91-day and 364-day Treasury Bills for each auction were increased from Rs.500 crore and Rs.1,000 crore, respectively, to Rs.2,000 crore each, effective April 2004. The increase was on account of issuances under the MSS with a view to absorbing surplus liquidity from the market. However, taking into account the prevailing liquidity conditions in the market, the absorption under the MSS through the Treasury Bills was discontinued for a brief period during November 2004. Accordingly, the notified amount for 91-day and 364-day Treasury Bills was reduced to Rs. 500 crore and Rs. 1,000 crore, respectively for the auctions held between November 10, 2004 to December 1, 2004. The primary market cut-off yields of 91-day and 364-day Treasury Bills have edged up during the year so far. Yields have generally been above the Reserve Bank's liquidity absorption rate under the LAF since mid-June 2004.

State Government Borrowings

2.69 The gross and net market borrowings allocated for States for the fiscal year 2004-05 (provisional) are placed at Rs.43,897 crore and Rs.38,774 crore, respectively. This is inclusive of the additional allocation of Rs.22,274 crore under the debt-swap scheme. During the current year so far (up to December 15, 2004), the State Governments have raised Rs.32,848 crore (Rs.31,963 crore through tap sale and Rs.885 crore through auction) under the market borrowing programme; of this, Rs.13,781 crore was raised under the debt-swap scheme. During the current year so far, the weighted average yield of State Government securities worked out to 6.32 per cent, higher than that of 6.20 per cent during the corresponding period of 2003-04.

Secondary Market for Government Securities - Yield Movement

2.70 During the current financial year, the rise in the secondary market yield of government securities reflected a number of factors such as higher than expected inflation, interest rate hikes by major central banks and sharp increases in the international crude oil prices. Consequently, 10-year yield rose to 6.73 per cent on August 11, 2004. However, the yields retracted to 6.16 per cent by end-August 2004 reflecting fiscal measures taken by the Government to rein in inflation, lower than anticipated hike in the MSS ceiling amount at Rs.80,000 crore, some moderation in global oil prices and one time permission by the Reserve Bank to banks to transfer the securities to Held-to-Maturity (HTM) category. The yields again increased on account of the hike in the CRR by 50 basis points in two stages on September 18, 2004 and October 2, 2004, sharp rise in international oil prices, hike in domestic energy prices, rise in domestic inflation and tightening of liquidity in November 2004. On November 8, 2004, the 10-year yield peaked at 7.31 per cent as compared with 5.15 per cent as at end-March 2004 (Chart II.19). Subsequently, yields fell on cancellation of scheduled auctions, fall in international oil prices and easing of liquidity conditions. On December 15, 2004, the 10-year yield was at 6.76 per cent. The yield spread of AAA-rated bonds over those of gilts has been broadly constant (Chart II.20).

Foreign Exchange Market

2.71 The foreign exchange market has generally exhibited orderly conditions during 2004-05 so far (up to December 15, 2004). The exchange rate of the Indian rupee *vis-à-vis* the US dollar has moved within a range of Rs 43.57 - 46.46 per US dollar during the year 2004-05 so far (up to December 15, 2004). Reflecting large capital flows, the rupee appreciated *vis-à-vis* the US dollar during April 2004. It, however,

Chart II.19 : Government Securities Yield Curve

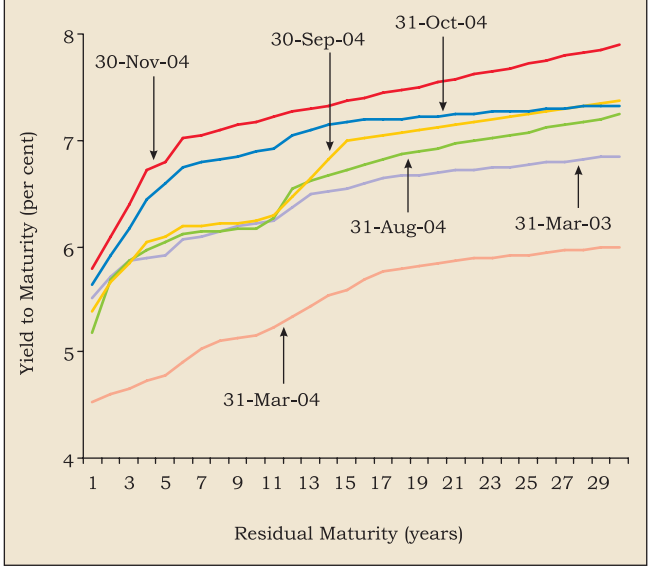


Chart II.20 : Yield Spreads (annualised)

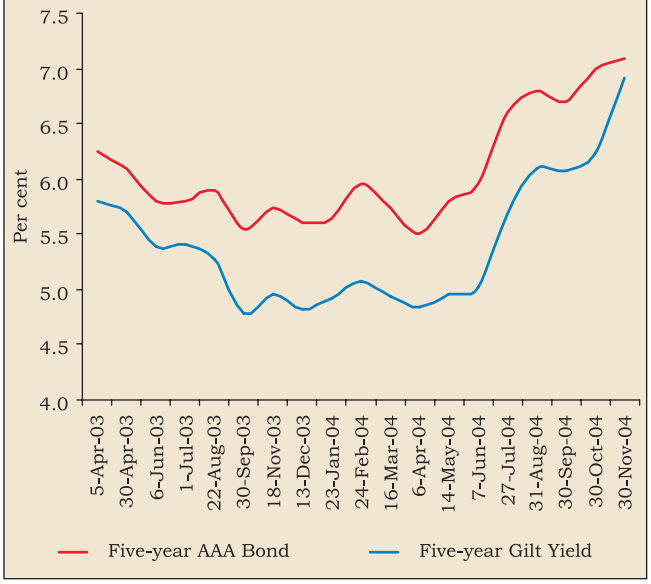
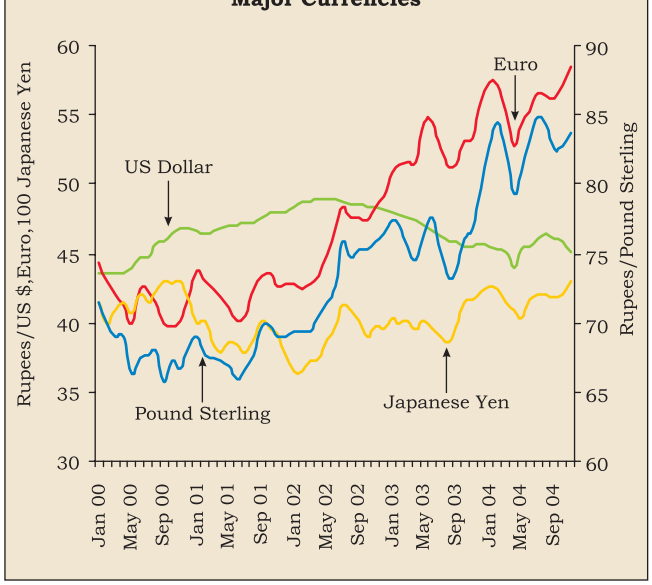


Chart II.21 : Movements of the Rupee *vis-à-vis* Major Currencies



depreciated during May-August 2004, mainly on account of ebbing of capital flows and rising demand for foreign exchange due to high oil prices. In the subsequent months, with the revival of capital flows, the rupee appreciated *vis-à-vis* the US dollar. Overall, the Indian rupee depreciated by 1.6 per cent against the US dollar during April-December 15, 2004. The rupee also depreciated against the Pound Sterling, the Euro and the Japanese Yen by 6.2 per cent, 9.4 per cent and 0.7 per cent, respectively, during the same period (Chart II.21). During April-October 2004, in terms of monthly averages, while the 5-country (trade-weighted) REER of the rupee appreciated by 1.8 per cent, the NEER depreciated by 1.9 per cent.

2.72 The forward markets reflected the developments in the spot segment of the foreign exchange market. Reflecting excess supplies in the markets, the forward premia turned into discounts during April 2004. The forward rates, however, turned into premia thereafter, as the exchange rate depreciated against the US dollar, import demand picked up and international oil prices steadily edged up (Chart II.22).

Capital Market

Primary Market

2.73 During the current financial year so far (April-October 2004), the primary market showed a mixed trend. Resource mobilisation through public issues increased significantly in consonance with pick-up in the industrial activity. All the public issues floated during April-October 2004 were equity issues belonging to the private sector excepting one issue from public sector (Table 2.39). On the other hand, the resource mobilisation through private placement as well as Euro issues registered a decline. The decline in resource mobilisation under private placement route was entirely due to the public sector. The public sector entities accounted for 62.7 per cent of total resource mobilisation through private placement as compared with 70.3 per cent during the corresponding period of the previous year.

Chart II.22 : Forward Premia

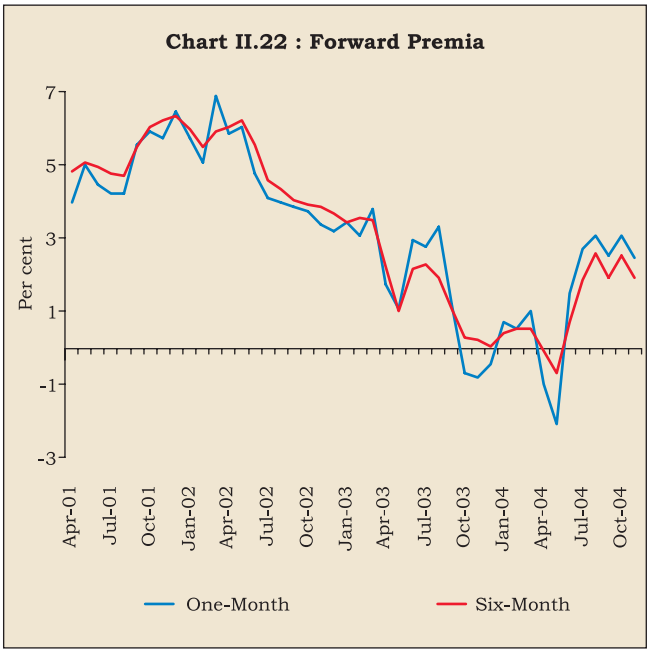


Table 2.39: Mobilisation of Resources from the Primary Market*

(Rupees crore)

Item	2002-03		2003-04		April-October			
					2003-04		2004-05	
	No. of Issues	Amount	No. of Issues	Amount	No. of Issues	Amount	No. of Issues	Amount
1	2	3	4	5	6	7	8	9
A. Prospectus and Rights Issues	**17**	**4,867**	**35**	**7,190**	**9**	**1,654**	**26**	**10,751**
I. Public Sector	8	2,989	8	3,980	4	820	1	2,684
II. Private Sector	9	1,878	27	3,210	5	834	25	8,067
B. Private Placement #	**1,144**	**66,948**	**800**	**59,215**	**514**	**33,161**	**401**	**28,973**
I. Public Sector	267	41,871	222	44,349	127	23,317	105	18,156
II. Private Sector	877	25,077	578	14,866	387	9,844	296	10,817
C. Euro Issues	**11**	**3,426**	**18**	**3,098**	**7**	**1,818**	**6**	**1,367**

* Including both debt and equity. # For private placement, data pertain to April-September.

Note : Estimates based on information gathered from arrangers, FIs and newspaper reports.

Disbursements by the All-India Financial Institutions (AIFIs) increased during April-September 2004 mainly on account of the Life Insurance Corporation (LIC).

2.74 The resource mobilisation by mutual funds during April-October 2004 was considerably lower - it was only around one-fourth of that recorded during the corresponding period of the previous year. UTI mutual fund and also public sector mutual funds recorded net outflows (Table 2.40).

Secondary Market

2.75 The stock market, which had witnessed a sustained and broad-based rally between end-May 2003 and February 2004, remained subdued during March-July 2004. This was on account of several domestic and international factors such as diversion of funds to primary market due to certain attractive Initial Public Offers (IPOs), uncertainty regarding the outcome of the general elections and its effects on the reform process, slowdown in institutional investments, rise in domestic inflation, rising international crude oil prices and a strengthening dollar. The stock markets declined sharply on May 17, 2004 - the BSE Sensex declined by more than 11 per cent - due to a variety of domestic and international factors, *viz.*, uncertainties on the political front after the general elections, declining trend in other East Asian markets and rising international crude oil prices. The stock markets, however, recovered immediately on the next trading day and the contagion effects to other segments of the financial markets were contained due to the effective and coordinated regulatory actions undertaken by the Reserve Bank and the Securities and Exchange Board of India (SEBI) as well as strong underlying fundamentals of the economy.

Table 2.40: Net Resource Mobilisation by Mutual Funds

(Rupees crore)

Category			April-October	
	2002-03	2003-04	2003-04	2004-05
1	2	3	4	5
I. Unit Trust of India	-9,434	1,667	360	-2,150
II. Private Sector	12,069	42,544	33,930	11,203
III. Public Sector	1,561	2,597	1,675	-231
Total (I+II+III)	**4,196**	**46,808**	**35,965**	**8,822**

Note : Data for UTI do not include data for UTI-I since February 2003.

Source : Securities and Exchange Board of India.

2.76 The stock markets also reacted sharply to the proposal of the Union Budget, 2004-05 to impose Securities Transaction Tax (STT) of 0.15 per cent on all securities transacted in the stock exchanges. The market sentiment revived subsequently on the statement by the Government to revise the STT. Notwithstanding the volatility in international crude oil prices, the stock markets have registered gains in recent months, mainly on account of sustained macroeconomic fundamentals, encouraging quarterly results of major corporates and strong investments by Foreign Institutional Investors' (FIIs) in equities. The BSE Sensex reached the historic high of 6,402.29 on December 15, 2004. Turnover, market capitalisation as well as the price-earning ratio, on both the Stock Exchange, Mumbai (BSE) and the National Stock Exchange (NSE) in the current year so far, have been higher than those in the corresponding period of the previous year. The volatility was much lower (Table 2.41).

Table 2.41: Trends in Stock Markets

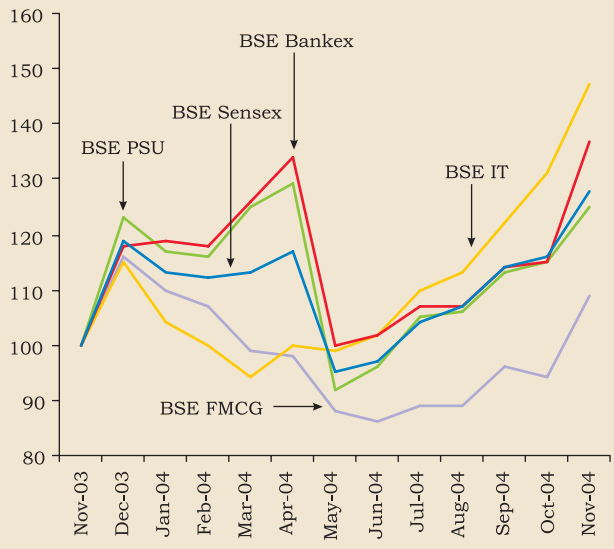
Item	BSE		NSE	
	April-November		April-November	
	2003	2004	2003	2004
1	2	3	4	5
Average BSE Sensex/ S&P CNX Nifty (Index)	3896.73	5365.31	1235.30	1687.48
Volatility (Coefficient of Variation)	17.8	7.7	18.0	8.0
Turnover (Rupees crore)	2,79,933	3,15,388	6,41,298	7,11,702
Market Capitalisation (end-period) (Rupees crore)	10,65,853	15,39,595	9,79,541	14,46,292
P/E ratio (end-period)	16.01	18.79	17.81	16.39

Source : The Stock Exchange, Mumbai (BSE) and The National Stock Exchange of India Limited (NSE).

2.77 Most of the sectoral indices, including those of technology, banking and Public Sector Units (PSU) registered a downtrend during April-May 2004, but witnessed a revival subsequently. Banking scrips gained after the Supreme Court upheld the validity of the new securitisation law paving the passage for higher recoveries in the banking sector. They also benefited from the relaxation made by the Reserve Bank in the rules governing the investment portfolio of banks. The FMCG scrips gained on hopes of a rise in demand for these products in the near future (Chart II.23).

2.78 In view of the turnaround since August 2004 onwards, the investments by FIIs in equities are now quite close to that in the corresponding period of the previous year. FIIs have, however, turned net sellers in debt during the current financial year so far. In contrast, the mutual funds have remained net sellers in equities but net buyers in debt during the current financial year so far (Table 2.42).

Chart II.23 : Sectoral Trends *vis-à-vis* BSE Sensex*



* Normalised to September 2003=100

Table 2.42: Institutional Investments

(Rupees crore)

Year	FIIs		Mutual Funds	
	Equity	Debt	Equity	Debt
1	2	3	4	5
2001-02	8,067	685	-3,796	10,959
2002-03	2,528	162	-2,067	12,604
2003-04	39,959	5,805	1,308	22,701
2003-04 (April-November)	22,620	3,776	-117	17,658
2004-05 (April-November)	21,103	-2,181	-1,388	5,440

Source : Securities and Exchange Board of India.

2.79 The derivatives segment continued to attract larger volumes. The total turnover in the derivative markets on the NSE during April-November 2004 was more than double the turnover in cash markets (Table 2.43). In response to a demand from market participants for shorter maturity options, BSE decided to offer, effective September 13, 2004, weekly options series with maturity of one week and two weeks in addition to the existing monthly options series.

Table 2.43: Turnover in Derivatives Market *vis-à-vis* Cash Market in NSE

(Rupees crore)

Year	Derivatives	Cash
1	2	3
2001-02	1,01,925	5,13,167
2002-03	4,39,855	6,17,989
2003-04	21,30,612	10,99,535
2003-04 (April-November)	10,34,359	6,41,298
2004-05 (April-November)	14,61,088	7,11,702

Source : The National Stock Exchange of India Limited.

Financial Sector

2.80 Against the backdrop of strong macroeconomic performance, nearly all segments of the financial sector registered significant improvement in their operations, profitability and financial health during 2003-04. The spread of the Scheduled Commercial Banks (SCBs) continued to improve during 2003-04 (Table 2.44). The net profits of the SCBs registered strong growth on the back of a sharp increase in non-interest income, in particular trading profits, in a declining interest rate scenario. The soundness indicators also registered an improvement. The capital to risk-weighted assets ratio (CRAR) improved marginally to 12.9 per cent from 12.7 per cent during 2002-03. Only two banks accounting for a negligible 0.5 per cent of the assets of the SCBs could not satisfy the stipulated 9.0 per cent CRAR. The gross non-performing assets (NPAs) of the banking system declined in absolute terms for the second year in succession despite the switchover to 90-days delinquency norm. The net NPAs to net advances ratio came down sharply to 2.9 per cent from 4.4 per cent during 2002-03 with the range of net NPAs varying between 1.5 per cent for foreign banks and 3.0 per cent for the public sector banks. Improved risk management practices, greater recovery efforts, impact of the Securitisation

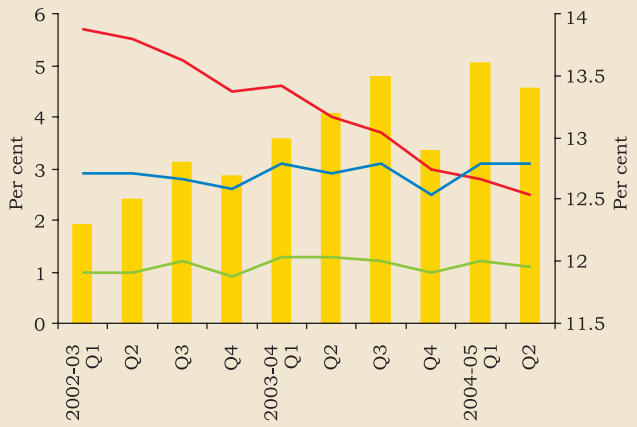
Table 2.44: Important Parameters of Select Bank-Groups

(Per cent)

Item	1996-97	2001-02	2002-03	2003-04
1	2	3	4	5
Operating Expenses/Total Assets				
Scheduled Commercial Banks	2.9	2.2	2.2	2.2
Public Sector Banks	2.9	2.3	2.3	2.2
Old Private Sector Banks	2.5	2.1	2.1	2.0
New Private Sector Banks	1.9	1.1	2.0	2.0
Foreign Banks	3.0	3.0	2.8	2.8
Spread/Total Assets				
Scheduled Commercial Banks	3.2	2.6	2.8	2.9
Public Sector Banks	3.2	2.7	2.9	3.0
Old Private Sector Banks	2.9	2.4	2.5	2.6
New Private Sector Banks	2.9	1.2	1.7	2.0
Foreign Banks	4.1	3.2	3.4	3.5
Net Profit/Total Assets				
Scheduled Commercial Banks	0.7	0.8	1.0	1.1
Public Sector Banks	0.6	0.7	1.0	1.1
Old Private Sector Banks	0.9	1.1	1.2	1.2
New Private Sector Banks	1.7	0.4	0.9	0.8
Foreign Banks	1.2	1.3	1.6	1.7
Gross NPAs to Gross Advances				
Scheduled Commercial Banks	15.7	10.4	8.8	7.2
Public Sector Banks	17.8	11.1	9.4	7.8
Old Private Sector Banks	10.7	11.0	8.9	7.6
New Private Sector Banks	2.6	8.9	7.6	5.0
Foreign Banks	4.3	5.4	5.3	4.6
Net NPAs to Net Advances				
Scheduled Commercial Banks	8.1	5.5	4.4	2.9
Public Sector Banks	9.2	5.8	4.5	3.0
Old Private Sector Banks	6.6	7.1	5.5	3.8
New Private Sector Banks	2.0	4.9	4.6	2.4
Foreign Banks	1.9	1.9	1.8	1.5
CRAR				
Scheduled Commercial Banks	10.4	12.0	12.7	12.9
Public Sector Banks	10.0	11.8	12.6	13.2
Old Private Sector Banks	11.7	12.5	12.8	13.7
New Private Sector Banks	15.3	12.3	11.3	10.2
Foreign Banks	N.A.	12.9	15.2	15.0

Source : Balance Sheets of banks and returns submitted by banks.

Chart II.24 : Scheduled Commercial Banks - Key Performance Indicators



Source : DSB returns submitted by banks covering domestic operations.

and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act, 2002 and corporate debt restructuring mechanism have led to the improvement in the recovery of NPAs during 2003-04. SCBs sustained their performance during the first half of 2004-05. The CRAR of SCBs at end-September 2004 was higher than its end-March 2004 levels. Over the same period, the ratio of net NPAs to net advances declined (Chart II. 24).

2.81 As regards the scheduled urban co-operative banks (UCBs), the policy induced changes - in particular, higher investments in the Government securities - led to a significant improvement in their asset quality and profitability during 2003-04. The net profits of the scheduled UCBs showed a turnaround (Table 2.45).

Table 2.45: Urban Co-operative Banks - Select Financial Indicators

Indicator	2001-02	2002-03	2003-04
1	2	3	4
Growth in Major Aggregates (Per cent)			
Deposits	15.1	9.1	7.5
Credits	14.1	4.5	3.4
Financial Indicators@			
(as percentage of total assets)			
Operating Profits	1.5	1.5	1.8
Net Profits	-0.9	-1.1	0.6
Spread	2.2	2.0	2.1
Non-Performing Assets			
(as percentage of advances)			
Gross NPAs	21.9	19.0	17.6
Net NPAs	..	13.0	11.1

.. Not Available.
@ Relates to Scheduled Urban Co-operative banks.

Their NPAs declined both in absolute as well as percentage terms. The Tier-I capital also registered a turnaround to Rs.297 crore from a negative Rs.10 crore during 2002-03. The performance of the rural co-operatives, however, remained below potential. While profitability of the state co-operative banks increased marginally during 2002-03, the central co-operative banks continued to register losses. The NPAs of rural co-operative banks continued to remain high.

2.82 The income and expenditure of the select AIFIs declined leading to an unchanged profit ratio in 2003-04. The CRAR of all the AIFIs, except IFCI and IIBI, remained well above the regulatory minimum. The net NPAs, however, increased during 2003-04 (Table 2.46).

2.83 The lead data on the performance of the major Non-Banking Financial Companies (NBFCs) (other than RNBCs) holding public deposits of Rs.20 crore and above, accounting for three - fourth of sectoral assets, indicates some changes in their structure of assets and liabilities (Table 2.47). There was a marginal increase in their public deposits during 2003-04 accompanied by a larger recourse to bank loans, partly driven by the softening of the lending rates. In terms of deployment of funds, only loans and advances recorded a marginal increase in contrast to declines in the other areas of business. Investment pattern of Residuary Non-Banking Companies (RNBCs) shifted towards unencumbered approved securities during 2002-03, indicating an improvement in the risk profile of their investment portfolio (Table 2.48).

Table 2.46: Financial Institutions - Select Performance Indicators

Indicator	2001-02	2002-03	2003-04
1	2	3	4
Balance sheet Indicators			
(as percentage of assets)			
Operating Profits	1.6	1.4	1.3
Net Profits	0.7	0.9	0.9
Spread	0.6	0.7	0.2
Non-Performing Assets	8.8	10.6	..
(as percentage of net advances)			
Resource flows (Rupees crore)			
Sanctions	27,619	22,272	23,407
Disbursements	20,725	17,225	14,057
Credit	-4,706	-6,021	-2,845

.. Not Available.

Note : Data on balance sheet indicators cover nine FIs, *viz.*, IDBI, IFCI, IIBI, IDFC, EXIM Bank, TFCI, SIDBI, NABARD and NHB while that on resource flows cover IDBI, IFCI, IDFC, IIBI and SIDBI.

Table 2.47: Assets and Liabilities of Non-Banking Financial Companies Holding Public Deposits of Rs.20 crore and above
(as at end-March)

(Rupees crore)

Item	2003		2004	
	Amount	Percentage to total	Amount	Percentage to total
1	2	3	4	5
Liabilities				
Paid-up capital	1,693	6.4	1,100	5.2
Free Reserve *(adjusted for loss)*	1,325	5.0	1,324	6.3
Public Deposits	3,686	14.0	3,233	15.3
Convertible Debentures	3,755	14.2	3,140	14.9
Other Borrowings	8,675	32.9	7,601	36.1
of which: Banks	6,785	25.7	6,130	29.1
Other Liabilities	7,222	27.4	4,685	22.2
Total Liabilities	**26,355**	**100.0**	**21,083**	**100.0**
Assets				
Investments	2,696	10.2	1,113	5.3
Loans and Advances	8,576	32.5	8,588	40.7
Other Financial Assets	10,255	38.9	8,619	40.9
of which: Hire Purchase	8,571	32.5	7,648	36.3
Equipment Leasing	1,546	5.9	916	4.3
Other Assets	4,828	18.3	2,763	13.1
Total Assets	**26,355**	**100.0**	**21,083**	**100.0**

2.84 The financial health of the NBFCs improved during 2002-03. The decline in their income was more than compensated by the fall in expenditure resulting in a turnaround in their financial performance from the losses witnessed during the previous two years. Reduced interest costs on the back of a softening interest rate regime and a rise in the fee-based income resulted in profits during 2002-03. The gross and net NPAs declined during 2002-03. The CRAR of most NBFCs remained well above the 30 per cent. Only a few NBFCs reported CRAR lower than the stipulated minimum of 12 per cent.

Table 2.48: Profile of RNBCs
(as at end-March)

(Rupees crore)

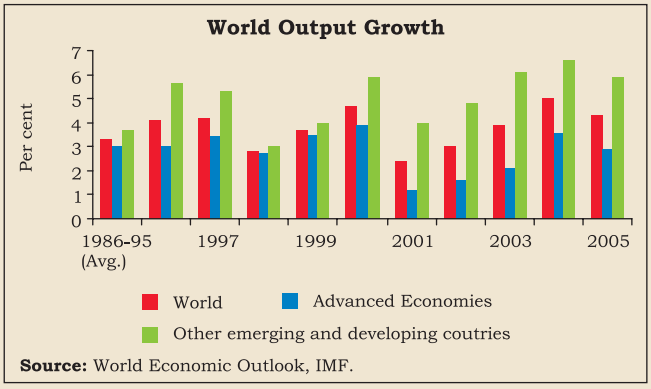
Item	2002	2003
1	2	3
Number of RNBCs	**5**	**5**
Net Owned Funds	**111**	**809**
Aggregate Liability to Depositors	**12,889**	**15,065**
Total Assets (a to e)	**18,458**	**20,362**
a. Unencumbered Approved Securities	4,080	6,129
b. Fixed Deposits with Banks	1,830	1,470
c. Bonds/Debentures/Commercial Papers of a Government Company, Public Sector Bank, Public Financial Institution/Corporation	6,265	6,553
d. Other Investments	529	912
e. Other Assets	6,169	6,040

V. EXTERNAL SECTOR

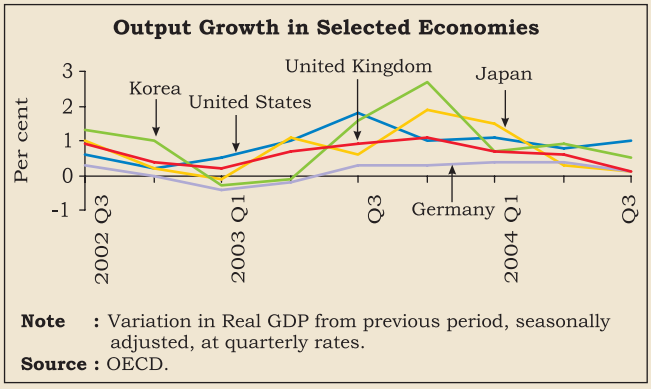
Global Economic Outlook

2.85 Global economic activity strengthened further during 2004. According to the International Monetary Fund (IMF), global GDP growth is projected at around 5.0 per cent during 2004, 0.3 percentage points higher than its April 2004 estimate. At this level, global GDP growth would be the highest in the past three decades as the growth pick-up in industrial countries is supported by rapid expansion in emerging markets, notably China. While global growth in the first quarter was much stronger than expected earlier, the momentum of the recovery has, however, slowed thereafter as GDP in major countries such as the US and Japan fell below expectations (Chart II.25). GDP growth in China also eased, which is considered a welcome development, given the concerns of over-heating. The recovery in the euro area remains relatively weak and is heavily dependant on external demand. Notwithstanding the firming up of economic activity, the

Chart II.25 : World Output



Source: World Economic Outlook, IMF.



Note : Variation in Real GDP from previous period, seasonally adjusted, at quarterly rates.
Source : OECD.

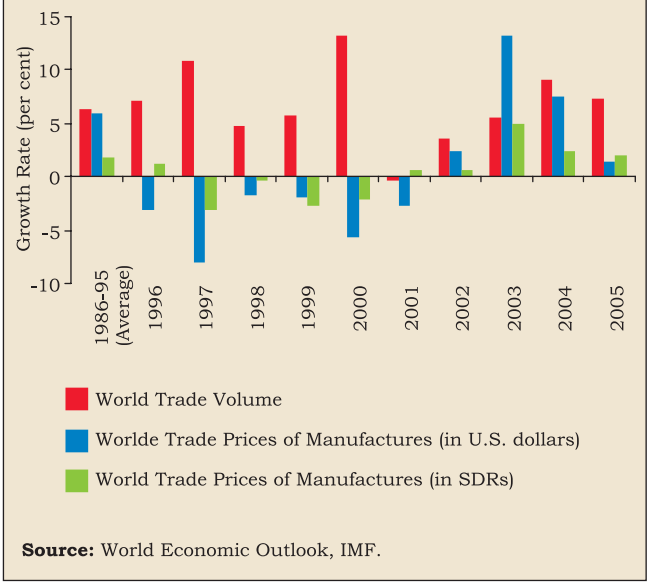
sharp rise in international crude oil prices poses the main downward risk to global economic prospects. According to estimates by the IMF, a sustained increase of US $ 5 per barrel in crude oil prices can reduce global growth by about 0.3 percentage point with a lag of one year (see Chapter V). Another source of downside risk is the global macroeconomic imbalances which increased further, as the US current account deficit continued to widen matched by higher surpluses in Japan, the Euro Area and the emerging economies of Asia (see Chapter IV).

2.86 The growth in world trade volume, which accelerated during 2004, is expected to moderate during 2005 (Chart II.26). Growth in trade prices is expected to decelerate further during 2005. Private capital flows (net) to developing markets during 2004 are projected to be lower than that during 2003 and are expected to fall even further in 2005. In contrast to the falling trend in total capital flows, foreign direct investment flows have been rising. Emerging Asian countries are expected to see a further build up in their reserves during 2005.

India's Merchandise Trade

2.87 India's merchandise exports exhibited a robust growth during 2004-05 indicative of growing competitiveness of the manufacturing sector. According to the Directorate General of Commercial Intelligence and Statistics (DGCI&S), merchandise exports during April-November 2004 posted a growth of 24 per cent in US dollar terms, substantially higher than the annual target of 16 per cent as well as that recorded in the corresponding period of the previous year. The growth rate of India's exports during 2004 (January - August) remained higher than that of major exporting nations (Table 2.49).

Chart II.26 : World Trade Volumes and Prices



Source: World Economic Outlook, IMF.

Table 2.49: Merchandise Exports - Global Scenario

(Percent change in US $ terms)

Country		January-August	
	2003	2003	2004
1	2	3	4
World	**16.1**	**16.6 ***	**21.1 ***
Industrial Countries	**14.3**	**13.4**	**18.7**
USA	4.3	2.4	13.6
Germany	22.7	23.1	22.4
Japan	13.2	11.4	22.7
Developing Countries	**18.9**	**18.6 ***	**26.0 ***
China	34.5	33.9 *	35.7 *
India	**16.7**	**10.0**	**35.6**
South Korea	19.3	16.1	36.9
Singapore	15.2	12.8	25.3
Indonesia	5.1	7.8	3.0
Malaysia	6.5	10.3	20.2
Thailand	18.0	16.5	21.6

* Relate to January-June.

Source : International Financial Statistics, IMF. For India, the source is DGCI&S.

2.88 Merchandise imports continued to record a strong growth during 2004-05. Both oil and non-oil imports contributed to this increase (Table 2.50). Non-oil imports posted a strong growth of 26.8 per cent with the firming up of industrial activity. Oil imports

Table 2.50: India's Foreign Trade

(US $ billion)

Item	April-March		April-November	
	2002-03	2003-04	2003-04	2004-05 P
1	2	3	4	5
Exports	**52.7**	**63.8**	**37.4**	**46.4**
	(20.3)	(21.1)	(9.3)	(24.2)
Oil	2.6	3.6	2.3	..
	(21.6)	(38.5)	(48.1)	(–)
Non-oil	50.1	60.3	35.1	..
	(20.2)	(20.2)	(7.5)	(–)
Imports	**61.4**	**78.1**	**47.8**	**64.3**
	(19.4)	(27.3)	(21.7)	(34.6)
Oil	17.6	20.6	12.8	19.9
	(26.0)	(16.6)	(12.4)	(56.0)
Non-oil	43.8	57.6	35.0	44.3
	(17.0)	(31.5)	(25.5)	(26.8)
Trade Balance	**-8.7**	**-14.3**	**-10.4**	**-17.9**
Oil	-15.1	-17.0	-10.5	..
Non-oil	6.4	2.7	0.2	..

.. Not Available.

P : Provisional.

Note : Figures in bracket indicate growth rates over corresponding period of previous year.

Source : DGCI&S.

Table 2.51: India's Principal Exports

Item	April-March				April-July			
	US $ million		Growth Rate (Per cent)		US $ million		Growth Rate (Per cent)	
	2002-03	2003-04	2002-03	2003-04	2003-04	2004-05 P	2003-04	2004-05
1	2	3	4	5	6	7	8	9
Primary Products	**8,706**	**9,902**	**21.5**	**13.7**	**2,642**	**3,565**	**1.9**	**35.0**
Agricultural & Allied Products	6,710	7,533	13.7	12.3	2,053	2,513	4.7	22.4
Ores & Minerals	1,996	2,369	58.1	18.7	588	1,052	-6.7	78.8
Manufactured Goods	**40,245**	**48,492**	**20.6**	**20.5**	**13,564**	**17,437**	**7.1**	**28.6**
Leather & Manufactures	1,848	2,163	-3.2	17.0	632	706	-0.9	11.6
Chemicals & Related Products	7,455	9,446	23.2	26.7	2,695	3,450	16.3	28.0
Engineering Goods	9,033	12,405	29.8	37.3	3,465	4,639	28.2	33.9
Textiles	11,036	12,145	14.2	10.0	3,432	3,887	-5.9	13.2
Gems & Jewellery	9,030	10,573	23.6	17.1	2,803	4,091	1.9	46.0
Handicrafts	785	500	43.1	-36.3	151	92	-38.3	-39.2
Carpets	533	586	4.4	9.9	172	164	-4.6	-4.2
Petroleum Products	**2,577**	**3,568**	**21.6**	**38.5**	**988**	**1,768**	**20.4**	**78.8**
Others	**1,192**	**1,880**	**1.5**	**57.9**	**486**	**915**	**44.8**	**88.5**
Total Exports	**52,719**	**63,843**	**20.3**	**21.1**	**17,679**	**23,685**	**7.7**	**34.0**

P : Provisional.
Source : DGCI&S.

swelled by 56.0 per cent largely due to the sharp increase in international crude oil prices. The average international crude oil price (Dubai variety) increased by 38 per cent to US $ 35.2 per barrel during April-November 2004. As overall import growth outstripped export growth, trade deficit widened to US $ 17.9 billion during April-November 2004.

2.89 Commodity-wise data show that the growth in exports was spread across all the major commodity-groups. Primary products exhibited a sharp turnaround with substantial contributions from major agricultural commodities (such as tea, wheat, cotton, tobacco, cashew, spices and oil meal), ores and minerals. Exports of manufactured products maintained the tempo of high growth with gems and jewellery, engineering goods and chemicals as the key drivers. Among the engineering goods, exports of transport equipments surged by 74.9 per cent during April-July 2004. Increase in textile exports mainly emanated from readymade garments. Exports of petroleum products posted a sharp increase during April-July 2004, benefiting from higher international oil prices (Table 2.51).

2.90 Destination-wise, exports to almost all the major regions/country groups recorded marked improvement. Exports to the Asian countries maintained their rising profile. Among the major partner countries, sharp increases were recorded in respect of the UK, the US, China, Hong Kong, UAE and Singapore (Table 2.52).

Table 2.52: Major Destination of India's Exports

Country	April-March				April-July			
	US $ million		Growth Rate (Per cent)		US $ million		Growth Rate (Per cent)	
	2002-03	2003-04	2002-03	2003-04	2003-04	2004-05 P	2003-04	2004-05
1	2	3	4	5	6	7	8	9
USA	10,896	11,490	28.0	5.5	3,330	4,129	-5.3	24.0
UAE	3,328	5,126	33.5	54.1	1,242	2,090	13.9	68.2
UK	2,496	3,023	15.5	21.1	871	1,118	6.4	28.4
Hong Kong	2,613	3,262	10.4	24.8	852	1,090	-0.2	27.9
Germany	2,107	2,545	17.8	20.8	742	845	12.3	13.9
China	1,976	2,955	107.5	49.6	622	1,070	32.4	71.9
Japan	1,864	1,709	23.4	-8.3	544	576	-8.1	6.0
Belgium	1,662	1,806	19.5	8.6	536	721	5.0	34.5
Singapore	1,422	2,125	46.2	49.4	447	1,125	-8.1	151.6
Italy	1,357	1,729	12.5	27.4	513	609	23.8	18.7
Bangladesh	1,176	1,741	17.3	48.0	521	441	55.1	-15.3
Srilanka	921	1,319	46.0	43.2	384	408	62.2	6.3
France	1,074	1,281	13.7	19.3	341	564	-1.1	65.7

P : Provisional.
Source : DGCI&S.

Table 2.53: India's Principal Imports

Commodity	April-March				April-July			
	US $ million		Growth Rate (Per cent)		US $ million		Growth Rate (Per cent)	
	2002-03	2003-04	2002-03	2003-04	2003-04	2004-05 P	2003-04	2004-05
1	2	3	4	5	6	7	8	9
Petroleum, Petroleum Products & Related Material	17,640	20,570	26.0	16.6	6,115	9,480	11.7	55.0
Edible oil	1,814	2,543	33.8	40.2	885	735	61.3	-17.0
Non-Ferrous Metals	667	949	3.0	42.5	257	342	26.8	33.0
Metalliferous Ores and Metal Scraps	1,038	1,296	-9.3	24.8	414	710	9.0	71.3
Iron & Steel	943	1,506	13.2	59.7	431	733	49.0	70.3
Capital Goods	13,498	18,279	36.6	35.4	4,632	6,028	30.7	30.1
Pearls, Precious & Semi-Precious Stones	6,063	7,129	31.2	17.6	2,180	2,636	-1.2	20.9
Textiles, Yarn, Fabrics, *etc.*	970	1,258	29.8	29.7	378	415	31.0	9.8
Chemicals, Organic & Inorganic	3,025	4,032	8.1	33.3	1,114	1,434	13.2	28.7
Gold & Silver	4,288	6,856	-6.4	59.9	2,430	3,105	107.6	27.8

P : Provisional.
Source : DGCI&S.

2.91 As regards imports, the sharp increase in imports of petroleum, petroleum products and related materials reflected mainly the impact of hardening in international crude oil prices. In terms of volume, these imports grew by only 11 per cent during April-July 2004, roughly the same order of growth as during fiscal 2003-04. Among the major 'non-oil' items, imports of gold and silver increased sharply, while bulk consumption goods (notably, edible oils) declined. Imports of 'mainly industrial inputs' (*i.e.*, non-oil imports net of gold and silver, bulk consumption goods, manufactured fertilisers, and professional instruments) recorded a strong increase, signalling the firming up of domestic manufacturing activity (Table 2.53).

2.92 Country-wise details indicate sharp increase in imports from all major country groups. Among the major partner countries, imports from Germany, China, Australia, South Korea and USA showed remarkable increases (Table 2.54).

Table 2.54: Sources of India's Imports

Country	April-March				April-July			
	US $ million		Growth Rate (Per cent)		US $ million		Growth Rate (Per cent)	
	2002-03	2003-04	2002-03	2003-04	2003-04	2004-05 P	2003-04	2004-05
1	2	3	4	5	6	7	8	9
USA	4,444	5,035	41.1	13.3	1,428	1,721	13.9	20.5
Belgium	3,712	3,976	34.3	7.1	1,294	1,552	–	20.0
China	2,792	4,053	37.1	45.2	1,120	1,877	39.6	67.5
UK	2,777	3,234	8.3	16.5	1,040	926	8.5	-11.0
Germany	2,405	2,919	18.6	21.4	785	1,011	4.5	28.8
Switzerland	2,330	3,313	-18.8	42.2	1,318	1,636	102.9	24.1
South Africa	2,094	1,899	45.3	-9.3	845	512	58.9	-39.4
Japan	1,836	2,668	-14.4	45.3	739	859	32.7	16.2
South Korea	1,522	2,829	33.3	85.9	642	930	85.1	45.0
Malaysia	1,465	2,047	29.3	39.7	580	631	29.0	8.7
Australia	1,337	2,649	2.3	98.2	560	1,076	35.1	92.2
Indonesia	1,381	2,122	33.2	53.7	645	825	68.5	27.8
UAE	957	2,060	4.6	115.2	371	1,037	33.0	179.2

P : Provisional.
Source : DGCI&S.

Invisibles and Current Account

2.93 Early indications for 2004-05 suggest that the invisible surplus is expected to be buoyant as in recent past (Table 2.55 and Chart II.27). Net invisible surplus during the first quarter of 2004-05 was underpinned by remittances from expatriate Indians, software exports and travel earnings. Net investment income continued to remain negative. During April-June 2004, services payments increased sharply in relation to 2003-04 reflecting the impact of growth in outbound tourist traffic, transportation and insurance payments associated with merchandise trade and expanding demand for imports of business services such as business and management consultancy, engineering, technical and distribution services. Nonetheless, net earnings from services trebled during the quarter leading to a net surplus of US $ 3.2 billion. India emerged as a favoured travel destination with international tourist traffic rising by 26.8 per cent in the quarter. This trend continued in July-September 2004 with a rise of 26 per cent in foreign tourist arrivals (16.5 per cent in July-September 2003).

2.94 Software exports have continued to remain strong belying the fears of protectionist pressures. During April-June 2004, software exports posted a rise of 28.7 per cent and the results announced by major software companies indicate that the impressive growth continued during July-September 2004. Buoyant software exports reflect the initiatives towards market diversification, moving up the value chain, focus on high-end processes and setting up of Research and Development Centres for offshore partners. In the recent past, there are clear signs of the BPO industry heading towards consolidation. Acquisitions of leading Indian BPO firms by global giants, setting up of captive BPO operations by multinationals in India, overseas acquisitions by Indian companies and rise in venture capital investments indicate growing maturity of the BPO segment of the software industry. Finance and accounting have drawn the maximum venture capital attention. These moves towards consolidation bring with them benefits like access to a large base of established clientele/acquired knowledge and business practices, leverage against competitors while also enabling the merged entities to improve their higher level consulting skills.

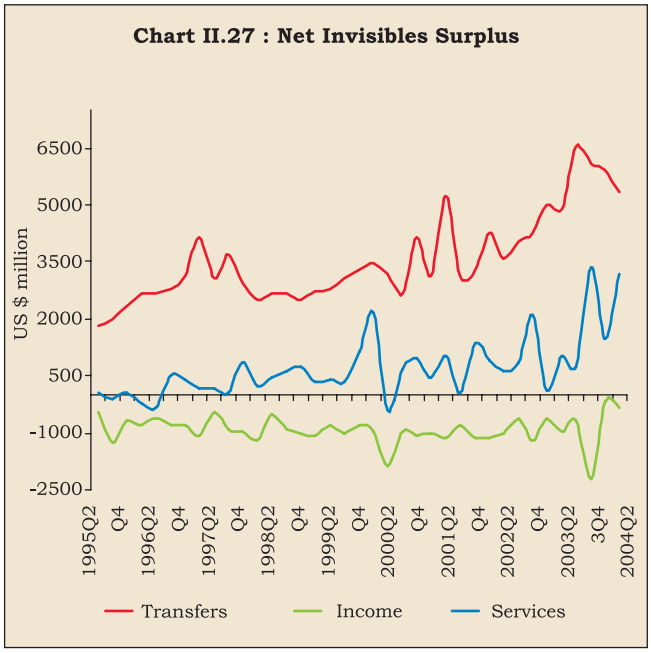
Table 2.55: India's Current Account

(US $ million)

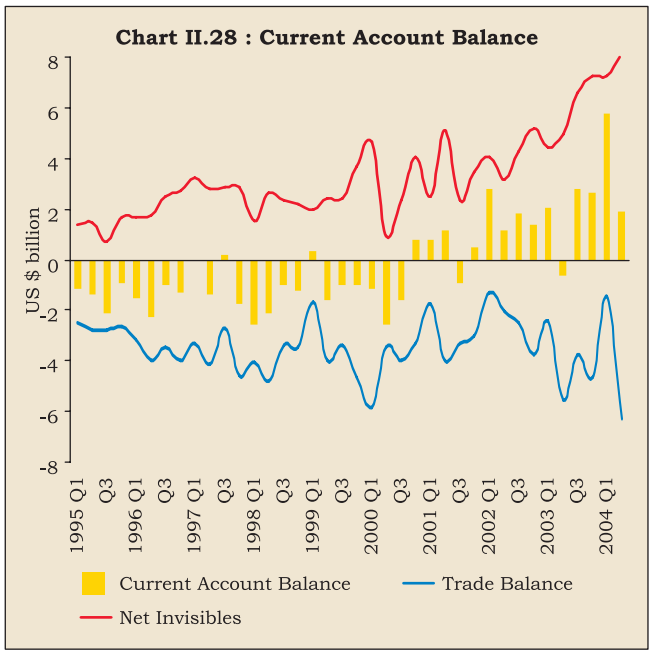
Item				April-June	
	2001-02	2002-03	2003-04	2003	2004
1	2	3	4	5	6
I. Merchandise Balance	-11,574	-10,690	-15,454	-5,565	-6,274
II. Invisibles Balance (a+b+c)	14,974	17,035	26,015	4,929	8,178
a) Services	3,324	3,643	6,591	999	3,193
i) Travel	123	-29	611	-68	-282
ii) Transportation	-1,306	-736	929	144	-6
iii) Insurance	8	19	57	-13	267
iv) G.n.i.e.	235	65	70	18	35
v) Miscellaneous	4,264	4,324	4,924	918	3,179
Of which:					
Software Services	6,884	8,863	11,750	2,544	3,376
b) Transfers	15,856	16,838	23,396	4,871	5,339
i) Official	458	451	563	73	220
ii) Private	15,398	16,387	22,833	4,798	5,119
c) Income	-4,206	-3,446	-3,972	-941	-354
i) Investment Income	-3,844	-3,544	-3,291	-783	-148
ii) Compensation of Employees	-362	98	-681	-158	-206
Total Current Account (I+II)	**3,400**	**6,345**	**10,561**	**-636**	**1,904**

G.n.i.e.: Government not included elsewhere.

Chart II.27 : Net Invisibles Surplus



2.95 Inward remittances from Indians working abroad have continued to surge, maintaining India's position as the leading recipient of remittances in the world. During April-June 2004, workers' remittances remained the mainstay of the current account accounting for about 30 per cent of gross invisible receipts (Table 2.55). The increase in net invisible surplus was able to more than offset the sharp increase in the trade deficit. Consequently, the current account balance remained in surplus during April-June 2004 in contrast to a deficit during the corresponding period of 2003 (Chart II.28).



Capital Account

2.96 Net capital inflows have remained buoyant during 2004-05 so far. During the first quarter of 2004-05 (April-June), net capital flows at US $ 5.6 billion were driven mainly by ECBs, short-term trade credits on account of substantially higher crude oil import requirements and Foreign Direct Investment (FDI) (Table 2.56). FII inflows have revived in subsequent months.

2.97 Foreign investment inflows in the current financial year are mainly attributable to investors' confidence in the Indian economy. International liquidity conditions and portfolio diversification by investors also contributed to foreign investment inflows during the year (Table 2.57). After remaining subdued during 2002-03 and 2003-04, FDI is showing clear signs of a pick-up backed by policy support and optimism about the investment opportunities being offered by several sectors. Ongoing liberalisation of the FDI policy, including the budget proposals of raising the sectoral caps on FDI in telecom, civil aviation and insurance sector as well as strong macroeconomic performance of the Indian economy are the main factors behind the higher FDI inflows during the current year. Of the three sectors, the hike in FDI cap to 49 per cent in private airlines has already been approved. Issues like procedural and policy bottlenecks are being addressed on a priority basis. An Investment Commission has been set up to act as

Table 2.56: Capital Flows

(US $ billion)

Component	April - March		April-June	
	2002-03	2003-04	2003-04	2004-05
1	2	3	4	5
Foreign Direct Investment	3.2	3.4	0.7	1.2
Portfolio Investment	0.9	11.4	1.4	0.1
External Assistance	- 3.1	- 2.7	-0.3	0.1
External Commercial Borrowings	- 1.7	-1.5	0.4	1.2
NRI Deposits	3.0	3.6	1.8	-0.8
Other Banking Capital	7.4	2.6	0.1	1.9
Short-term Credits	1.0	1.4	0.9	1.6
Other Capital	0.1	2.3	1.0	0.3
Total	**10.8**	**20.5**	**6.0**	**5.6**

Table 2.57: Foreign Investment Flows by Category

(US $ million)

Item			April-September	
	2002-03 R	2003-04 P	2003	2004 P
1	2	3	4	5
A. Direct Investment (I+II+III)	**5,035**	**4,673**	**1,600**	**2,596**
I. Equity (a+b+c+d+e)	2,764	2,387	1,034	2,046
a. Government (SIA/FIPB)	919	928	470	704
b. RBI	739	534	263	659
c. NRI	–	–	–	–
d. Acquisition of shares *	916	735	253	635
e. Equity capital of unincorporated bodies	190	190	48	48
II. Re-invested earnings $	1,833	1798	450	454
III. Other capital $$	438	488	116	96
B. Portfolio Investment (a+b+c)	**979**	**11,377**	**3,534**	**512**
a. GDRs/ADRs #	600	459	347	170
b. FIIs **	377	10,918	3,187	339
c. Offshore funds and others	2	–	–	3
C. Total (A+B)	**6,014**	**16,050**	**5,134**	**3,108**

* Relates to acquisition of shares of Indian companies by non-residents under Section 5 of FEMA, 1999. Data on such acquisitions have been included as part of FDI since January 1996.

$ Data for 2003-04 are estimated as average of previous two years.

$$ Data pertain to inter-company debt transactions of FDI entities.

\# Represents the amount raised by Indian corporates through GDRs and ADRs.

** Represents fresh inflow of funds by FIIs.

R : Revised. P : Provisional.

an interface between the Government and investors to attract investment in infrastructure. A recent survey by global management consultancy firm AT Kearney reveals that India is now the third most preferred FDI destination in the world behind only China and the US and ahead of other emerging markets like Brazil, Mexico and Poland. According to the survey, the global investors view India as the world's business process and IT services provider, with longer-term market potential. Reflecting the same, services industry emerged as the largest recipient of FDI flows during April-September 2004, followed by engineering and computers. Source-wise, Mauritius continued to be the single largest source of FDI into India during April-September 2004, followed by the US and the Netherlands.

2.98 A revival of FII sentiments since August 2004 has brought about a turnaround in FII inflows (Chart II.29). This is attributed to a number of factors such as improvement in economic outlook of emerging markets including India; tax benefits extended in the Union Budget 2004-05; and, the Initial Public Offerings (IPO). FIIs registrations with SEBI have continued to surge with the number increasing to 634 as on December 15, 2004 (540 on March 31, 2004). The Indian equity market is correlated with other emerging markets but its correlation with developed markets is not strong.

2.99 NRI deposits have registered net outflows during 2004-05 so far (up to September 2004) responding to the alignment of interest rates on these deposits in tune with rates of return in the international markets (Table 2.58 and Chart II.30).

Table 2.58: Inflows under NRI Deposit Schemes

(US $ million)

Scheme			April - September	
	2002-03	2003-04	2003-04	2004-05 P
1	2	3	4	5
1. FCNR (B)	526	762	-247	125
2. NR (E) RA	6,195	4,695	3,464	-724
3. NR (NR) RD @	-3,745	-1,816	-1,027	-651
Total	**2,976**	**3,641**	**2,190**	**-1,250**

@ Discontinued with effect from April 1, 2002.
P : Provisional.

2.100 ECBs have risen substantially during the current financial year reflecting the strong demand for these funds from corporates. During April-June 2004, net inflows on account of ECBs surged to US $ 1.2 billion from US $ 0.4 billion in April-June 2003. Approvals data for the subsequent months also indicate an increasing appetite for ECBs (Table 2.59). Under the automatic route, the companies have resorted to ECBs mainly for the import of capital goods, project financing, capital investment/ modernisation of plant expansion of activity which can be considered as a sign of capacity and investment expansion. Under the approval route, the ECB approvals have been granted primarily to financial institutions (for the purpose of on-lending to exporters), Power Finance Corporation (for power projects) and banks (that have participated in steel/ textile restructuring packages).

Chart II.29 : Net Inflows by Foreign Institutional Investors

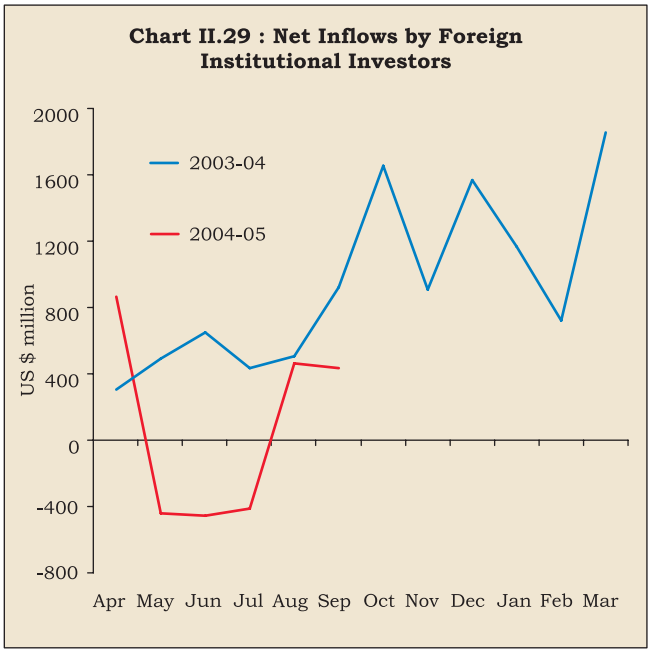


Chart II.30 : Outstanding NRI Deposits

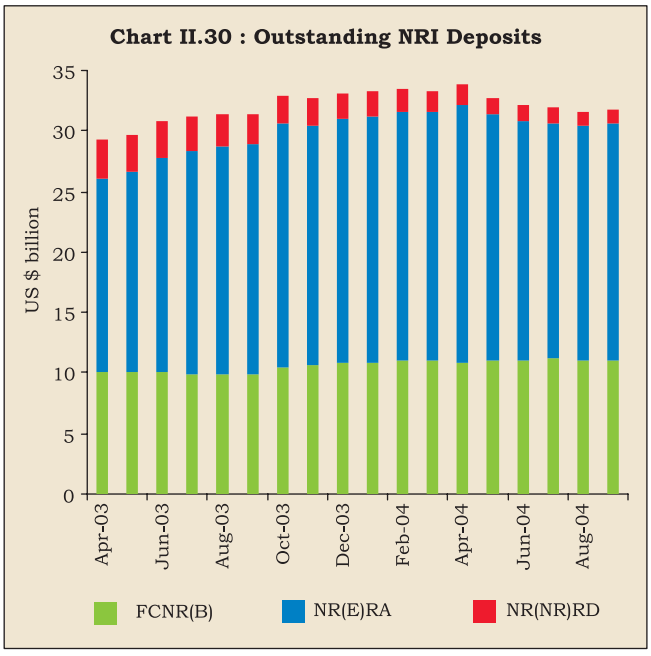


Table 2.59: External Commercial Borrowing Approvals

(US $ million)

Month	Automatic Route	Approval Route	Total
1	2	3	4
April 2004	1,356	400	1,756
May 2004	454	100	554
June 2004	793	0	793
July 2004	811	350	1,161
August 2004	886	0.38	886
September 2004	1,553	2	1,555
October 2004	1,010	69	1,079
Total	**6,863**	**921**	**7,784**

2.101 Short-term trade credit disbursements grew in line with import growth in the first quarter of 2004-05. Net disbursements were also sizeable at US $ 1.6 billion. Banks in India increased their recourse to overseas borrowings and drew down foreign currency assets held abroad during April-June 2004. While the overseas borrowings continued to rise, there was a build-up of Nostro balances by banks during July-September 2004.

2.102 FDI by the Indian corporates abroad is assuming increasing significance as they have started to explore new expansion opportunities outside the national boundaries in areas of their competitive advantage. Access to markets, natural resources, distribution networks and foreign technology are some of the factors that have driven the process of formation of strategic alliances by Indian corporates with the international business partners. Mergers and acquisitions, and joint venture route have been the commonly adopted modes for FDI by Indian corporates. The sectors that are being preferred for outward FDI include IT, steel, telecom, oil exploration, power and pharmaceuticals.

Foreign Exchange Reserves

2.103 India's foreign exchange reserves comprising foreign currency assets, gold, Special Drawing Rights (SDRs) and Reserve Position in the Fund (RTP) reached US $ 129.7 billion on December 10, 2004. Foreign exchange reserves increased by US $ 6.6 billion in April-June 2004. Current account surplus led by buoyant invisibles receipts and large worker remittances, FDI flows, short-term trade credits and banking capital (excluding NRI deposits) were the major contributors to the accretion to foreign exchange reserves during this period. However, during the second quarter of 2004-05 (July-September), net accretion to foreign exchange reserves turned negative. This reflected partly the impact of ebbing of capital flows arising as a result of net outflows under NRI deposits. In the subsequent months, with the revival of FII inflows, foreign exchange reserves have again recorded a strong increase. Overall, the accretion to foreign exchange reserves in the current financial year up to December 10, 2004 was US $ 16.7 billion as compared with a rise of US $ 23.5 billion in the corresponding period of 2003-04 (Chart II.31).

External Debt

2.104 India's total external debt at end-June 2004 remained broadly unchanged from its previous quarter (Table 2.60). This marked a moderation of the sharp increase in the debt stock in 2003-04. According to the World Bank's classification, India continues to be among the Less Indebted Low-Income Countries (LILICs). Furthermore, significant improvements in the form of buoyant export performance and the rising level of foreign exchange reserves have strengthened the external debt servicing capacity, imparting strength and resilience to external debt management.

2.105 Among the major components, the increase in short-term debt during the quarter was driven up by the substantial increase in trade credits for financing the surge in the demand for imports. On the other hand, NRI deposits declined during the quarter, responding to rationalisation of interest rates on these deposits in line with international interest rates.

2.106 The US dollar continued to dominate the currency composition of India's external debt

Chart II.31 : Accretion to Foreign Exchange Reserves

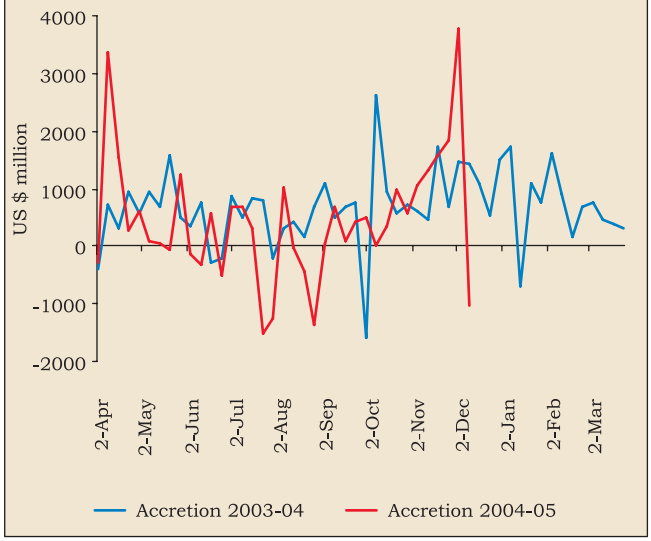


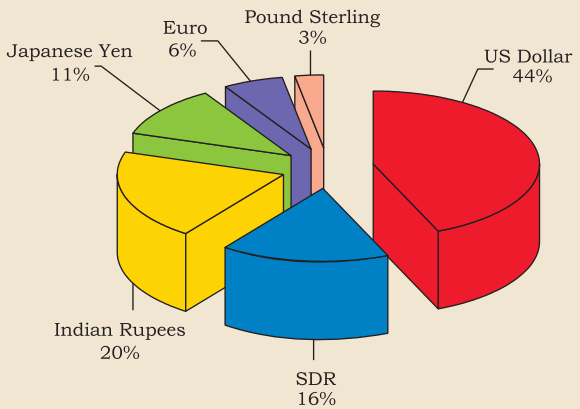
Table 2.60: India's External Debt

Item	end-March 2004		end-June 2004		Variation during the Quarter	
	Amount (US $ million)	Percentage to total	Amount (US $ million)	Percentage to total	(US $ million)	(Per cent)
1	2	3	4	5	6	7
1. Multilateral	29,614	26.3	29,705	26.4	91	0.3
2. Bilateral	17,489	15.5	17,149	15.2	-340	-1.9
3. IMF	0	0	0	0	–	–
4. Export Credit	4,588	4.1	4,464	4.0	-124	-2.7
5. Commercial Borrowings #	22,163	19.7	22,316	19.8	153	0.7
6. NRI Deposits (long-term)	31,216	27.7	30,785	27.3	-431	-1.4
7. Rupee Debt	2,709	2.4	2,309	2.0	-400	-14.8
8. Long-term Debt (1 to 7)	1,07,779	95.8	1,06,728	94.8	-1,051	-1.0
9. Short-term Debt	4,736	4.2	5,908	5.2	1,172	24.7
10. Total Debt (8+9)	**1,12,515**	**100**	**1,12,636**	**100**	**121**	**0.1**

Includes net investment by 100 per cent FII debt funds.

(Chart II.32). Valuation effects on account of movements in international currencies had a tempering impact on external debt in April-June 2004-05, in sharp contrast to the experience in 2003-04. Excluding valuation effects on account of the appreciation of the US dollar against other major international currencies during April-June 2004, the stock of external debt would have increased by about US $ 2 billion. Measured in rupees, the external debt stock rose by 5.9 per cent during April-June 2004. This is in contrast to the fact that external debt during the quarter ended March 2004 had increased mainly on account of the valuation effect.

Chart II.32 : Currency Composition of External Debt : end-June 2004



2.107 Among the key indicators of stability and sustainability of external debt, the ratio of short-term to total debt posted a modest rise during April-June 2004, which was also reflected in an upward movement in the ratio of short-term debt to foreign exchange reserves. On the other hand, a distinct positive feature was that India's foreign exchange reserves exceeded the external debt by US $ 6.9 billion providing a cover of 106.1 per cent to the external debt stock at the end of June 2004 (Table 2.61).

VI. CONCLUDING OBSERVATIONS

2.108 Developments during 2004-05 confirm the growing resilience of the Indian economy. The economy continued to be buffeted by exogenous shocks emanating from the monsoon conditions and international oil prices. In contrast to earlier expectations, the South-West Monsoon turned out to be weak and erratic with an adverse effect on the *kharif* crop. A major source of uncertainty during the year was the heightened volatility in international crude oil markets. International crude oil prices increased sharply during the course of the year, touching record highs and crossed US $ 50 per barrel.

Table 2.61: Debt Indicators

(Per cent)

Indicator	March 2004	June 2004
1	2	3
Concessional debt / Total debt	35.8	35.4
Short-term debt / Total debt	4.2	5.2
Short-term debt / Reserves	4.2	4.9
Reserves / Total debt	100.4	106.1

In the recent weeks, although these prices have retreated sharply, they remain high. Financial markets also operated in an environment of uncertainty on concerns about the pace and timing of monetary tightening in the US and its probable repercussions on the rest of the global economy. Notwithstanding these shocks, the Indian economy exhibited remarkable stability.

2.109 A heartening feature of 2004-05 has been the further entrenchment of the growth momentum in the industrial sector. Structural reforms since early 1990s, the opening up of the economy and corporate restructuring have increased the competitiveness of the Indian industry. This is reflected in the robust merchandise export growth during the year so far. Sustained growth in production of capital goods coupled with large imports of such goods point towards revival of investment demand in the economy. Various business confidence surveys indicate a degree of optimism in regard to future growth prospects of the industrial sector in a broad-based manner. The increase in bank credit to industry is also suggestive of the revival of investment demand in the economy. The upturn in industry has been duly supported by the services sector. Services sector, which has been the mainstay of growth, now contributes more than one-half of GDP. Buoyancy in the information technology sector, significant growth of the telecommunications and transport sectors, and strong foreign tourist inflows are expected to add further impetus to the services sector growth. On the agricultural front, the *rabi* crop is expected to benefit from the North-East monsoon which has been satisfactory so far. On the current reckoning, as the Mid-Term Review indicated, the overall GDP growth for the year 2004-05 is expected to be in the range of 6.0 to 6.5 per cent, assuming that the combined downside risks of high and uncertain oil prices, and sudden changes in international liquidity environment remain manageable. India would thus remain among the faster growing economies in the world in 2004-05.

2.110 Monetary management during 2004-05 faced challenges on two counts: overhang of liquidity and surge in the headline inflation. The Annual Policy Statement of May 2004 had placed WPI inflation at around 5.0 per cent for the year 2004-05 assuming no significant supply shocks and appropriate management of liquidity. The magnitude and persistence of supply shocks, however, turned out to be more than what was anticipated. The deficient South-West monsoon and the increase in prices of oil and some other commodities such as iron and steel exerted significant pressure on prices. Since the overall assessment of the inflation scenario indicated that it is largely supply-induced, the following calibrated measures were undertaken. First, the CRR was raised to absorb liquidity in the system, but more importantly to signal the Reserve Bank's concern at the unacceptable levels of inflation so that inflationary expectations are moderated while reiterating the importance of stability in financial market conditions. Second, the fixed liquidity absorptions rate under LAF was increased in October 2004 for more flexible management of liquidity. Third, in order to enable the Reserve Bank to address the overhang of liquidity, the Government raised the ceiling of Market Stabilisation Scheme from Rs. 60,000 crore to Rs. 80,000 crore. Fourth, given the supply-induced nature of inflation, the Government responded with fiscal measures, particularly relating to oil.

2.111 Based on the prevailing conditions, the Reserve Bank, in its Mid-Term Review of Annual Policy in October 2004, revised its inflation projection to around 6.5 per cent, assuming that there would be no further major supply shocks and liquidity conditions remain manageable. Although year-on-year WPI inflation, at 7.0 per cent on December 4, 2004 was still high, the balance of risks has tilted downward with the recent easing of oil prices, improved *rabi* prospects, fiscal measures to dampen price rise and the measures to impound liquidity. Inflationary pressures are, therefore, expected to moderate over the coming months, consistent with the projections in the Mid-Term Review. Given that the poor have no hedge against inflation in an economy such as India, the pursuit of price stability remains a key objective of monetary policy.

2.112 Domestic financial markets have generally been stable, even as yields across various markets edged up. The strong fundamentals of the economy have led to a rally in the stock markets in the recent months. The BSE Sensex crossed the 6000 mark in late November 2004.The financial sector has strengthened further. Despite movement towards the 90-days norm for recognition of NPAs, the ratio of net NPAs to net advances of the scheduled commercial banks witnessed a decline during 2003-04. Financial results for the first half of 2004-05 indicate that banks have further strengthened their balance sheets.

2.113 Notwithstanding the sharp rise in oil imports, the BoP position remained comfortable. The strong growth in merchandise exports was supplemented by exports of services and buoyant remittances. The current account is expected to post a marginal surplus during 2004-05. Foreign direct investment inflows have recorded a significant increase during 2004-05 so far, responding to improved growth prospects as well as the ongoing liberalisation measures to attract higher FDI in critical areas such as infrastructure. Portfolio inflows have revived in the recent months. Overall, capital flows are expected to remain buoyant, in view of positive sentiments on India. The comfortable BoP position is reflected in the foreign exchange reserves which have increased by US $ 16.7 billion during 2004-05 so far (up to December 10, 2004). The overall approach to the management of India's foreign exchange reserves in recent years has reflected the changing composition of the BoP, and has endeavoured to reflect the 'liquidity risks' associated with different types of flows and other requirements. The policy for reserve management is thus judiciously built upon a host of identifiable factors and other contingencies. Taking these factors into account, India's foreign exchange reserves are at present comfortable and consistent with the rate of growth, the share of the external sector in the economy and the size of risk-adjusted capital flows.

2.114 Global GDP growth during 2004 is expected to be the highest for nearly three decades. Nevertheless, growth momentum appears to be slowing down from the second quarter of 2004. The sharp rise in international crude oil prices poses a downward risk to growth prospects and global output growth is expected to decelerate to 4.3 per cent in 2005. Business confidence has fallen back to just above the historical average in the US and Europe, prompted in large part by the surge in oil prices. Downside risks could also emanate from global macroeconomic imbalances and the associated possibility of disruptive currency adjustments and persistent structural problems in the Euro area and Japan.

2.115 To conclude, the growth prospects of the Indian economy remain strong. These prospects are expected to get a further boost from the envisaged fiscal consolidation under the Fiscal Responsibility and Budget Management Act, 2003. Adherence to the envisaged targets under the Act will release additional resources for productive private sector investment. This is expected to provide additional employment opportunities and enable the Indian economy to realise its potential. At the same time, the global environment remains uncertain. International oil prices have eased in recent weeks, but still remain high. Global imbalances and their resolution add to this uncertainty.

2.116 Against this backdrop, barring the emergence of any adverse and unexpected developments in various sectors of the economy and keeping in view the inflationary situation, the overall stance of monetary policy for the second half of 2004-05 will be: provision of appropriate liquidity to meet credit growth and support investment and export demand in the economy while placing equal emphasis on price stability; to pursue an interest rate environment that is conducive to macroeconomic and price stability, and maintaining the momentum of growth; and, to consider measures in a calibrated manner, in response to evolving circumstances with a view to stabilising inflationary expectations.

III MONETARY POLICY FRAMEWORK: AN ANALYTICAL OVERVIEW

3.1 The framework of monetary policy has undergone far-reaching changes all over the world in the 1990s, mainly in response to the challenges and opportunities of financial liberalisation. There is, first of all, a clearer focus on price stability as a principal - though not necessarily the sole - objective of monetary policy. Besides, with the deregulation of financial markets and globalisation, the process of monetary policy formulation has acquired a much greater market orientation than ever before, inducing a shift from direct to indirect instruments of monetary control. This has been accompanied by several institutional changes in the monetary-fiscal interface to ensure that central banks possess the autonomy to anchor inflation expectations.

3.2 Monetary management is now further complicated by the increasing trade and financial openness. The opening up of the capital account, while necessary for efficiency of capital, exposes the economy to sudden switches in capital flows. This, in turn, can lead to large changes in exchange rates over short periods of time, not necessarily related to fundamentals. Volatility in capital flows and exchange rate impacts not only domestic demand and inflation, but also has implications for the maintenance of financial stability. Central banks are thus concerned not only about price stability but also financial stability. With exogenous shocks hitting the economy at different points of time, the stabilisation of the real economy as well as financial markets requires a multi-pronged response from central banks. In a way, central banks have, therefore, emerged as the primary shock absorbers in the system.

3.3 The process of globalisation and liberalisation has thus necessitated a widening of the mandate of central banks. At the same time, for their policies to be effective, monetary authorities have been required to modify the way in which they conduct monetary policy. Central banks in emerging markets also face a similar set of issues. A special challenge in their case has been the need to calibrate the changes in the operating procedures of monetary policy with the pace of transition from an administered regime of interest rates to a market-based process of price discovery. Accordingly, intermediate targets, instruments and operating procedures of central banks have been evolving in the recent decades.

3.4 In consonance with international experience and the liberalisation process initiated by structural reforms of the early 1990s, the monetary policy framework in the Indian economy has also witnessed a major transformation. The Reserve Bank adopted a three-pronged strategy of financial liberalisation. Improvement in the allocative efficiency of the financial system entailed deregulation of financial prices, including the institution of a market-determined exchange rate regime in March 1993. This was supported by the development of financial markets - spot and futures - of varying tenors and degrees of risk. Finally, the withdrawal of balance sheet restrictions on financial intermediaries through rationalisation of directed credit programmes as well as investment limits facilitated development of the inter-linkages between markets, essential for the process of price discovery. In tune with the process of financial liberalisation, the Reserve Bank, like other central banks in most emerging market economies (EMEs), has shifted from direct to indirect instruments of monetary policy. The Reserve Bank has been able to develop an array of monetary levers that are designed to manage market liquidity in order to achieve the overall objectives of price stability and credit availability for growth and to ensure orderly conditions in the financial markets. These developments have been facilitated by initiatives to limit the fiscal dominance of monetary policy through measures such as reducing statutory pre-emptions, raising Government debt at market-related rates and phasing out of the automatic monetisation through *ad hoc* Treasury Bills. As a result, monetary policy emerged as a key instrument of stabilisation in the face of macroeconomic shocks, especially as fiscal policy continues to be handicapped by the persistence of large deficits.

3.5 A key development that shaped the conduct of monetary management during the 1990s was the progressive opening up of the Indian economy to capital flows. Accordingly, monetary policy had to contend not only with the usual supply shocks emanating from the vagaries of the monsoon but had to increasingly manage external shocks emanating from surges and ebbs in capital flows, volatility in the exchange rate and global business cycles. Concomitantly, maintaining financial stability has

emerged as an additional key objective of monetary policy, apart from price stability and credit availability. In view of all these developments, the Reserve Bank had to make necessary modifications in its conduct of monetary policy. Intermediate targets, instruments and operating procedures have, therefore, evolved over time and these issues form the subject of this Chapter.

3.6 The first Section surveys the cross-country experience in the evolution of the monetary policy framework in terms of objectives, intermediate targets and instruments. The role of institutional developments - central bank independence and fiscal rules - in contributing to monetary stability is also addressed. Section II traces the process of monetary policy evolution in India. It analyses the shifting perspectives on intermediate targets in the switch from monetary targeting to a multiple indicator approach. It also discusses the changes in the operating procedures that became necessary to conduct monetary policy in an effective manner. Section III presents concluding observations.

I. MONETARY POLICY FRAMEWORK : INTERNATIONAL EXPERIENCE

3.7 The intellectual discourse in monetary policy has been strongly influenced by the classic Tinbergen (1952)-Theil (1961) policy framework in which each policy instrument is geared to meet a defined objective. Assuming there are no spillovers between different policies, monetary policy is best suited to achieve price stability. While price stability and output stabilisation are final objectives of monetary policy, they are not directly under the control of the central bank. Monetary authorities typically set intermediate targets in terms of macroeconomic variables, which bear a stable relationship with the overall objectives of monetary policy. This Section surveys the issues involved in each of the three elements of the monetary policy framework in terms of objectives, intermediate targets and instruments. The Section reviews briefly the debate regarding objectives of monetary policy. This is followed by a discussion on intermediate targets and even the very necessity of intermediate targets in the emerging inflation targeting framework. Finally, this Section evaluates the choices involved in adopting particular operating procedures of monetary policy.

Objectives of Monetary Policy

3.8 Price stability - defined as low and stable inflation - is considered a key objective of monetary policy. It is now widely believed that monetary policy can contribute to sustainable economic growth through price stability. At the same time, the focus and the weight attached to the price stability objective evolved over time. During the 1960s and 1970s, the Phillips curve paradigm came to dominate monetary economics. It was believed that there exists not only a short-run but even a long-run trade-off between inflation and output. This led to a viewpoint that central banks could achieve higher growth on a sustainable basis, if they permit inflation to be a little higher. The pitfalls of this reasoning were brought out by the stagflation of the 1970s. These developments justified the stance taken by Phelps (1967) and Friedman (1968) who had argued that, once inflation expectations are taken into account, there existed no long-run trade off. The lessons learned from the spike in inflation in the 1970s brought about a renewed focus on price stability as a key objective of monetary policy. In the subsequent decades, inflation has been brought under control not only in advanced economies but also in developing and emerging market economies. In the latter group, the fall in inflation has been quite dramatic (Table 3.1). Empirical evidence suggests that disinflations are associated with transitory output and employment losses. Typically, measured through sacrifice ratios, these losses are high even for independent central banks (Ball, 1994; Anderson and Wascher, 1999). Over longer periods of time, the decline in inflation, as the decadal analysis in Table 3.1 indicates, need not be associated with any significant adverse impact on growth, consistent with a long-run vertical Phillips curve. In fact, Table 3.1 suggests that high inflation in the 1970s did not buy any additional growth either in developed countries or in EMEs. Issues related to the Phillips curve, the build-up of inflation, the subsequent moderation and the reasons for this rise and fall are explored further in Chapter V.

3.9 Although low and stable inflation is the final objective, it is not inconsistent with stabilisation of output - around its potential - by monetary authorities. In fact, monetary policy affects inflation not directly but *via* its impact on aggregate demand in the economy. Thus, even if price stability is the objective of monetary policy, monetary authorities have a key role to play in the stabilisation of output and employment in the economy. This is reflected in the charters of central banks. Amongst advanced economies, some central banks such as the US Federal Reserve have multiple objectives of price stability, maximum employment and moderate long-

Table 3.1: Inflation and Growth in Select Economies

(Per cent)

	Growth				Inflation			
Region/Country	1970s	1980s	1990s	2000-03	1970s	1980s	1990s	2000-03
1	2	3	4	5	6	7	8	9
Developed Countries	**2.9**	**2.8**	**3.2**	**3.1**	**8.4**	**5.9**	**2.6**	**2.0**
Australia	3.0	3.4	3.3	3.1	10.5	8.4	2.5	3.7
Canada	4.3	3.0	2.4	3.0	7.8	6.5	2.2	2.6
Japan	4.7	3.8	1.7	1.3	9.3	2.5	1.2	-0.6
New Zealand	2.5	2.7	2.6	3.1	12.0	12.0	2.0	2.4
United Kingdom	2.4	2.4	2.1	2.4	13.3	7.4	3.7	2.3
United States	3.6	3.1	3.1	2.3	7.2	5.6	3.0	2.5
Developing Countries	**4.9**	**4.2**	**5.0**	**4.3**	**16.3**	**37.1**	**36.6**	**6.2**
Mexico	6.4	2.3	3.4	2.1	10.3	68.8	20.4	6.4
South Africa	3.0	2.2	1.4	2.9	10.3	14.6	9.9	6.5
India	**2.7**	**5.9**	**5.7**	**5.4**	**7.8**	**9.1**	**9.5**	**4.0**
Indonesia	7.8	5.8	4.3	n.a.	17.4	9.6	14.5	8.6
Thailand	7.0	7.3	5.3	4.8	8.9	5.8	5.0	1.4
Korea	8.6	7.6	6.1	5.6	15.1	8.4	5.7	3.1
Malaysia	8.4	5.9	7.2	4.6	6.5	3.7	3.7	1.5

Source : International Financial Statistics, IMF.

term interest rates but many like the United Kingdom and the European Central Bank have hierarchical objectives. In the latter case, price stability is the primary objective, and subject to that, these central banks are concerned about growth and employment. However, the distinction between the two categories is now much less pronounced. Both groups of central banks are as much concerned about price stability as they are about deviations of output from its potential. In the words of Mervyn King, neither group is a "inflation nutter" and they are better described as flexible inflation targeters. While many central banks may in practice continue to attempt to stabilise output, they find it useful for their public mandate to be restricted to price stability alone, since this reduces their vulnerability to political pressure for expansionary policy (Kamin *et al*, 1998).

3.10 While price stability remains a key objective of monetary policy, central banks in EMEs have generally tended to follow multiple objectives, especially as they are usually assigned a key role in promoting economic development. Besides, in EMEs that are relatively more open, exchange rates often emerge as a key policy issue. Empirical evidence suggests that in EMEs central bank interest rates often react more strongly to the changes in the exchange rate rather than changes in the inflation rate or the output gap (Mohanty and Klau, 2004). At the same time, a number of EMEs are gradually veering to a sole price stability objective (Table 3.2). This switch to single/ hierarchical mandates has occurred as these economies have adopted inflation targeting frameworks during the 1990s. The usefulness of inflation targeting frameworks in both advanced and emerging economies continues to be a matter of debate. While it is true that many inflation targeting economies reduced inflation during the 1990s, so has been the case with countries that have not adopted inflation targeting (see Chapter V for a detailed discussion).

3.11 Paradoxically, the 1990s - a decade of price stability - witnessed a number of episodes of financial instability suggesting that price stability by itself is not sufficient. As stated earlier, globalisation and integration of economies with the rest of the world have thrown up new challenges for monetary policy. Large movements in capital flows and exchange rates affect the conduct of monetary policy on a daily basis. These impact not only demand and inflation but also balance sheets of residents. Large and sudden changes in exchange rates have, therefore, implications for financial stability. Beyond the traditional trade-off between inflation and growth, there is now thus the challenge of financial stability. This has led to an intense debate as to how monetary policy can contribute to financial stability. While it is true that price stability is necessary for financial stability, it is increasingly clear that price stability, *per se*, is not sufficient to guarantee financial stability

Table 3.2: Objectives of Monetary Policy

Central Bank	Objective
1	2
Developed Economies	
Australia	Stability of the currency, maintenance of full employment and economic prosperity and welfare.
Canada	Low and stable inflation.
ECB	Price stability primary objective. Without prejudice to the objective of price stability, also support the general economic policies with a view to contributing to a high level of employment and sustainable and non-inflationary growth.
Japan	Price stability and to ensure the stability of the financial system.
New Zealand	Maintaining a stable general level of prices.
UK	Monetary stability – meaning stable prices and confidence in the currency – and financial stability.
USA	Maximum employment, stable prices and moderate long-term interest rates.
Emerging Market Economies	
China	Stability of the currency and thereby promote economic growth.
India	**Price stability and credit availability.**
Indonesia	Achieve and maintain currency stability by maintaining monetary stability and by promoting financial system stability.
Malaysia	Safeguard the value of the currency, promote monetary stability and a sound financial structure and influence the credit situation to the advantage of the country.
Mexico	Price stability.
Russia	Stability of currency, development of banking system and efficient settlement system.
South Africa	Financial stability.
Thailand	Maintain monetary stability.

Source : Central bank websites.

(Schwartz, 1995; Cukierman, 1992; Mishkin, 1996; Padoa-Schioppa, 2002; Issing, 2003). One line of argument suggests that central banks should continue to focus on achieving the macroeconomic goal of low and stable inflation as it is difficult to identify potential sources of financial instability. In this view, asset price misalignments are not easy to identify *ex ante*. And, even if it was possible to do so, it is debatable as to whether monetary policy can prick these bubbles (Bernanke and Gertler, 2001; Bernanke, 2003; Bean, 2003; Filardo, 2004). An alternative view is that central banks should pro-actively tighten monetary policy and monitor various indicators such as credit and monetary aggregates to identify incipient financial imbalances (Cecchetti *et al*, 2000; Crockett, 2001; Borio and Lowe, 2002). Accordingly, central banks need to extend their policy horizon beyond the usual two-year period as financial imbalances need not necessarily show up in overt inflation in such a short period. Furthermore, given the limitations of monetary policy, effective regulation and supervision of financial institutions have assumed importance (see Chapter VIII for a further discussion).

3.12 To sum up, the debate over the objectives that monetary policy can pursue is far from settled. While price stability remains the key objective of monetary policy, global integration is increasingly requiring central banks to focus on financial stability as well. Although the possible multiple goals of price stability, economic growth and financial stability are mutually reinforcing in the long run, the critical issue in the design of monetary policy is to meet the challenges of the trade-offs in the short run, which involve conscious policy choices. While there is very little disagreement over the fact that price stability should remain a key objective of monetary policy, reservations persist about adopting it as the sole objective of monetary policy.

Price Stability and Institutional Arrangements

3.13 It is increasingly realised that inflation expectations play a key role in determining actual inflation. Most of the reforms in the institutional design of monetary policy - central bank independence, transparency, communications and accountability - have been aimed at increasing the credibility of the central banks so that they can stabilise inflation expectations of the public at low levels. As Walsh (2003) stresses, the three most important ingredients of a successful monetary policy are credibility, credibility and credibility. The contemporary literature has, therefore, underscored the need for an official commitment to price stability - either in the form of a conservative central banker or in the form of an institutional/legislative commitment to price stability - to avoid political cycles which could entice governments to finance populist programmes by printing money during the elections (Table 3.3) (Nordhaus, 1975; Rogoff, 1985; Alesina, 1988; Persson and Tabellini, 1990; Walsh, 1995). During the 1990s, the commitment to price stability has been reinforced by a legislative mandate in favour of price stability as the principal - if not the only - objective of monetary policy in a number of economies to stabilise inflation expectations. Central bank independence thus connotes the autonomy of instrument choice and not independence in regard to objectives. Governments reserve the right to determine the overall objectives of economic policy, including monetary policy. Studies suggest that central bank independence does help to lower inflation (Alesina and Summers, 1993; Blinder, 1998). The role of monetary policy in reducing output volatility, however, is a matter of debate. Apart from an improved monetary policy, a number of factors such as the increasing share of services in GDP, better inventory management and improved consumption-smoothing on account of financial innovations and deregulation are believed to have played a role. Good luck - absence of major supply disruptions and other such macroeconomic shocks in the recent decades - is also considered as one of the contributory factors (Stock and Watson, 2002) (see Chapter V).

3.14 Notwithstanding the institutional reforms granting independence to central banks, price stability and inflation expectations are ultimately dependent upon the fiscal regime in the economy. Expansionary fiscal policies and their accommodation by monetary policies are the major causes of inflation in many developing economies. Even in the context of the advanced economies, the steep increase in inflation during the 1970s is attributed, *inter alia*, to expansionary fiscal policy. The conduct of monetary policy is, thus, inextricably linked with the fiscal regime. As the unpleasant monetary arithmetic (UMA) proposition of Sargent and Wallace (1981) shows, if fiscal policy is imprudent and if the central bank does not finance the

Table 3.3: Government-Central Bank Relationships

Central Bank	Counter-party Relations			Purchase of Government Bonds in Secondary Market
	Overdraft	Loans	Subscriptions in Primary Market	
1	2	3	4	5
Euro area	Prohibited	Prohibited	Prohibited	Allowed
India	**Limited, at Bank Rate *plus* 200 basis points**	**Short-term**	**Prohibited after March 2006.**	**Allowed**
Japan	Prohibited	Limited amount	Allowed	Allowed
Mexico	Mandatory, limited at market rate	Prohibited	Prohibited	Allowed
U.K.	Limited	Prohibited	Prohibited	Allowed
U.S.A.	Prohibited	Prohibited	Prohibited	Allowed

Source : Hawkins (2003).

fisc initially, the end-result could still be inflationary as the public debt-GDP ratio would turn unsustainable over time (see Chapter V). If economic agents have rational expectations, a tight monetary policy today may lead almost immediately to a step-up in inflation. Thus, a combination of tight monetary policy with an expansionary fiscal policy will be ineffective. In other words, central bank independence, *per se,* is not a panacea for fiscal irresponsibility. In the alternative scenario whereby high fiscal deficits are financed by recourse to external borrowings denominated in foreign currency, this will result in a build-up of external debt leading eventually to a balance of payments crisis. This outcome is more likely for EMEs since they do not have the benefit of borrowing in their own currencies. Thus, external borrowings are a substitute neither for a well-developed domestic government securities market nor for fiscal discipline. As a result, in consonance with the increasing emphasis on price stability as an objective of monetary policy, most countries have put in place fiscal rules. These rules, *inter alia*, place limits on the deficit and debt of the government and prohibit primary subscriptions by the central banks to the governments' borrowing programmes.

3.15 Fiscal deficits are not only inflationary, but also put pressure on real interest rates and crowd out private investment (Engen and Hubbard, 2004). There is a vicious circle between inflation and budget deficits: higher deficits cause higher inflation through excessive money financing and then, the higher inflation feeds back into higher deficits by reducing the real value of tax collections. An attempt by Latin American governments to fund themselves through an inflation tax in the 1980s, for instance, sent inflation soaring to three-digit levels in many cases (Selowsky, 1989). Budget deficits turn out to be especially inflationary when the central bank is not independent and the financial markets are not developed enough to contain inflationary expectations (Neyapti, 2003). The very existence of large fiscal deficits puts continuous pressure on inflationary expectations (Drazen and Helpman, 1991). While the conventional view is that fiscal deficits lead to excessive monetary expansion and hence inflation, a more recent view - the fiscal theory of the price level - argues that fiscal imbalances lead to an increase in inflation and it is the money supply which adjusts subsequently to higher prices (see Chapter V).

3.16 The inflationary consequences of the fiscal dominance of monetary policy brought into sharp focus the need to reduce fiscal imbalances, *per se,* as well as the draft of resources by the fisc on the central bank. This need for monetary and fiscal coordination naturally raises the issue of its nature. A key issue in this context is whether this coordination should be rule-based or discretionary. Frameworks based on clear mandates and rules are usually considered preferable to *ad hoc* discretionary coordination, which could be clouded by problems of implementation and incentive distortions caused by electoral cycles. Furthermore, uncertainty and imperfect information about the current state of the economy as well as future outlook make it difficult to agree and implement a case-by-case discretionary approach to coordination. On all these grounds, there is a explicit preference for frameworks based on clear mandates/rules. In most countries, these take two forms: central bank independence and fiscal responsibility legislation.

3.17 An ideal fiscal rule should be well-defined, transparent, simple, flexible, adequate relative to the final goal, enforceable, consistent and supported by structural reforms if needed (Kopits and Symansky, 1998). Cross-country evidence shows that the form of fiscal responsibility legislation has varied from country to country, depending upon factors such as the historical background, social set-up, nature of financial market evolution and objectives of macro-economic policies. Some countries have set transparency requirements for their governments while others follow expenditure rules and deficit and debt rules (Table 3.4).

3.18 The efficacy of the fiscal rules remains a matter of debate. First, the frameworks may be circumvented by creative accounting (for example, modifying

Table 3.4: Fiscal Responsibility Legislation in OECD Economies : Summary Characteristics

Type of Rule	Countries
1	2
Balanced/surplus budget policy	Canada, EU countries, Japan, New Zealand.
Limits on budget/ fiscal deficit	Japan, Norway, Poland, Switzerland, U.K.
Limits on expenditure	U.S., Japan, Switzerland.
Limits on borrowing / debt	U.K., EU countries, New Zealand, Switzerland.
Enforcement sanctions	EU countries, Poland, U.S.
No explicit sanctions	Australia, Canada, Japan, New Zealand, Switzerland, U.K.
Transparency	Australia, EU countries, New Zealand, U.K.
Escape clause	Canada, EU countries, Japan, Switzerland, U.S.

Source : OECD (2002).

accounting practices and changing the nominal timing or other classification of taxes and expenditure). A second issue of contention is that fiscal rules might increase business cycle fluctuations. Two opposing factors are at work here. On the one hand, fiscal rules restrict unbridled government spending and this checks the excessive build-up of deficits and public debt which imparts stability to the economy. On the other hand, fiscal rules may restrict the government's ability to take countercyclical policy measures and hence, contribute to increased business cycle volatility. Ultimately, it is, therefore, an empirical exercise as to which of these two effects dominates. Levinson (1998), Poterba (1994) and Alt and Lowry (1994) find that fiscal rules are inflexible and inhibit counter-cyclical fiscal policy and thus lead to more volatile business cycles. In contrast, Alesina and Bayoumi (1996) find that such rules do not have any affect on output volatility as fiscal rules may limit destabilising politically motivated and biased policies. Fatas and Mihov (2004) find that the first factor dominates the second and, fiscal rules are, therefore, stabilising. Overall, fiscal policy rules are likely to be effective if they are accompanied by strong commitments and increased transparency (Bayoumi and Eichengreen, 1995).

3.19 To conclude, the inflationary consequences of the monetisation of fiscal deficits are now well-recognised. Alternatives such as recourse to external borrowings in foreign currency to finance high fiscal deficits are more likely to engender unsustainable current account deficits, high external debt and an eventual balance of payments crisis. In this context, well-developed domestic debt markets can help governments to raise their borrowing requirements locally. This will avoid automatic monetisation and the pitfalls associated with external borrowings. However, if the government borrowing requirements are high, this could exert upward pressure on domestic interest rates. Thus, the development of domestic government securities markets needs to be supported by fiscal discipline so as to provide a more enduring solution. As a result, there is a widespread consensus in favour of central bank independence, backed by some form of fiscal discipline. Such clear-cut rules are an essential pre-requisite to contain inflation and stabilise inflation expectations.

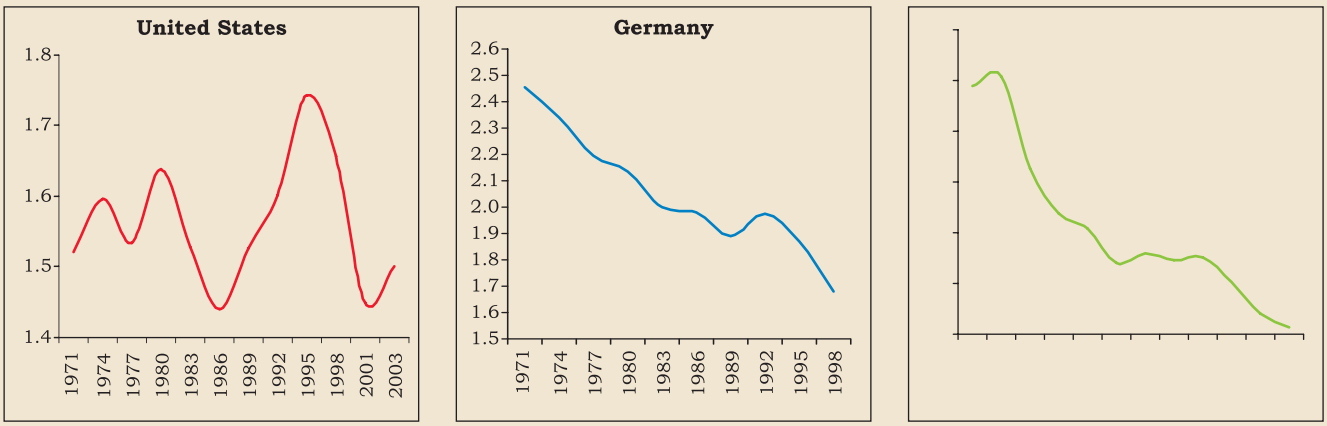
Intermediate Targets

3.20 While price stability and output stabilisation are final objectives of monetary policy, they are not directly under the control of central banks. Monetary authorities, therefore, typically set "intermediate targets" in terms of macroeconomic variables, which bear a stable relationship with the overall objectives of monetary policy (Friedman, 1990). The choice of the intermediate target is critical. A macro variable, if too narrow, such as base money, may be fully within the central bank purview but could be incapable of providing an effective conduit to the overall objectives. At the same time, a macro variable, if too broad, such as nominal income, may not be amenable to central bank control. Besides, the selection of intermediate targets is also conditional on the channels of transmission of monetary policy. With the growing complexities of macroeconomic relationships, a number of central banks have, however, chosen to abandon single intermediate targets and directly target inflation. In the following paragraphs, a brief discussion is undertaken of the various intermediate targets of monetary policy.

3.21 Although central banks such as the US Federal Reserve did traditionally set credit targets, the concept of a formal intermediate target really came into its own with the monetarist emphasis on money targeting in the 1960s (Friedman, 1968). In the 1970s, evidence of a stable relationship between money, output and prices, coming as it did in a climate of worsening inflation, prompted central banks to give more weight to money in their policy deliberations (Volcker, 1978). A commitment to rules was thought to anchor inflation expectations (Kydland and Prescott, 1977; Barro and Gordon, 1983). A number of central banks, starting with Switzerland and including Germany, Japan, the UK and the USA, adopted money targets in the mid-1970s.

3.22 At the heart of the monetary targeting framework is the assumption that money demand is stable. This, in turn, requires that income velocity of money is reasonably stable and predictable. Velocity of money is essentially the number of times the stock of money changes hands to finance transactions. In the long-run, the velocity of money generally follows a U-curve pattern, determined by a range of institutional factors (Bordo and Jonung, 1987). Velocity declines in the initial stages of economic development reflecting monetisation of the economy as a result of the spread of the banking network. It subsequently rises in the advanced stages, as the parallel sophistication in financial markets reduces the need for financial intermediation by the banking system. The 1970s and 1980s witnessed a spate of financial innovations such as money market mutual funds. The concomitant process of disintermediation began to impart volatility to the behaviour of monetary aggregates and the velocity of money, especially in market-based economies, such as the USA (Chart III.1 and Table 3.5). The volatility in

Chart III.1 : Income Velocity of Broad Money



velocity of money undermined the efficacy of monetary targeting. Their central banks, therefore, gradually started de-emphasising the role of monetary aggregates in the conduct of monetary policy.

3.23 In contrast, bank-based economies, especially in continental Europe such as France, Germany and Switzerland were able to persevere with some version of monetary targeting as money demand continued to be relatively stable. This was due to the fact that financial innovations in these economies led to substitution towards instruments that could be considered as part of money and, therefore, could be taken care of by simply redefining monetary aggregates (Calza and Sousa, 2003; Brand, Gerdesmeier and Roffia, 2002). Real money gaps (the gap between current real balances and long-run equilibrium real balances) appear to have substantial predictive power for future inflation in the euro area (Gerlach and Svensson, 2003). Econometric results suggest that money demand continues to be stable in the euro area even after the adoption of the euro although the impact of wealth may have become more pronounced (ECB, 2004). In view of this, central banks in some advanced economies continue to lay stress on monetary aggregates in the process of monetary policy formulation (Box III.1).

Table 3.5: Velocity of Narrow Money – Cross Country Experience

	1970s		1980s		1990-2002	
Economy	Mean	Volatility	Mean	Volatility	Mean	Volatility
1	2	3	4	5	6	7
Developed Economies						
Australia	7.5	9.9	9.1	9.8	5.9	21.6
Canada	6.9	15.4	7.9	19.1	5.6	15.4
Japan	3.0	6.4	3.5	2.7	2.7	25.8
United States	4.9	10.3	6.0	5.7	6.2	6.2
New Zealand	7.0	8.8	10.0	13.7	8.1	13.2
Emerging Market Economies						
Mexico	9.0	3.9	13.8	38.2	11.1	15.9
South Africa	6.5	12	6.0	11.1	4.2	23.6
India	**6.2**	**6.6**	**6.5**	**3.9**	**6.2**	**5.4**
Indonesia	10.5	13.2	9.6	6.2	8.5	0.3
Thailand	8.1	9.2	10.7	9.6	9.6	18.8
Korea	8.6	7.5	10.5	8.5	11.3	11.6
Malaysia	5.4	5.6	5.2	6.2	4.0	12.5

Note : Volatility is measured by co-efficient of variation in per cent.
Source : International Financial Statistics, IMF.

Box III.1

Does Money Matter?

With perceived instability of money demand during the 1980s, many central banks started de-emphasising monetary targets and shifted towards using short-term interest rates as operating instruments/targets of monetary policy. Concomitantly, models without any explicit role for monetary aggregates have become a norm. These "monetary models without money" typically contain three equations - an aggregate demand equation (IS-type curve), an aggregate supply equation (Phillips curve) and a monetary policy reaction function (Taylor-type rule) (McCallum, 2001, 2003). This raises the issue as to whether money has any useful role to play in the conduct of monetary policy.

First, models without monetary aggregates do not imply that inflation is a non-monetary phenomenon and are not necessarily non-monetary models. This is because the central bank's control over the nominal interest rate ultimately stems from its ability to control the quantity of base money. Using an interest rate rule does not eliminate the concept of money demand and money supply; it simply makes money endogenous. Money stock and interest rates jointly transmit monetary policy in many cases (Leeper and Roush, 2003).

Second, although money demand may be unstable in the short-run because of financial innovations, it is found to be reasonably stable over the long run (Lucas, 1988; Poole, 1988; Stock and Watson, 1993; Ball, 1998). Alternative measures of the opportunity cost or adjustment for structural breaks or a proxy for economic uncertainty often reinforces a long-run relationship between money, output and prices. Some studies find that even short-run money demand is stable, if it is properly specified - in particular, if the rate of interest on near monies is also included as an explanatory variable (Ball, 2002).

Third, reflecting the financial innovations, the definition of money supply cannot be static and needs to evolve over time (Sriram, 2001). Fourth, empirical evidence confirms that the neutrality proposition does hold over long periods of time (Serletis and Krause, 1996).

In brief, monetary aggregates continue to be an important indicator variable. Illustratively, the European Central Bank's (ECB) monetary policy strategy rests on the twin pillars of general economic analysis and monetary analysis. The first pillar comprises a broad based assessment of the risks to price stability, using a wide range of economic and financial indicator variables, including long-term interest rates and the yield curve, indicators of consumer and business confidence, measures of output growth, wages and unit labor costs, import prices for commodities, and the external value of the euro. The second pillar - monetary analysis - is based on the premise that inflation is ultimately a monetary phenomenon. At the same time, it is recognised that, in the short-run, movements in inflation need not be correlated with money supply. Accordingly, the quantitative reference value of broad money growth of 4.5 per cent (three-month moving average) is not regarded as an intermediate monetary target, to avoid an automatic monetary policy reaction to monetary fluctuations.

Amongst other major central banks, while the Swiss National Bank abandoned monetary targeting in the beginning of 2000 in favour of an inflation forecast (but, not inflation target), it continues to lay stress on the role of money. It believes that money remains the most important determinant of inflation in the long-run (period of 18 months and above) and the forecasting abilities of the models improve substantially if broad money is taken into account. At the same time, the Swiss National Bank did not follow the 2-pillar approach of the ECB as it felt that the public would have been confused as to which pillar determined monetary policy in practice. For this reason, while the inflation forecast acts as its main policy compass, money serves as an important input into that forecast.

3.24 Following the adoption of monetary targets in advanced economies, developing countries began to adopt money targeting in the 1980s. A money target was deemed particularly appropriate in their case because of the dominance of the quantum-based credit channel of monetary policy transmission, especially as the absence of developed financial markets alongside administered interest rates virtually ruled out the interest rate channel of monetary policy transmission (van't Dack, 1999). Given the under-developed financial markets, price signals were considered to be less reliable in these economies. Rapidly shifting levels of interest rates in an unstable inflation environment were believed to produce a noisy and distorted echo of the stance of monetary policy. Money targets were also seen as the most effective way to discipline Government finances. They continue to be in vogue even now as money demand continues to remain stable in many developing countries, which are yet to witness large-scale financial liberalisation. Several studies on large EMEs, which have adopted bank-based systems and which have also seen a fair degree of financial innovations, also testify to a stable relationship between money demand, inflation and real economic activity. At the same time, in cases of relatively sophisticated market-based systems, such as the ASEAN economies, money demand tended to turn unstable very quickly under the impact of financial market development and liberalisation (Dekle and Pradhan, 1997).

3.25 The breakdown of the money-targeting framework naturally set off a search for alternate intermediate targets. Following Poole (1970), it is believed that central banks can modulate aggregate demand by targeting interest rates in case of instability of money demand. An increasing number of central banks in advanced economies as well as EMEs emphasise the role of short-term interest rates as operating targets of monetary policy or as an instrument variable or as a key information variable[1] (Friedman, 2000). The reaction function of central banks that have adopted interest rates as instruments of monetary policy can be encapsulated in the Taylor rule (Taylor, 1993). A Taylor-rule relates short-term policy interest rates to deviations of inflation and output from their target and potential, respectively. In particular, the Taylor principle requires that nominal interest rates should increase more than one-to-one with an increase in the inflation rate so that real interest rates also rise in order to dampen aggregate demand and bring inflation back to target (Clarida, Gali and Gertler, 1998). The use of interest rates as operating targets has revived interest in the natural rate of interest (Woodford, 2000; Laubach and Williams, 2003). While useful in theory, the concept of a natural/neutral/equilibrium rate of interest is difficult to implement in practice (see Chapter VII for a detailed discussion).

3.26 EMEs have witnessed significant structural changes and financial innovations during the 1990s. With financial liberalisation, central banks in these economies are progressively moving away from quantitative targets towards using interest rates as instruments in the conduct of monetary policy. However, in the absence of fully developed and integrated financial markets, central banks in these economies still need to rely upon quantitative targets in their conduct of monetary policy. In particular, due to high information and transaction costs, credit markets continue to be regulated in order to direct the flow of credit to productive sectors of the economy. Thus, even as central banks in developing economies make use of short-term interest rates, monetary policy continues to aim at influencing aggregate demand by altering the quantity of availability of credit along with changes in the price of credit. Thus, quantitative targets, although diminishing in importance, still play an important role in the transmission mechanism.

3.27 Finally, a number of central banks have switched away from any sort of intermediate targets. These inflation targeting (IT) central banks - at present, more than 20 - directly target inflation, attracted by the primary advantage of the transparency of an explicit commitment to an inflation rate target. As noted earlier, both IT and non-IT central banks were able to reduce inflation. The jury is still out on the extent to which inflation targeting policies have actually contributed to the reduction in inflation that has occurred (Ball and Sheridan, 2003; Gramlich, 2003; Mohan, 2004). The adoption of IT in emerging market economies is, in particular, complicated by the lack of strong fiscal, financial and monetary institutions (Mishkin, 2004).

3.28 In sum, although there is widespread acceptance of price stability as a key monetary policy objective, the underlying monetary frameworks vary a great deal (Table 3.6) (Stone and Bhundia, 2004). At one end of the spectrum, the overwhelming

Table 3.6: Taxonomy of Monetary Regimes

Central Bank	Monetary Regime
1	2
Developed Countries	
Australia	Inflation targeting
Canada	Inflation targeting
Japan	Multiple indicators
United Kingdom	Inflation targeting
United States	Multiple indicators
Euro area	Multiple indicators
New Zealand	Inflation targeting
Emerging Market Economies	
Mexico	Inflation targeting
South Africa	Inflation targeting
China,P.R.	Money targeting and exchange rate anchor
Russia	Multiple indicators
India	**Multiple indicators**
Indonesia	Money targeting
Thailand	Inflation targeting
Korea	Inflation targeting
Malaysia	Exchange rate anchor
Singapore	Multiple indicators

Source : Annual Report on Exchange Arrangements and Exchange Restrictions, IMF (2004).

[1] In the mid-1990s, some central banks, especially in relatively open economies, led by the Bank of Canada (and for some time, the Reserve Bank of New Zealand) briefly experimented with so-called monetary conditions indices (MCI) - essentially a linear weighted combination of nominal or real interest rate and exchange rate deviations with respect to a base period - as 'operating' targets (Freedman, 1994).

majority of central banks, which follow a broad price stability objective and even put out inflation forecasts, have not formally adopted inflation targeting. At the centre, stand the inflation targeters, with a formal inflation anchor. At the other extreme, are a few central banks, especially in developed countries, such as the European Central Bank, which follow implicit price stability but do not formally declare themselves as inflation targeting. Ultimately, it is the existence of explicit quantitative targets - exchange rates, money growth rates or inflation targets - and their achievement rather than any particular target which is associated with a better inflation performance (Fatas, Mihov and Rose, 2004).

3.29 There is now an emerging consensus that the growing complexities of monetary management require that the process of monetary policy formulation be guided by the information content available from a number of macroeconomic indicators rather than the reliance on a single intermediate anchor. Central bankers operate in an environment of high uncertainty regarding the functioning of the economy as well as its prevailing state and the future course of developments. These uncertainties have increased further since the 1990s due to ongoing structural changes and financial globalisation. In such a complex environment, a single model or a limited set of indicators is not a sufficient guide for monetary policy. Instead, an encompassing and integrated set of data is required (Trichet, 2004). Thus, most central banks now monitor a number of macroeconomic indicators which have a bearing on the ultimate objective of price stability.

Operating Procedures of Monetary Policy

3.30 With short-term interest rates emerging as instruments of monetary policy, central banks need to modulate liquidity in order to stabilise the money markets. In fact, the power of monetary policy stems from the central bank's monopoly over primary money in the economy (Friedman, 2000). The key issue in monetary policy design is to determine the form and pricing of primary liquidity with a view to impacting the overall objectives through the available channels of monetary policy transmission. The operating procedures of monetary policy are, therefore, changing as central banks cope with the opportunities and challenges of financial liberalisation. There are several choices to make in terms of the appropriate regime, the deployment of particular sets of instruments and their impact on the central bank balance sheet and finally, the linkages with the parallel framework of financial stability.

3.31 Alongside advanced economies, the operating procedures of monetary policy in EMEs have also undergone changes in the context of an overall shift in the paradigm of the financing framework. Changes in the operating procedure in most EMEs (especially, transition economies), however, had to be calibrated with the development of a market mechanism for resource allocation by the financial system, in terms of building markets, deregulating interest rates and allowing financial intermediaries freedom of portfolio allocation.

3.32 The search for an alternate operating procedure of monetary policy is now coalescing into a strategy of liquidity management which broadly follows a two-step procedure of estimating market liquidity, autonomous of policy action, to initiate liquidity operations to steer monetary conditions (Borio, 1997; Schaechter *et al*, 2000). A key advantage of this framework is that it is possible to switch between quantitative targets and interest rate targets in response to the macroeconomic circumstances of the economy. In consonance with the growing market orientation of the economy, most central banks try to build in automatic stabilisers in the liquidity management framework itself. First, reserve requirements, set on an average basis, allow the financial system the leverage to adjust to temporary/seasonal liquidity shocks on its own account without central bank action. A second automatic stabiliser results from the central banks' preference for encasing short-term interest rates in a corridor around some optimal rate rather than at a point target rate. For instance, Australia, Canada, Malaysia and New Zealand currently operate a 50 basis point spread corridor while the European Central Bank has a wider 100 basis point band. The precise position of the short-term interest rate in the corridor depends on the liquidity position of the market, especially in case reserve requirements are set on an average basis, and the countervailing liquidity operations of the central bank. A *sine qua non* of the liquidity management framework, therefore, is the ability of the central bank to define and defend an interest rate corridor around the policy rate. The ceiling (and the floor) of the corridor is set by the prices of the standing lending (and deposit) facilities. At the heart of the efficacy of the liquidity management framework is the ability of the central bank to forecast market liquidity (Box III.2 and Table 3.7). A number of central banks such as the Bank of England, the European Central Bank and the Bank of Japan publish forecasts of 'autonomous' factors that impact upon bank liquidity to provide the market a

Box III.2
Forecasting Market Liquidity

Most central banks are putting in place a strategy of liquidity management in which market liquidity is modulated by open market operations to steer monetary conditions to the desired trajectory. At the core of this exercise is an estimate of liquidity conditions prior to policy action. For this purpose, the bifurcation of the central bank balance sheet into autonomous liquidity and policy position is useful (Borio, 1997). Autonomous liquidity comprises balance sheet flows arising out of regular central banking functions such as issue of currency, banker to government and banker to banks. If the demand for market liquidity, proxied by the demand for bank reserves, is in excess of autonomous liquidity, the central bank could absorb primary liquidity (through changes in the policy position) to balance the market. Alternately, interest rates change to clear the market for bank reserves through the liquidity effect.

Central banks, therefore, typically begin by estimating the demand for bank reserves. This is usually a function of reserve requirements (which determines required reserves), the volume of transactions (which determines settlement balances) and the opportunity cost of holding bank reserves (which determines excess reserves). This is supplemented by a forecast of autonomous liquidity. This, in turn, depends on a variety of factors such as the fiscal deficit (which determines the Government's recourse to the central bank), the balance of payments position (which determines central bank's foreign assets) and transactions demand (which determines cash demand). These two sets of projections provide an estimate of the *ex ante* market liquidity conditions.

The estimation of the market liquidity is often difficult in view of its complex dynamics. First, if banks are allowed to maintain their reserve requirements on an average basis, the central bank has to take day-to-day bank portfolio re-allocations between bank reserves and the money and government securities markets. Second, the demand for settlement balances often fluctuates with trading volumes rather than administrative requirements. Third, in case of gross settlement systems, there is also the demand for intra-day liquidity depending on the sequence of settlement of debits and credits. Fourth, the estimation of the fiscal gap, especially on a day-to-day basis, is difficult because the presentation of cheques issued could be guided by the liquidity position of a variety of entities, including employees, government contractors and tax payers receiving refunds. Fifth, the estimation of capital flows is also challenging given their intrinsic volatility. Finally, it is difficult to get a fix on the seasonality of cash demand, especially in economies where festivals are not calendar date-specific.

guide to monetary policy action. Beyond the design of the liquidity management strategy, the relative efficacy of alternate instruments of monetary policy also poses challenges for monetary management (Box III.3).

Table 3.7: Liquidity Forecasting in Central Banks

Central Bank	Operating Target	Most Unpredictable item	Forecast Horizon
1	2	3	4
Brazil	Overnight inter -bank rate	Net foreign assets	1 month
European Central Bank			1 month
India		**Net RBI credit to Government**	**1 day**
Indonesia	Monetary base	Net foreign assets	1 week
Japan	Bank reserves		1 day
Malyasia	Over night inter-bank rates	Government and currency	1 day
Mexico		-	1 day
South Africa		Government	1-6 months
UK			1 day – 13 weeks
USA	Federal Funds rate		2 weeks

Source : Van't dack, 1999; Schaechter, 2001; RBI, 2002.

3.33 The ability of a central bank to carry its market operations effectively depends on the strength of its balance sheet. This implies that the central bank must weigh the relative costs of market stabilisation and the implications of the fragility of its own balance sheet in deploying the instruments of monetary control. Accordingly, central bank balance sheets and accounting practices have attracted a great deal of attention in recent years (Box III.4 and Table 3.8).

3.34 To conclude this Section, it is evident that the transformation of monetary policy in the wake of financial sector reforms is far from complete. While price stability has emerged as a key policy objective, the growing integration and globalisation of the economies have thrown new challenges to monetary policy. In the context of sharp swings in capital flows and exchange rates, ensuring orderly conditions in the financial markets has emerged as a key policy concern. More generally, monetary policy is expected to maintain financial stability although the instruments for this purpose and their efficacy remain a matter of debate. On the issue of achieving price

Box III.3

Instruments of Monetary Policy

During the 1990s, there has been an increasing shift from direct to indirect instruments of monetary policy. This is in consonance with the consistent preference for market-based instruments of monetary policy. The process has been reinforced by a switch, within the group of indirect instruments, from relatively less market-oriented instruments such as reserve requirements to relatively more market-oriented instruments such as open market operations (Alexander, Balino and Enoch, 1995).

The cash reserve ratio (CRR) remains a powerful instrument of monetary policy in developing economies. It not only impounds liquidity at the first instance but also directly impacts banks' cost of raising funds since a portion of deposit mobilisation is continuously impounded by the central bank. Reserve requirements are especially effective in developing countries as their financial markets are not mature enough for open market operations. The principal drawback of reserve requirements is that they impose an indirect tax on the banking system as an across-the-board levy, which does not take into consideration the relative liquidity position of the players in the credit markets.

Most central banks have, therefore, gradually de-emphasised the use of reserve requirements, and as noted earlier, prefer open market operations as a tool of monetary policy. This allows them to adjust market liquidity and impact on the interest rate structure at varying tenors through an auction mechanism in which market players are able to bid their preferences. For such market operations to be effective, the secondary markets need to be deep and liquid. At the same time, the central bank must have a sufficient stock of eligible securities to undertake market operations.

stability on a sustainable basis and to stabilise inflation expectations, there is a reasonably clear consensus about the need to ensure central bank autonomy from the budgetary requirements of the fisc. This is necessary in order to accord monetary management the necessary flexibility to attain its objectives.

3.35 In view of the growing complexities of monetary management, most central banks now track

Box III.4

Central Bank Balance Sheets

It is sometimes argued that central banks may not require reserves at all, since the owner in cases, is the government itself. Notwithstanding this initial thinking regarding the uniqueness of central banking, most central banks now usually follow conservative accounting norms of income recognition such as periodic revaluation of assets and ignoring unrealised gains (Kurtzig and Mander, 2003). A number of central banks are now adopting the International Accounting Standards (IAS), while the European Central Bank (ECB) System of Central Banks prefer the ECB Generally Accepted Accounting Principles (ECB GAAP). The International Monetary Fund has introduced a comprehensive safeguard assessments standard, ELRIC, based on five areas: External audit mechanism, Legal structure and independence, financial Reporting (based on the IAS), Internal audit mechanism and system of internal Controls. It is, however, recognised that the net worth of a central bank is difficult to establish, especially as the 'franchise' value of currency issuance is almost impossible to measure (Fry, 1993). While explicit contingent liabilities could be valued, the lender-of-last-resort function is difficult to provide for (Blejer and Schmacher, 2003).

With the increasing market orientation of monetary policy, there is now an emerging consensus that well-capitalised central banks are relatively more credible because they can bear larger *quasi*-fiscal costs of market stabilisation (Stella, 1997; Zhu, 2003). Most central banks, therefore, prefer to maintain sufficient reserves to ensure that monetary policy is not limited by balance sheet considerations. In particular, central banks in EMEs tend to maintain larger reserves, especially as the fiscal position is often not strong enough to protect central bank balance sheets.

Central bank legislations often link the size of reserves to the size of the balance sheet, paid-up capital, annual surplus, or some macroeconomic variable, such as GDP or money supply. A related issue is to determine the share of the central bank (*i.e.*, in the form of reserves), the Government and non-Government owners in central bank income. In most cases, central banks have the first charge on annual income. Although governments typically appropriate the dominant share (often up to 90 per cent), especially given the right of *seignorage* for having farmed out the right of issue, this is counterbalanced by parallel restrictions on the monetisation of the fiscal deficit.

In brief, the health of the central bank balance sheet is increasingly viewed as an essential element in the credibility of monetary policy. Most central banks are now strengthening their balance sheets by building adequate reserves to ensure that balance sheet considerations do not hamper their ability to undertake policy actions.

Table 3.8: Apportionment of Central Bank Profits

Per cent of profits

Central Bank	Appropriation of Central Bank Surplus			Deciding Authority	First Charge
	Central Bank	Government	Others		
1	2	3	4	5	6
India	**Contingency reserves of 12 per cent of balance sheet by June 2005.**	**Balance after reaching June 2005.**		**Central bank, in consultation with Government.**	**Central bank**
Japan	At least 5 per cent to reserve fund.	Balance surplus	Up to 5 per cent	Government	Central bank
Mexico	Provisions to reserves aimed at maintaining real value in line with GDP.	Balance		Government and central bank	Central bank
Poland	At least 2 per cent of net profit to reserve capital.	Balance		Central bank	Central bank
South Africa	10 per cent to the central bank reserve fund.	Balance after appropriations		Statutory	Central bank
U.K.	Allocations from banking department, if any.	Agreed share *plus* income of issue department.		Government and central bank	
U.S.A.	Remainder to surplus fund.		6 per cent of capital	Central bank	Shareholders

Source : Pringle and Courtis (1999) and Hawkins (2003).

multiple indicators although the evidence suggests that a clear commitment - be it an inflation forecast or a traditional intermediate target - is useful in anchoring the path of inflation expectations. The operating procedures of monetary policy have acquired a greater market orientation than ever before. In view of the need to ensure central bank credibility, there is an increasing focus on strengthening the central banks' balance sheet.

II. MONETARY POLICY FRAMEWORK IN INDIA

3.36 In India, the transition of economic policies in general, and financial sector policies in particular, from a control oriented regime to a liberalised but regulated regime has been reflected in changes in the nature of monetary management (Mohan, 2004a). While the basic objectives of monetary policy, namely price stability and ensuring credit flow to support growth, have remained unchanged, the underlying operating environment for monetary policy has undergone a significant transformation. An increasing concern is the maintenance of financial stability. The basic emphasis of monetary policy since the initiation of reforms has been to reduce segmentation through better linkages between various segments of the financial markets including money, Government securities and forex markets. The key development that has enabled a more independent monetary policy environment was the discontinuation of automatic monetisation of the Government's fiscal deficit through an agreement between the Government and the Reserve Bank in 1997. The enactment of the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 has strengthened this further. Development of the monetary policy framework has also involved a great deal of institutional initiatives to enable efficient functioning of the money market: development of appropriate trading, payments and settlement systems along with technological infrastructure.

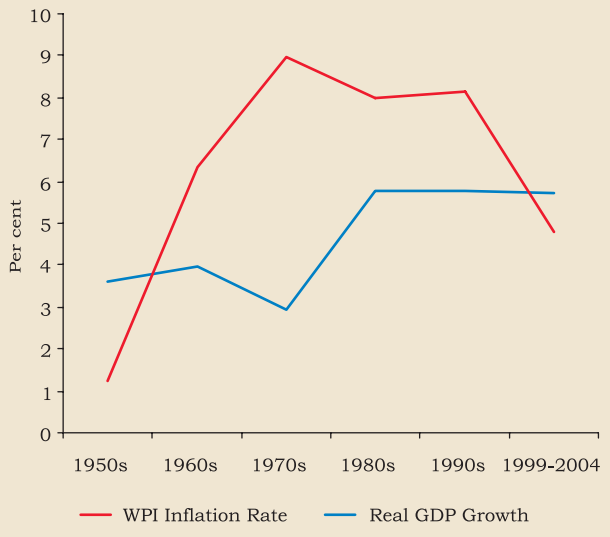
3.37 Against this brief overview, this Section focuses on the key changes in the monetary policy framework that became necessary in the liberalised economic regime. As in Section I, the discussion is organised under three broad heads: objectives, intermediate targets and operating procedures.

Objectives

3.38 The preamble of the Reserve Bank of India Act, 1934 enjoins the central bank "…to regulate the issue of Bank Notes and keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage…". Within this broad mandate, the Reserve Bank's monetary policy pursues the twin objectives of price stability and ensuring the availability of credit to the productive sectors in the Indian economy. The emphasis between the twin objectives of price stability and growth has,

however, varied over time depending on the evolving price-output situation. Initially, this was guided by the concept of developmental central banking crystallised in the First Five Year Plan, which required the Reserve Bank to create an institutional framework for industrial as well as rural credit to support economic growth (GoI,1951)[2]. This reflected a widespread consensus that public investment could spur rapid growth. The concomitant deficit financing associated with public investment began to spill over into inflation and concerns began to be expressed over the inflationary consequences of the fiscal deficit during the 1960s (Iengar, 1959; Rama Rau, 1960; Narasimham, 1968). These concerns gathered momentum during the 1970s as inflation trended up to around nine per cent during the 1970s (Chart III.2). Against this backdrop of persistent high inflation, the Chakravarty Committee recommended that price stability emerge as the "dominant" objective of monetary policy with a concomitant commitment to fiscal discipline (RBI, 1985)[3]. Besides the conventional wisdom that fluctuations in prices affected business decisions, inflation was also seen as a social injustice, especially as the poor seldom had hedges against inflation (Rangarajan, 1988).

Chart III.2 : Inflation and Real GDP Growth in the Indian Economy



3.39 The case for price stability as the dominant - if not sole - objective of monetary policy gathered momentum in the early years of financial liberalisation. Although it had to stabilise the economy in the face of the balance of payments crisis of 1991, the Reserve Bank emphasised that its ultimate mission was to steer monetary policy with its sights set firmly on inflation control (RBI, 1992). Price stability was seen to be critical to sustain the process of reforms (RBI, 1993). This acquired a new urgency as strong capital flows, after the liberalisation of the external sector, began to push inflation into the double digits. The very fact that inflation could be reined in during the second half of the 1990s by tightening monetary conditions - in turn, enabled by improved monetary-fiscal interface, as discussed later - appeared to demonstrate the potency of monetary policy in ensuring price stability (RBI, 1997). In the latter half of the 1990s, as the economy slowed down, monetary policy pursued an accommodative stance with an explicit policy preference for a softer interest rate regime while continuing a constant vigil on the inflation front. The macroeconomic scenario began to change by the first half of 2004-05. In the face of sharp increases in international commodity prices and the persistence of a large liquidity overhang, the Reserve Bank reaffirmed that maintaining confidence in price stability was a continuing policy objective (RBI, 2004b). The inflation situation would be watched closely in order to respond in a timely and measured manner.

3.40 Thus, price stability has been an abiding objective of monetary policy since the early 1950s although the success with price stability has varied over time in response to the evolving monetary-fiscal interface. It is only since the second half of 1990s that both inflation and inflation expectations have moderated substantially (see Chapter V). There is very little disagreement about the fact that price stability should continue to be a key objective of monetary policy. The Advisory Group on Monetary and Financial

[2] The First Five-Year Plan (1951) stated that: "...central banking in a planned economy can hardly be confined to the regulation of the overall supply of credit or to a somewhat negative regulation of the flow of bank credit. It would have to take on a direct and active role, firstly in creating or helping to create the machinery needed for financing developmental activities all over the country and secondly, ensuring that the finance available flows in the directions intended...".

[3] The Chakavarty Committee set out the following other tasks for the monetary system so that its functioning would be in consonance with the national development strategy as envisaged in the successive Five Year Plans: (a) mobilising the savings of the community and enlarging the financial savings pool; (b) promoting efficiency in the allocation of the savings of the community to relatively productive purposes in accordance with national economic goals; (c) enabling the resource needs of the major 'entrepreneur' in the country, *viz*., the government, to be met in adequate measure; and, (d) promoting an efficient payments system.

Policies (Chairman: Shri M. Narasimham) recommended that the Reserve Bank should be mandated a sole price stability objective (RBI, 2000a). There are, however, several constraints in pursuing a sole price stability objective (RBI, 2000).

- The recurrence of supply shocks limits the role of monetary policy in the inflation outcome. Structural factors and supply shocks from within and abroad make inflation in India depend on monetary as well as non-monetary factors.
- The persistence of fiscal dominance implies that the debt management function gets inextricably linked with the monetary management function while steering liquidity conditions.
- The absence of fully integrated financial markets suggests that the interest rate transmission channel of policy is rather weak and yet to evolve fully. In particular, the lags in the pass-through from the policy rate to bank lending rates constrain the adoption of inflation targeting.
- The high frequency data requirements including those of a fully dependable inflation rate for targeting purposes are yet to be met.

3.41 With the opening up of the Indian economy and its growing integration, monetary policy had to contend not only with price stability but also to ensure orderly conditions in the financial markets (Box III.5). The growing integration of financial markets, while necessary for economic efficiency, posed challenges for monetary management in terms of heightened risks of contagion. Episodes of financial volatility, often sparked off by sudden switches in capital flows in response to various shocks - such as the East Asian financial crisis, sanctions after the nuclear explosions, downgrading of credit ratings, the meltdown of the information technology bubble and the September 11 US terrorist attacks - required a swift monetary policy response. The Reserve Bank, therefore, began to emphasise the need to ensure orderly conditions in financial markets as a prime concern of monetary management. Financial

Box III. 5

Monetary Policy Matrix in India

The conduct of contemporary monetary policy in the Indian economy is based on a carefully crafted strategy. The strategy aims to balance the linkages between monetary policy, credit policy and the regulatory regime in a dynamic environment of structural transformation (Reddy, 2004).

Monetary policy now simultaneously pursues the objectives of price stability, provision of appropriate credit for growth and increasingly, financial stability. While there are complementarities between the objectives, especially in the long run, it cannot be denied that there are certain trade-offs, particularly in the short run. The Reserve Bank has always had to address the monetary policy dilemma of providing adequate credit to the Government and the commercial sector, without fuelling inflationary pressures (Reddy, 1999a). With the deregulation of interest rates, an added dimension is to balance the interest cost of public debt with the price of commercial credit. Besides, with the opening up of the economy, there are times when it is necessary to tighten monetary conditions to ward off speculative pressures on the exchange rate, although the growth objective presages a softer interest rate regime. Finally, the imperatives of price stability have to be increasingly balanced with the impact of monetary policy actions on balance sheets of the banking system.

In order to achieve these objectives, the Reserve Bank has, at its disposal, three instruments - monetary policy, credit policy and regulatory policies. At the same time, it is, however, not possible to compartmentalise the policy actions, especially as the instruments are also used interchangeably to serve different objectives. Changes in the policy interest rates, for example, not only transmit a monetary policy signal but also change the price of credit and impact asset prices. This, in turn, requires some other complementary measures to manage the short-run trade-offs, especially in the context of the transitional problems and transactional costs of an economy in transition.

The process of monetary policy formulation is essentially based on the information content of a large host of macroeconomic indicators - quantum and rate - spanning the entire domestic macroeconomy as well as international macroeconomic developments. An internal Financial Markets Committee (FMC), instituted in 1997, monitors market developments and recommends tactical operations for meeting the evolving situation in the financial markets on a daily basis. For this purpose, the FMC makes an assessment of market liquidity based on the evaluation of inflows and outflows from the Reserve Bank balance sheet as a result of its operations with the banking sector, financial institutions and the Government (RBI, 2002). This is reinforced by inflation and growth forecasts produced by an Inter-Departmental Group. The Board for Financial Supervision (BFS), constituted as a Committee of the Central Board in November 1994 and headed by the Governor, is entrusted with the supervision of commercial and select co-operative banks, select financial institutions and non-banking financial companies. The Reserve Bank also draws policy inputs from the Technical Advisory Committee on Money and Government Securities Markets and the Standing Committee on Financial Regulation, which also includes external experts, as well as a number of working groups, again with external experts, appointed to look into specific issues.

stability is now being recognised as a key consideration in the conduct of monetary policy, in terms of ensuring uninterrupted financial transactions; maintenance of a level of confidence in the financial system amongst all the participants and stakeholders; and absence of excess volatility that unduly and adversely affects real economic activity (Reddy, 2004a).

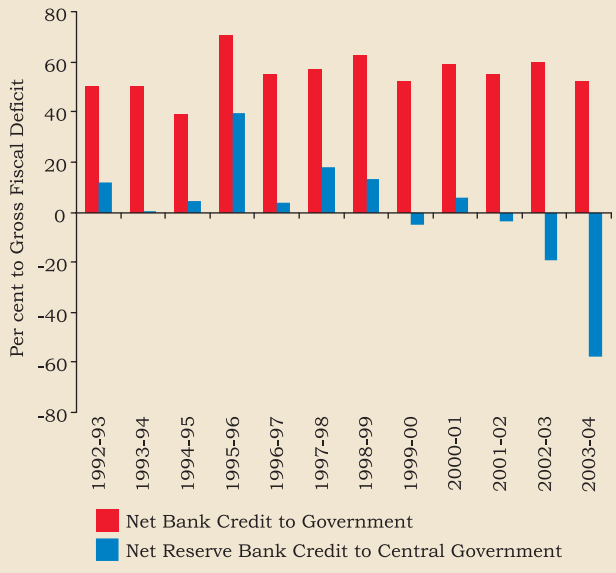
Monetary-Fiscal Interface in India

3.42 A key message from the above discussion is that the surge in inflation during the 1970s and 1980s was a consequence of expansionary monetary policy. This, in turn, was the outcome of expansionary fiscal policies. Concomitantly, the 1990s received a renewed focus on improving monetary-fiscal interface in order to provide the monetary policy necessary flexibility in monetary management. This Section briefly touches upon the monetary-fiscal interface over the past decades and the recent efforts to strengthen the same through fiscal rules.

3.43 With the progressive widening of fiscal deficits from the 1960s onwards, the burden of financing was borne by the Reserve Bank and the banking system. The support of the banking system to the Government's borrowing programme took the form of a progressive increase in statutory liquidity ratio (SLR). Although interest rates - initially kept artificially low to contain the interest cost of public debt - on Government securities were steadily raised to enhance their attractiveness to the market, it got increasingly difficult to get voluntary subscriptions even at higher rates of return. The SLR, therefore, was raised to 38.5 per cent by the early 1990s[4]. The increase in the SLR was, however, unable to fully meet the fiscal requirements and the burden of financing the Government had also to be borne by the Reserve Bank. As Reserve Bank financing is inflationary beyond a limit, the increase in the Reserve Bank support to the Central Government was accompanied by an increase in cash reserve requirements (CRR). The CRR was increased from three per cent in the early 1970s to reach 15 per cent (in fact, 25 per cent if incremental reserve requirements are also taken into account) by the early 1990s. However, even this order of increase in the CRR to impound liquidity was insufficient and broad money growth continued to remain high during the 1970s and 1980s and spill over to inflation.

3.44 As discussed in Section I, there are limits to the effectiveness of monetary policy in containing inflation in the face of an expansionary fiscal policy. Accordingly, monetary-fiscal coordination is often emphasised in order to achieve price stability. In India too, following the balance of payments crisis of the early 1990s, structural reforms addressed the issue of imparting monetary policy greater flexibility. This was done through, *inter alia*, raising market borrowings at market-related yields and the phasing out of the automatic monetisation through *ad hoc*s. These measures were able to reduce the reliance on the Reserve Bank significantly from mid-1990s onwards[5] . It is now clear that the Reserve Bank is able to control the timing and form of its accommodation to the Government. The more critical issue is whether the Reserve Bank would be able to contain the volume of its support to the Government, once liquidity conditions change - either because domestic credit demand picks up or capital flows dry up. Not only is the Centre's fiscal deficit still substantial, but the share of net bank credit to the Government in financing the fiscal deficit remains high (Chart III.3). Monetary management, however adroit, and monetary-fiscal co-ordination, however seamless,

Chart III.3 : Bank Financing of Fiscal Deficits



[4] The increase in SLR coupled with the increase in the cash reserve requirements (CRR) had the effect of crowding out the private sector from the credit markets (see Chapter 6).

[5] Other factors such as strong capital flows, weak credit demand and risk aversion by banks also lowered the recourse to monetisation. This, in turn, implies that commercial banks hold a large proportion of long-term Government paper although their deposit liabilities are usually short, creating an inherent maturity mismatch in commercial bank balance sheets. As their demand for longer-term assets is already met by investments in government paper, the ability of commercial banks to fund infrastructure financing is also thus limited (Mohan, 2004a) (see Chapter IV).

cannot thus be a substitute for fiscal discipline (Jadhav, 2003) (Box III.6). It is for these reasons that, as discussed in Section I, several countries have put in place fiscal responsibility legislation which, *inter alia*, place limits on fiscal deficits to guard against fiscal profligacy.

3.45 As in other economies, the fiscal-monetary co-ordination in India has been strengthened through the enactment of the FRBM Act, 2003. The FRBM Act, while placing limits on deficits, prohibits borrowings from the Reserve Bank from the fiscal year 2006-07 except by way of WMA or under exceptional circumstances. The

Box III.6

Monetary and Fiscal Co-ordination: The Indian Experience

The evolving relationship between the Reserve Bank and the Government over time can be analytically divided into four distinct phases (Reddy, 2001a). These span the periods of i) 1935-48, ii) 1948-69, iii) 1969-91 and iv) 1991 onwards. Interestingly, the proposal to set up a central bank, originally made by the Royal Commission on Indian Currency and Finance (Chairman: Sir Edward Hilton Young) in 1926, was itself long held up partly on account of the debates over the precise mechanism, which would ensure the independence of the central bank from the budgetary demands of the fisc (Deshmukh, 1948; RBI, 1970; Rangarajan, 1993)[6].

During the first phase, the Reserve Bank, although set up as a privately owned and managed entity, was virtually subservient to the dictates of the British Indian Government, especially in view of the war effort. This was demonstrated by a Government threat to supersede the Reserve Bank board if it did not recommend monetary and exchange rate policies compatible with fiscal policy (RBI, 1970).

The second phase began with the nationalisation of the Reserve Bank in 1948. The pressure on public finances, emerging from the programme of large-scale industrialisation taken up in the Second Five Year Plan, led the Government to turn increasingly to the Reserve Bank for financing its deficit. It is during this phase that the process of automatic financing of the fiscal deficit through *ad hoc* Treasury Bills as and when the Government balances fell below a stipulated minimum took root (RBI, 1983). This led to persistent deficit financing with inflationary consequences.

Fiscal dominance increased further during the 1970s and 1980s. The entire financial system came to be geared to funding the budgetary requirements of the fisc. The continuous process of monetisation of the fiscal deficit, in particular, ended up effectively subjugating monetary policy to the imperatives of fiscal policy. It was in this context that the Chakravarty Committee (RBI, 1985) recommended a cap on the net Reserve Bank credit to the Government.

The fourth phase, co-incident with the programme of financial sector reforms, has been redrawing the institutional relationship between the Reserve Bank and the Central Government to ease the fiscal constraint on monetary policy (Rangarajan, 1993). An important initial step in this was the process of pricing Government debt at market-determined rates (Tarapore, 2002). This was supported by the development of a Government securities market. The emergence of a Government securities market enabled, and in turn was facilitated, by the reduction in SLR to the statutory minimum of 25.0 per cent of net demand and time liabilities. The investments in Government paper are now guided, to a large extent, by portfolio considerations, rather than administrative *fiat* (Reddy, 1999). *Ad hoc* Treasury Bills were phased out in April 1997 with a view to enabling the Reserve Bank to gain better control over money supply. During this period, the Reserve Bank adopted a strategy of combining private placements and devolvements in Government securities in order to moderate the impact of fluctuations in monetary conditions on the interest cost of public debt.

The Finance Minister, in the Union Budget Speech, 2000-01 announced that in the fast changing world of modern finance it had become necessary to accord greater operational flexibility to the Reserve Bank for the conduct of monetary policy and regulation of the financial system. A key step forward in this respect has been the enactment of the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 which, *inter alia*, prohibits borrowings from the Reserve Bank from the fiscal year 2006-07 except by way of WMA or under exceptional circumstances. This is backed by limits on the fiscal deficit. The FRBM Act also seeks to eliminate the revenue deficit by March 2008.

[6] The need for central bank independence was, in fact, prophetically stressed by the Government while piloting the Reserve Bank of India Act, 1934: "….It has generally been agreed in all the constitutional discussions, and the experience of all other countries bears this out, that when the direction of public finance is in the hands of a ministry responsible to a popularly elected Legislature, a ministry which would for that reason be liable to frequent change with the changing political situation, it is desirable that the control of currency and credit in the country should be in the hands of an independent authority which can act with continuity. Further, the experience of all countries is again united in leading to the conclusion that the best and indeed the only practical device for securing this independence and continuity is to set up a Central Bank, independent of political influence….(In) modern life, and modern economic organisations, there are two important functions: they are the functions of those who have to raise and use money and there are the functions of those who are responsible for producing the actual tokens of money, the money in circulation. The basis of the whole proposal for setting up an independent Central Bank is to keep these functions separate. The largest user of money in the country is the Government, and the whole principle of the proposal is that the Government, when it wants money to spend, should have to raise that money by fair and honest means in just the same way as every private individual has to raise money which he requires to spend for his own maintenance. If the Government is in control of the authority which is responsible for exercising the other function, then all sorts of abuses can intervene".

Reserve Bank would, however, still be able to buy or sell Government securities in the secondary market consistent with the conduct of monetary policy. In exercise of the powers of the Act, the Central Government has framed the FRBM Rules, 2004. In the Fiscal Strategy Statement, the Government proposes to assist the Reserve Bank in restraining the growth in money supply without damaging the medium/long-term prospects of savings in the economy and without hurting the interests of the poor, senior citizens and other fixed-income earners.

3.46 To conclude, price stability has been an abiding objective of monetary policy in India although its achievement was circumscribed by the fiscal dominance of monetary policy till the mid-1990s. In the subsequent years, the reforms in the monetary-fiscal interface have been successful in providing the Reserve Bank greater flexibility in monetary management. A key development in this regard was the accord between the Government and the Reserve Bank in 1994 that eliminated the automatic monetisation of the Central Government's fiscal deficit by gradually phasing out *ad hoc*s by 1997. The most noteworthy endeavour in this direction is the enactment of the FRBM Act. Adherence to FRBM targets is critical for the objective of maintaining price stability, and more importantly, to stabilise inflation expectations in the economy.

Intermediate Targets

3.47 As indicated earlier in Section I, central banks seek to achieve their final objectives through the control of intermediate targets. In India, these targets have evolved over time with changes in the overall operating environment of monetary policy and financial liberalisation of the Indian economy. This sub-section presents a brief overview of the evolution of the intermediate targets - from broad money to a multiple indicator approach - in the conduct of the Reserve Bank's monetary policy.

3.48 The Reserve Bank did not have a formal intermediate target till the 1980s. Bank credit - aggregate as well as sectoral - came to serve as a proximate target of monetary policy after the adoption of credit planning from 1967-68 (Jalan, 2002). Credit targeting, in fact, wove well into the concept of development central banking. Since inflation was largely thought to be structural, selective credit controls were used, from 1956, to regulate bank advances to sensitive commodities to influence production outlays, on the one hand and to limit possibilities of speculation, on the other. A Credit Authorisation Scheme (CAS), introduced in November 1965, required commercial (and later, co-operative banks, since 1974) banks to seek the Reserve Bank's prior approval before sanctioning large working capital limits. This additional measure of credit regulation was expected to perform the multiple objectives of keeping inflationary pressures under check and ensuring that credit was directed to genuine purposes. The elaborate process of credit regulation, however well intentioned, was not only the cause of delays in credit disbursal but also impeded efficient resource allocation by segmenting credit markets [Marathe Committee (RBI, 1983); Chakravarty Committee (RBI, 1985)]. It was in this context that the requirement of prior authorisation in respect of credit limits exceeding a threshold level under the Credit Authorisation Scheme was replaced by a system of post-sanction scrutiny in 1988. Selective credit controls were also abolished in the 1990s.

3.49 During the early 1960s, even as the analytics of money supply continued to be governed by the expansion in credit, the Reserve Bank began to pay greater attention to the movements in monetary aggregates. This accent on monetary aggregates was supported by several empirical studies which provided evidence of a stable money demand function in the Indian economy (Vasudevan 1977; Jadhav 1994). By the early 1980s, there appeared to be a consensus that while fluctuations in agricultural prices and oil price shocks did affect prices, continuous inflation of the kind witnessed since the early 1960s could not occur unless it was sustained by the continuous excessive monetary expansion generated by the large-scale monetisation of the fiscal deficit.

3.50 Against this backdrop, the Chakravarty Committee recommended a monetary targeting framework to target an acceptable order of inflation in line with output growth (RBI, 1985). Changes in broad money were thought to provide reasonable predictions of average changes in prices over a medium-term horizon of 4-5 years, though not necessarily on a year-to-year basis. It was, in fact, argued that in the absence of a stable money demand function, the role of monetary policy in inflation management would itself be negligible. Thus, broad money emerged as an intermediate target of monetary policy and the Reserve Bank began to formally set monetary targets in order to rein in inflation. As the process of money creation is simultaneously a process of credit creation, it was also necessary to estimate the increase in credit required by the projected increase in output. The concept of monetary targeting adopted by the Reserve Bank was a flexible one allowing for various feedback effects.

3.51 The process of financial liberalisation, which gathered momentum in the 1990s, necessitated a re-

look at the efficiency of broad money as an intermediate target of monetary policy. The Reserve Bank's Monetary and Credit Policy Statement of April 1998 noted that most studies in India show that money demand functions have so far been fairly stable. At the same time, it observed that financial innovations emerging in the economy provided some evidence that the dominant effect on the demand for money in the near future need not necessarily be real income, as in the past. Interest rates too seemed to exercise some influence on the decisions to hold money. In a similar vein, the Working Group on Money Supply: Analytics and Methodology of Compilation (Chairman: Dr. Y.V. Reddy) observed that monetary policy exclusively based on the demand function for money could lack precision (RBI, 1998a) (Box III.7).

3.52 The Reserve Bank, therefore, formally adopted a multiple indicator approach in April 1998. Besides broad money which remains an information variable, a host of macroeconomic indicators including interest rates or rates of return in different markets

Box III.7

Stability of Money Demand

In India, broad money emerged as an intermediate target of monetary policy from the mid-1980s following the recommendations of the Chakravarty Committee (RBI, 1985). The monetary targeting framework was based on the premise of a stable relationship between money, output and prices. At the same time, in view of ongoing financial innovations, a view emerged that monetary policy exclusively based on the demand function for money could lack precision. This necessitated a switch to a multiple indicator approach in which broad money remains an important information variable in the conduct of monetary policy. Notwithstanding this shift, the Reserve Bank's monetary policy statements continue to provide an indicative trajectory of broad money growth. Amongst the recent studies, Joshi and Saggar (1995), Arif (1996), Mohanty and Mitra (1999) and Das and Mandal (2000) found evidence in favour of money demand stability while Bhoi (1995) and Pradhan and Subhramanian (2003) found that financial deregulation and liberalisation in the 1990s did affect the empirical stability of broad money demand.

Against this backdrop, an attempt is made to examine stability of money demand in India. Following the literature, real broad money is postulated to depend upon real GDP. In order to assess the role of interest rates, the interest rate on deposits of 1-3 years maturity is included. As these variables turn out to be non-stationary, cointegration analysis is undertaken in the Johansen-Jesuelius framework, using annual data from 1975-76 to 2003-04. Based on trace as well as maximum eigenvalue tests, the null hypothesis of a single cointegrating vector cannot be rejected. The coefficients of the cointegrating vector have the expected signs[7] . Real money demand increases with real GDP and the estimated coefficient - although it cannot be interpreted as the elasticity - is close to the various estimates of income elasticity of money demand in India. As regards the interest rate, its coefficient is positive. This reflects the fact that time deposits are the predominant component of broad money and an increase in the interest rate on these deposits, therefore, leads to a shift of financial assets towards bank deposits. This analysis, therefore, confirms that real money and output are cointegrated, *i.e.*, there exists a long-run relationship between these variables.

Following this, the short-run dynamics are examined using an error correction model. Results indicate that real GDP and interest rates are weakly exogenous to the system. As regards real money, the error correction results show that the coefficient on the error correction term is negative and statistically significant (t-value is 4.0)[8] . Stability properties of the short-run model are examined by employing CUSUM and CUSUM SQUARE tests. Both these tests indicate that the path of the parameters has been within the two standard error bands (Chart III.4). While this supports the stability of the parameters, the path of the parameters is not exactly horizontal. However, as noted by the Working Group on Money Supply (RBI, 1998), the predictive stability is equally important. Towards this purpose, the model is re-estimated up to 1999-2000 and multivariate dynamic forecasts for change in broad money are evaluated. As Chart III.4 indicates, the model under-predicts the demand for money. A number of factors may explain this behaviour. First, inflation has come down significantly since the second half of the 1990s and this could have increased the real demand for money. Second, monetary aggregates are inclusive of non-resident deposits and movements in these deposits have varied a lot from year-to-year, mainly in response to policy efforts to modulate these deposits. Third, the mergers in the banking industry have provided a jump to monetary aggregates. From these factors, it is evident that in the short-run, there can be deviations from the long-run equilibrium relationship. These results thus support the conclusions of RBI (1998) that monetary policy based solely on broad money could lack precision. At the same time, given the long-run relationship, there is a role for monetary aggregates to play. Accordingly, a multiple indicator approach in which broad money remains an important information seems to be appropriate.

[7] LMR = -9.6 + 1.32 LGDPR + 0.02 DR

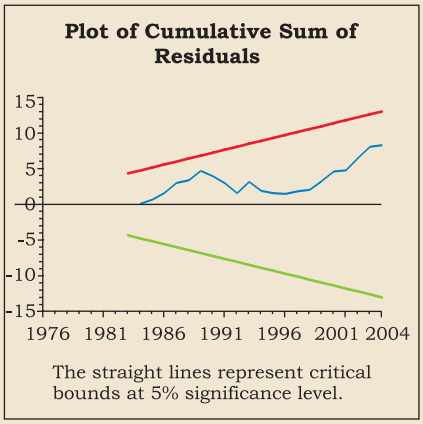
MR, GDPR and DR are real broad money, real GDP and nominal interest rate on deposits of 1-3 years. The prefix L denotes that variables are in logs. The VAR was estimated with three lags.

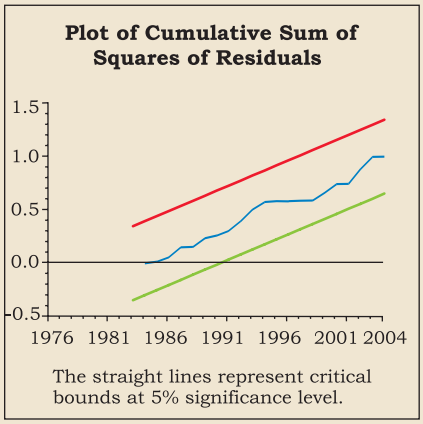
[8] DLMR = 0.04 DLMR(-1) + 0.53 DLGDPR(-1) - 0.01 DDR(-1) + 0.08 DLMR(-2) + 0.05 DLGDPR(-2) + 0.003 DDR (-2) – 0.16 ECM(-1)

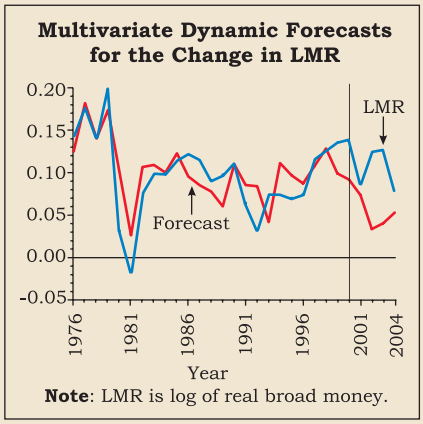
$\bar{R}^2$ = 0.26 DW = 1.5

The variables are defined in the previous footnote. The prefix D denotes that variables are in first-difference form while ECM is the error correction term.

Chart III.4 : Stability of Money Demand







(money, capital and Government securities markets) along with such data as on currency, credit extended by banks and financial institutions, fiscal position, trade, capital flows, inflation rate, exchange rate, refinancing and transactions in foreign exchange available on high frequency basis are juxtaposed with output data for drawing policy perspectives in the process of monetary policy formulation.

3.53 This large panel of indicators is sometimes criticised as a 'check list' approach, which tends to water down the concept of a nominal anchor for monetary policy. It is certainly true that a single intermediate target is much more theoretically appealing and operationally easier. At the same time, it is very difficult to find a variable, which would be able to encapsulate the larger number of factors, which need to go into monetary policy making at this stage of transition from a relatively autarkic administered economy to a relatively open market-oriented economic system. As channels of monetary policy transmission shift course as a result of financial liberalisation, the central bank has to naturally operate through all the paths that transmit its policy impulses to the real economy. As discussed in Section I, given the environment of high uncertainty in which monetary authorities operate, a single model or a limited set of indicators is not a sufficient guide for the conduct of monetary policy. The multiple indicators approach provides the required "encompassing and integrated set of data".

Operating Procedures of Monetary Policy

3.54 With the shift away from the monetary targeting framework towards a multiple indicator approach, the operating procedures of monetary policy in India have undergone a significant shift. In particular, short-term interest rates have emerged as instruments to signal the stance of monetary policy. In order to stabilise short-term interest rates, the Reserve Bank now modulates market liquidity to steer monetary conditions to the desired trajectory. This is achieved by a mix of policy instruments including changes in reserve requirements and standing facilities and open market (including repo) operations which affect the quantum of marginal liquidity and changes in policy rates, such as the Bank Rate and reverse repo/repo rates, which impact the price of liquidity.

3.55 The Reserve Bank had originally conducted its monetary policy through a standard mix of open market operations and changes in the Bank Rate. The fiscal dominance during the 1970s and the 1980s changed the contours of the operating framework of monetary policy. A natural corollary was that the Reserve Bank's traditional instruments, the Bank Rate and open market operations, began to loose their efficacy. As a consequence, the Reserve Bank began to turn to changes in reserve requirements in order to modulate monetary conditions.

3.56 India, like most emerging market economies, saw a structural shift in the financing paradigm in the 1990s. The Ninth Five Year Plan recognised that the role of the financial system would have to be upgraded from mere channelisation to allocation of resources in order to reap the benefits of higher growth. In order to infuse a degree of efficiency in the allocation of resources by the financial system, the Reserve Bank initiated a multi-pronged strategy of institutional reforms to rekindle the process of price discovery in the financial markets (Reddy, 2002).

3.57 First, the Reserve Bank began to deregulate interest rates, beginning with the removal of restrictions on the inter-bank market as early as 1989. This was supported by the process of putting the market borrowing programme of the Government through the auction process in 1992-93. This was buttressed by a phased deregulation of lending rates in the credit markets. At present, banks are free to fix their lending rates on all classes of loans except small loans below Rs.2 lakh and export credit. The deregulation of deposit rates began later, especially as an incipient attempt in the late 1980s ended in a price war between banks. Banks are now free to offer interest rates on all classes of domestic deposits (except savings deposits), not only in terms of tenor but also in terms of size. Interest rates on non-resident deposits are linked to international interest rates and these are modulated from time to time, depending on the macroeconomic - including the balance of payments - scenario.

3.58 Second, the process of interest rate deregulation had to be supported by the development of market architecture, especially to address the problem of missing markets at the short end. Two key reasons explain as to why short-term instruments were not actively traded. First, the system of cash credit shifted the onus of cash management from the borrowers to the banks. Second, the availability of fixed rate 4.6 per cent Treasury Bills, with a discounting facility from the Reserve Bank, on tap, in turn, allowed banks to pass the fluctuations in liquidity onto the Reserve Bank balance sheet. To overcome these shortcomings, the Reserve Bank began to introduce a number of money market instruments, such as commercial paper, short-term Treasury Bills and certificates of deposits following the recommendations of the Working Group on the Money Market (Chairman: Shri N. N. Vaghul). The process of replacing cash credit with term loans, phasing out of fixed rate tap Treasury Bills and the development of a repo market outside the Reserve Bank is gradually generating a vibrant set of markets at the short end of the interest rate spectrum.

3.59 Third, the introduction of new instruments was buttressed by the parallel process of market development, beginning with the institution of the Discount and Finance House of India as a market maker with two-way quotes in the money markets. Although the call money market was initially widened by introducing non-bank participants, they are now being phased out in tandem with the parallel development of a repo market outside the Reserve Bank. The emergence of a vibrant Government securities market, in particular, has played a key role.

3.60 Fourth, with a view to deepening inter-linkages, the development of markets was supported by withdrawal of balance sheet restrictions which had tied financial intermediaries to their primary segments of the financial markets. Banks now operate across all the segments of the financial markets, including equity and foreign exchange markets, *albeit* with prudential limits on their exposures.

3.61 In brief, the liberalisation of the Indian economy required a comprehensive recast of the operating procedures of monetary policy. The Reserve Bank had to shift from direct to indirect instruments of monetary policy in consonance with the increasing market orientation of the economy (Reddy, 1999, 2001 and 2002; Kanagasabhapathy, 2001). This required development of an array of monetary policy instruments, which could effectively modulate monetary conditions in alignment with the rejuvenated process of price discovery. Besides, shifts in monetary policy transmission channels necessitated policy impulses which would travel through both quantum and rate channels. Finally, the episodes of volatility in the foreign exchange markets emphasised the need for swift policy reactions balancing the domestic and external sources of monetisation in order to maintain orderly conditions in the financial markets. Even within the set of indirect instruments, the preference is for relatively more market-based instruments such as open market operations. Accordingly, the cash reserve ratio (CRR) has been gradually lowered from 15 per cent in the early 1990s to five per cent by 2004, notwithstanding minor upward adjustments to deal with the evolving liquidity situation in the economy. As the Reserve Bank's Internal Working Group on Instruments for Sterilisation noted, the use of CRR as an instrument of sterilisation, under extreme conditions of excess liquidity and when other options are exhausted, should not be ruled out altogether by a prudent monetary authority ready to meet all eventualities (RBI, 2004a).

3.62 The Reserve Bank is now able to influence short-term interest rates by modulating the liquidity in the system through repo operations under the Liquidity Adjustment Facility, reinforced by interest rate signals (Box III.8) (RBI, 2000; Sen Gupta, Bhattacharyya, Sahoo and Sanyal, 2000; Dua, Raje and Sahoo, 2003). The Reserve Bank has been largely able to enforce the interest rate corridor

Box III.8

Facets of Liquidity Management

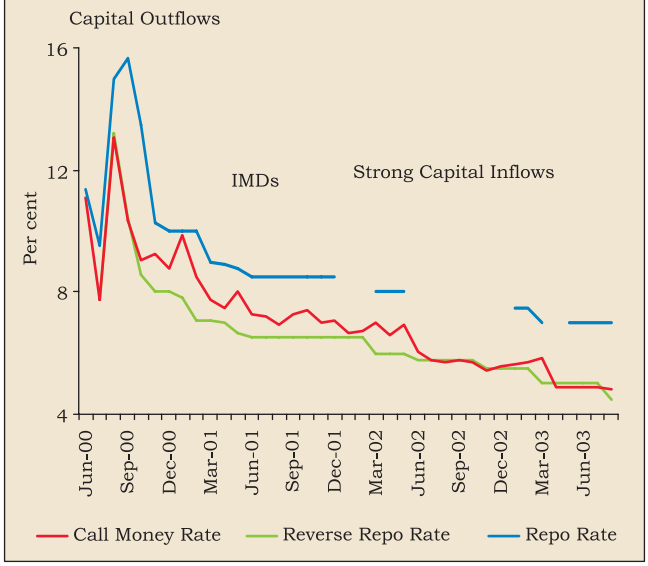
The Liquidity Adjustment Facility (LAF), introduced in June 2000, allows the Reserve Bank to manage market liquidity on a daily basis and also transmit interest rate signals to the market. The LAF, initially recommended by the Committee on Banking Sector Reforms (Chairman: Shri M. Narasimham), was introduced in stages in consonance with the level of market development and technological advances in payment and settlement systems. The first challenge was to combine the various sources of liquidity available from the Reserve Bank into a single comprehensive window, with a common price. An Interim Liquidity Adjustment Facility (ILAF), introduced in April 1999 as a mechanism for liquidity management through a combination of repo operations, export credit refinance facilities and collateralised lending facilities supported by open market operations at set rates of interest, was upgraded into a full-fledged LAF. Most of the alternate provisions of primary liquidity have been gradually phased out and even though export credit refinance is still available, it is linked to the repo rate since March 2004. Accordingly, the LAF has now emerged as the principal operating instrument of monetary policy.

Analytically, the LAF experience with market stabilisation can be partitioned into multiple sets of roles (Jadhav, 2003). First, the LAF stabilises regular liquidity cycles, by allowing banks to tune their liquidity requirements to the averaging requirements over the reporting fortnight and smoothening liquidity positions between beginning-of-the-month drawdown of salary accounts to fund household spending and end-of-the-month post-sales bulge in business current accounts. Second, it irons out seasonal fluctuations. It injects liquidity during quarterly advance tax outflows or at end-March, when banks avoid lending on call, which adds to their Capital to Risk-Weighted-Assets Ratio (CRAR) requirements. It mops up liquidity in April to counter the typically large ways and means advances drawn by the Government prior to the inception of its borrowing programme. Third, it modulates sudden liquidity shocks, by injecting liquidity on account of say, temporary mismatches arising out of timing differences between outflows on account of Government auctions and inflows on account of redemptions. Fourth, the LAF has emerged as an effective instrument for maintaining orderly conditions in the financial markets in the face of sudden capital outflows to ward off the possibility of speculative attacks in the foreign exchange market. Fifth, by funding the Government through private placements and mopping up the liquidity by aggressive reverse repo operations at attractive rates, the LAF helps to minimise the impact of market volatility on the cost of public debt. Sixth, the LAF bore much of the burden of sterilisation in the face of sustained capital flows, especially since November 2000, by mopping up bank liquidity through reverse repos and at the same time, gradually reducing reverse repo rates to enable a softening of the interest rate structure. Finally, the Reserve Bank tailors monetary policy action through both quantum and rate channels of transmission. The LAF accords the Reserve Bank the operational flexibility to alter the liquidity in the system (by rejecting bids) as well as adjusting the structure of interest rates (through fixed rate operations) in response to evolving market circumstances.

defined by the reverse repo rate, the price at which it absorbs liquidity and the repo rate/Bank Rate, the price at which it injects liquidity[9] (Chart III.5).

3.63 Persistent capital inflows that India experienced since 2001-02 posed a challenge to the LAF operations. In view of large capital flows, the LAF emerged as the key instrument of managing capital flows through sterilisation. This was reflected in the outstanding reverse repo amount which increased from Rs.2,415 crore as at end-March 2003 to Rs. 62,995 crore by late March 2004 and further to Rs. 89,435 crore by mid-April 2004. Thus, instead of absorbing liquidity of a short-term and temporary nature, the LAF window was absorbing funds of a relatively more enduring nature. In order to address these issues, an Internal Group of the Reserve Bank reviewed the operations of the LAF in a cross-country perspective, keeping in view recent developments in the financial markets as well as in technology. The Group noted that it is difficult to distinguish

Chart III.5 : LAF Rates and the Call Rate



[9] With effect from October 29, 2004, the nomenclature of repo and reverse repo has been interchanged as per international usage. Prior to that date, repo indicated absorption of liquidity while reverse repo implied injection of liquidity. The nomenclature in this Chapter is based on the new use of terms even for the period prior to October 29, 2004 for comparability purposes.

operationally between the sterilisation operations and liquidity management operations under the LAF. Nonetheless, it emphasised the need to conceptually distinguish surplus liquidity of "temporary" nature arising from banks' cash management practices from surplus liquidity of a somewhat "enduring" nature arising from sustained capital inflows. The Group also added that it would be desirable to de-emphasise the passive sterilisation attribute of the LAF-reverse repo facility so that it could emerge as the exclusive policy signalling rate. Accordingly, it felt a need for adequate instruments of sterilisation in addition to the liquidity management facilities and, recommended, *inter alia*, introduction of a standing deposit facility (Box III.9).

3.64 Pursuant to the recommendations of the Internal Working Group on LAF as well as the Internal Working Group on Instruments for Sterilisation (RBI, 2003b), a Market Stabilisation Scheme (MSS) was introduced in April 2004. Under this scheme, Government of India dated securities of a maturity of less than two years (so far) and Treasury Bills are being issued to absorb liquidity (see Chapter IV). As on December 10, 2004, the outstanding issuances under the MSS were Rs.51,334 crore, the pressure on the LAF window has gradually come down. The outstanding reverse repo amount, therefore, fell from Rs. 89,435 crore (mid-April 2004) to only Rs. 15,820 crore by December 10, 2004. The issuance of securities under the MSS enables the Reserve Bank to improve liquidity management in the system, to maintain stability in the foreign exchange market and to conduct monetary policy in accordance with the stated objectives.

3.65 The Indian experience underscores the need for constant innovation in terms of instruments and operating procedures for effective monetary management. Apart from introduction of innovative instruments such as the MSS, the policy framework has evolved in response to the changing environment. Illustratively, the interest rates in the LAF auctions were initially allowed to emerge from the bids, with the Reserve Bank holding occasional fixed rate auctions to transmit interest rate signals. As market players began to bid at the prices signalled by the Reserve Bank, the *de jure* market-determined LAF rates began to turn into *de facto* fixed rates. It is in this context that the Reserve Bank switched to a fixed auction format in March 2004. Second, while the

Box III.9

Internal Group to Review the Liquidity Adjustment Facility: Recommendations

In the light of substantial technological developments, the objective of conducting LAF operation on real-time basis needs to be pursued further.

Introduction of a deposit facility to afford more flexibility to the Reserve Bank in using the reverse repo facility as a signalling device while not sacrificing the objective of the provision of a floor to the movement of short-term interest rates. As the Reserve Bank of India Act, 1934 in its present form does not permit the Reserve Bank to borrow on a clean basis from banks and pay interest thereon, this would necessitate a suitable amendment to the Reserve Bank Act.

Pending amendments to the Reserve Bank Act, the Reserve Bank should explore possibilities of modifying the current CRR provision to accommodate a standing deposit type facility - placement of deposits at the discretion of banks unlike CRR which is applicable to all banks irrespective of their liquidity position.

The remuneration of CRR, if any, could be delinked from the Bank Rate and placed at a rate lower than the reverse repo rate.

The minimum tenor of the repo/reverse repo operations under the LAF facility should be changed from overnight to 7 days to be conducted on daily basis to enable balanced development of various segments of money market.

The LAF auction could be a fixed rate auction enhancing its policy signalling rate, with the flexibility to revert to variable price auction format.

The Bank Rate under normal circumstances should be aligned to the repo rate and, therefore, the entire liquidity support including refinance should be made available at the repo rate/Bank Rate.

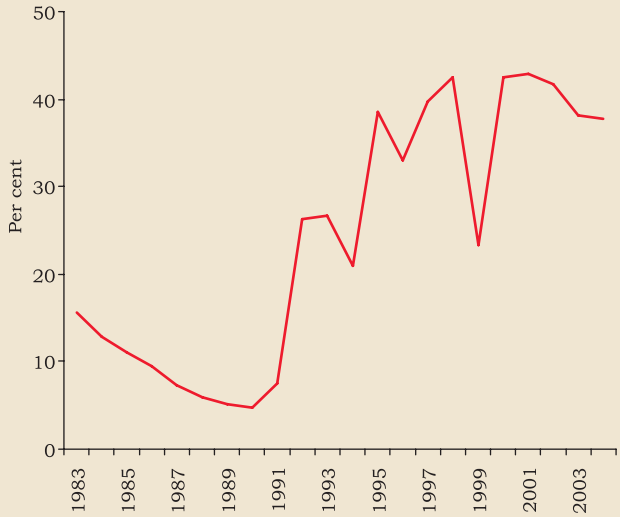
With intra-day liquidity (IDL) available under the RTGS system, the timing of LAF could be shifted to the middle of the day, say, 12 noon to ensure that marginal liquidity is kept in the system for a longer time. To take care of unforeseen contingencies, the Reserve Bank may consider discretionary announcement of timing of both repo auctions and reverse repo auctions at late hours.

As proposed by the Reserve Bank's Working Group on Instruments of Sterilisation, Market Stabilisation Bills/ Bonds (MSBs) could be issued for mopping up enduring surplus liquidity from the system over and above the amount that could be absorbed under the day-to-day reverse repo operations of the LAF. The maturity, amount, and timing of issue of MSBs may be decided by the Reserve Bank in consultation with the Government depending, *inter alia*, on the expected duration and quantum of capital inflows, and the extent of sterilisation of such inflows.

reverse repo rate, acted as the floor, the practice of supplying liquidity at multiple rates, *e.g.*, the Bank Rate and the repo rate, implied that there was no unique ceiling. It is in this context that the Reserve Bank has increasingly been resorting to pricing its liquidity at the repo rate, in recent years. Apart from WMA which are still at the Bank Rate, all other forms of liquidity support are at the repo rate.

3.66 The changes in the operating procedure of Reserve Bank's monetary policy in tune with financial sector reforms during the 1990s have impacted its balance sheet in terms of size and composition and sources of income and expenditure (Reddy, 1997). In consonance with the international experience, the programme of financial liberalisation was accompanied by several measures to further strengthen the health of the Reserve Bank balance sheet, especially as monetary policy emerged as the principal instrument of macroeconomic stabilisation (RBI, 2004b; Jadhav *et al,* forthcoming) (Box III.10 and Table 3.9).

Chart III.6 : Share of Surplus Transferred to the Government in the Reserve Bank's Total Income



Box III.10

The Reserve Bank's Balance Sheet during the 1990s

The process of financial liberalisation during the 1990s was accompanied by several measures to further strengthen the Reserve Bank's balance sheet and financial position. The pursuance of the already conservative accounting norms was accompanied by greater disclosures in the interest of transparency. Over the past few years, the Reserve Bank has recognised the need to proactively build up its internal reserves, *i.e.*, Contingency Reserve (CR) and Asset Development Reserve (ADR), in order to ensure a sound balance sheet and undertake monetary and exchange operations without any overriding concerns on the impact of such operations on the balance sheet. The Reserve Bank, as per the current policy, aims at an indicative target of CR at 12 per cent of total assets by June 2005. This would provide cushion with respect to losses which cannot be absorbed by current earnings arising out of central bank operations/ interventions in the money, Government securities and foreign exchange markets and depreciation of domestic/foreign securities held by the Reserve Bank.

The size and composition of the Reserve Bank's balance sheet underwent significant shifts during the 1990s and thereafter. The asset size increased fivefold to Rs.6,09,738 crore as at end-June 2004 from Rs.1,23,836 crore as at end-June 1991. On the asset side, the share of foreign currency assets and gold in the total assets increased to 89.1 per cent as at end-June 2004 from 8.9 per cent as at end-June 1991, reflecting mainly the consistently overall balance of payments surplus throughout the intervening period.

The structural changes in the composition of the Reserve Bank's assets were reflected in an increase in the share of income from foreign sources in total income. Besides, changes in the manner of conducting monetary operations have impacted the composition of income from domestic sources. Furthermore, financial market deregulation has enhanced the interest sensitivity of domestic income. The Reserve Bank's total income declined to 2.3 per cent of its assets as at end-June 2004 from 3.7 per cent during 1990-91, reflecting mainly the dominance of foreign currency assets, which carry relatively lower interest in comparison with domestic assets comprising largely Government securities (RBI, 2004b). Total expenditure declined to 1.3 per cent of assets as at end-June 2004 from 2.6 per cent as at end-June 1991, mainly as a result of decline in the interest outgo on the eligible CRR balances. The share of the surplus transferred to the Government in the total income has increased during the latter half of the 1990s but simultaneously with higher transfers to internal reserves (Chart III.6).

The increasing market orientation of monetary management was accompanied by greater balance sheet transparency in line with international best practices. The Reserve Bank follows conservative valuation and income recognition norms. Its holdings of both domestic and foreign securities are valued each month end at the market price or book value, whichever is lower. Foreign currency assets are revalued every week to take into account the impact of exchange rate changes. The resultant revaluation gain/loss is parked in a separate balance sheet head called the Currency and Gold Revaluation Account. Gold is similarly revalued at the end of the month at 90 per cent of the daily average price quoted at London for the month. Over the years, significant disclosures in respect of the Reserve Bank's accounts have been enhanced markedly in line with international best practice. These relate to i) details of interest income and interest expenditure in the Profit and Loss Account (since 1990); ii) statement of significant accounting policies and notes to accounts (since 1992); and iii) details of other assets and liabilities and contingency reserves (since 1993). The Advisory Group on Transparency in Monetary and Financial Policies (Chairman: M. Narasimham) observed that data dissemination by the Reserve Bank, including the balance sheet, bear up well in comparison with central banks in developed countries.

Table 3.9: Reserve Bank's Capital Account

Per cent to total assets

End-June	Capital Paid-up and Reserves	Contingency Reserves (including Asset Development Reserve)	Currency and Gold Revaluation Account	Exchange Equalisation Account	Total	*Memo Item*: National Funds
1	2	3	4	5	6 = 1+2+3+4+5	7
1991	5.2	4.5	2.9	4.4	17.1	4.7
1996	2.8	3.3	5.1	1.2	12.3	2.5
2004	1.1	10.2$	10.2	0.0	21.5	0.1

$ Includes previous balances under the National Industrial Credit (Long-Term Operations) Fund.

Note : The Working Group on Money Supply: Analytics and Methodology of Compilation (Chairman: Dr. Y. V. Reddy) expanded the definition of the Reserve Bank's capital account to include capital paid-up, reserves, national funds, contingency reserves, Currency and Gold Revaluation Account (formerly Exchange Fluctuation Reserve) and exchange equalisation account (RBI, 1998a).

Source : RBI Annual Reports.

III. CONCLUDING OBSERVATIONS

3.67 It is now widely agreed that monetary policy can contribute to sustainable economic growth by maintaining low and stable inflation. Within this overall objective of price stability, central banks attempt to stabilise output around its potential. In order to create enabling conditions for low and stable inflation as well as inflation expectations, there is an emerging consensus to secure the independence of monetary policy from the budgetary requirements of the fisc. A number of countries now limit Government access to central bank financing, reinforced by fiscal responsibility legislation.

3.68 With the growing globalisation and integration of economies, monetary authorities are now required to pay greater attention to external developments. Swings in trade flows and, especially capital flows are quite common and these impart a high degree of volatility to exchange rates. Even in an environment of price stability, the 1990s witnessed episodes of financial instability. The presumption that price stability ensures financial stability is thus not true, at least in the short-run. Ensuring orderly conditions in financial markets and maintenance of systemic financial stability has thus emerged as an important objective of monetary policy, even for central banks not involved with banking regulation and supervision.

3.69 Financial innovations have also impacted upon the conduct of monetary policy. In consonance with the preference for a degree of operational flexibility in a complex macroeconomic environment, most central banks are beginning to eschew setting unique intermediate targets or following some fixed rule of monetary policy. They, instead, prefer to monitor a range of macroeconomic indictors, which carry information about the ultimate objectives. Short-term interest rates have emerged as operative target/ instruments of monetary policy. Most central banks now prefer to manage liquidity to steer monetary conditions in consonance with the overall policy objectives of price stability and growth. Central banks usually forecast market liquidity and then conduct open market operations to impact the interest rate structure to affect the real economy. Along with these developments, central banks have strengthened their balance sheets in order to be able to meet unforeseen contingencies that may arise from their market operations.

3.70 In India, the opening up of the economy in the early 1990s had a significant impact upon the conduct of monetary policy. Price stability remains the key objective of monetary policy and there is virtually a national consensus that high inflation is not good. Inflation expectations and inflation tolerance have come down. Adherence to the Fiscal Responsibility and Budget Management Act should stabilise inflation expectations and hence contribute to the objective of price stability. While adequate availability of credit to meet investment demand continues to remain an important objective, the growing integration of the Indian economy with the global economy has led to financial stability emerging as a key consideration in the conduct of monetary policy. Although there are complementarities between the objectives in the long run, there are certain trade-offs in the short run.

3.71 In order to meet challenges thrown by financial liberalisation and the growing complexities of monetary management, the Reserve Bank switched

from a monetary targeting framework to a multiple indicator approach. Short-term interest rates have emerged as indicators of the monetary policy stance. A significant shift is the move towards market-based instruments away from direct instruments of monetary management. In line with international trends, the Reserve Bank has now put in place a liquidity management framework in which market liquidity is now modulated through a mix of open market (including repo) operations and changes in reserve requirements and standing facilities, reinforced by changes in the policy rates, including the LAF rates and the Bank Rate. These arrangements have been quite effective in the recent years in managing liquidity in the system, especially in the context of persistent capital flows. The introduction of the Market Stabilisation Scheme has provided further flexibility to the Reserve Bank in its market operations.

3.72 As monetary policy emerges as the primary instrument of macroeconomic stabilisation, the Reserve Bank, like most other central banks, has initiated several measures to strengthen the health of its balance sheet. Over the past few years, the process of monetary policy formulation has become relatively more articulate, consultative and participative with external orientation, while the internal work processes have also been re-engineered. The stance of monetary policy and the rationale are communicated to the public in a variety of ways, the most important being the monetary policy statements. The communications strategy and provision of information have facilitated conduct of monetary policy in an increasingly market-oriented environment.

3.73 To conclude, while financial and external liberalisation present opportunities, they also throw challenges for policy authorities. Monetary authorities are increasingly required to take cognisance of not only domestic shocks but also external shocks. Given their objectives, central banks are required to monitor various segments of financial markets to ensure orderly conditions. Given the random nature of the shocks hitting the economy, central banks are increasingly acting as shock absorbers. In order to manage these shocks effectively, a steady stream of innovations is required by central banks in terms of instruments and operating procedures while strengthening their balance sheets.

IV MONETARY POLICY IN AN OPEN ECONOMY

4.1 The 1990s have witnessed growing integration of goods and financial markets across the globe. With growth in global trade in goods and services outpacing growth in world output, the share of external trade in output has increased further. Opening up of the services to international trade and remittances flows have accelerated the integration process. The opening up of the economy has implications for the conduct of monetary policy as well as the monetary transmission mechanism. In particular, it has rendered economies vulnerable to external demand and exchange rate shocks. This, in turn, has enhanced the possibility of significant changes in trade and other current account flows in a short span of time. This was reflected in the aftermath of the Asian financial crisis when a number of economies in this region had to make substantial adjustments in their current accounts.

4.2 A more serious challenge to conduct of monetary policy emerges from the capital account. A distinctive feature of capital flows is the greater volatility *vis-à-vis* the trade flows. Capital flows in gross terms are much higher than those in net terms. Global capital flows impact the conduct of monetary policy on a daily basis, imparting volatility to monetary conditions. Along with the explosion in financial innovations and the information technology revolution, this has led to the swift transmission of market impulses across countries and a structural change in the process of financial intermediation. All this has fundamentally altered not only the environment of monetary policy formulation but also its instrumentality and operating framework. Monetary policy formulation has become much more interdependent than before across economies and has to factor in the developments in the global economic situation, the international inflationary situation, interest rates, exchange rate movements and capital flows (Mohan, 2004a). A stylised fact in regard to many, if not most, emerging market economies (EMEs) is that their external borrowings are usually denominated in foreign currency. Large devaluations not only lead to inflation but can also cause serious currency mismatches with adverse impact on balance sheets of borrowers (banks as well as corporates). A financial accelerator mechanism can exacerbate these effects and threaten financial stability. Accordingly, with the opening up of the economies and greater integration, monetary authorities are no longer concerned with mere price stability. Financial stability has emerged as a key objective of monetary policy.

4.3 A more recent challenge in monetary management in EMEs has emanated from a significant increase in capital flows coupled with current account surpluses which have led to large overall balance of payments surpluses in these economies. In their efforts to maintain external competitiveness and financial stability, the central banks in EMEs have absorbed the market surpluses. Consequently, the foreign exchange reserves of the EMEs have nearly doubled in the last seven years. The share of reserves held by EMEs in global reserves has increased from 36 per cent in 1990 to 61 per cent in 2003, with Asian EMEs accounting for much of the increase. The absorption of excess supplies by the central banks has, however, implications for monetary expansion and the objective of price stability. The central banks, therefore, face a trade-off: by preventing nominal appreciation, they may ultimately endanger their primary objective of price stability. Typically, central banks attempt to overcome the policy dilemma by undertaking a variety of operations such as open market sales of government/own bonds to neutralise the expansionary monetary effect arising out of their market purchases. Such sterilisation operations, in turn, have their own limitations and involve costs, especially if external flows are persistent. Globalisation, thus, transforms the environment in which monetary policy operates, throwing up a number of challenges. The foremost challenge is the progressive loss of discretion in the conduct of monetary policy.

4.4 Like other EMEs, India too has witnessed a progressive opening up of the economy. External sector reforms were a key aspect of the structural reforms initiated in the early 1990s. While current account convertibility was achieved in 1994, the Indian approach towards capital account liberalisation has been one of caution. Trade openness of the economy has increased significantly. There has been a sustained increase in capital flows and the balance of payments has recorded large surpluses. Since 1993-94, balance of payments developments have thus come to play a dominant role in the conduct of monetary policy. Net capital inflows to

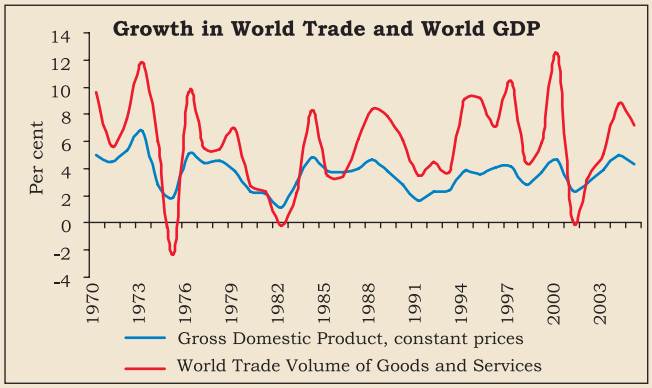
India have been largely stable, reflecting a prudent approach to capital account liberalisation with a focus on attracting stable capital flows. Nonetheless, there have been brief episodes of volatility in capital flows and these periods have been associated with volatility in the foreign exchange market. Overall, however, the past decade has seen a significant increase in capital flows and the balance of payments has posted surpluses. External developments have thus been a key driver of money supply. A number of steps were taken to manage the surplus conditions as well as periods of volatility in order to retain discretion over the conduct of monetary policy so as to ensure domestic macroeconomic and financial stability.

4.5 Against this background, Section I of this Chapter discusses implications of globalisation on conduct of monetary policy. It undertakes a critical assessment of recent trends in capital flows to developing economies and examines factors that have led emerging economies in the recent years to become net exporters of capital to the mature economies. Impact of increased integration on business cycle synchronisation and implications of global macroeconomic imbalances are addressed. The Section also discusses constraints imposed by surges in capital flows on monetary management and the policy options, drawing upon cross-country experiences. Section II assesses the Indian experience of monetary management in an open economy context. It presents a brief overview of the developments in India's balance of payments to place in context the challenges to monetary policy emanating from an open capital account. Policy responses to manage capital flows during times of volatility as well as times of persistent surpluses are highlighted. As sterilisation through open market sales has been a key instrument, an empirical exercise is undertaken to examine dynamics of the adjustment of monetary base and exchange rate in response to exogenous shocks to net foreign assets. The Section also undertakes a discussion of the efficacy of monetary measures in ensuring orderly conditions in the foreign exchange market. Finally, an attempt is made to measure synchronicity of business cycles in India with its trading partners to examine temporal changes in co-movement. Concluding observations are in Section III.

I. GLOBALISATION AND MONETARY POLICY

4.6 The 1990s have been marked by a further pick-up in domestic as well as external liberalisation in a number of EMEs. Expansion in volume of world trade has continued to exceed the growth in world output. Even as world output growth decelerated from 3.3 per cent during the 1980s to 3.1 per cent during the 1990s, growth in volume of world trade in goods and services accelerated from 4.5 per cent to 6.4 per cent over the same period. Thus, between 1980 and 2003, while world output has doubled, world trade has trebled. Global trade openness has increased substantially. After showing some stagnation during the 1980s, trade openness - measured as the ratio of global exports of goods and services to world output - jumped from 19 per cent in 1990 to 25 per cent in 2003 (Chart IV.1). Apart from continuing trade liberalisation during the 1990s, the higher order of expansion in international trade can be attributed to three factors: (i) falling costs of trade; (ii) productivity growth in tradable goods sector; and, (iii) increasing income per head. As a country's income rises, consumer spending shifts away from basic food and clothing towards manufacturing goods which offers scope for product differentiation, diversification and international trade. Quantitative analysis suggests that the fall in relative prices of tradable goods (relative to non-tradables) and the fall in tariffs are the key explanatory factors leading to increased trade. For a sample of 10 developed economies, these two factors alone explain nearly 65 per cent of the increase in the ratio of imports to total final expenditure (Dean and Sebastia-Barriel, 2004). While increased trade

Chart IV.1 : Global Trade Openness



Source : World Economic Outlook Database, IMF, September (2004).

is beneficial to an economy, evidence suggests that trade flows can also be quite volatile and economies may be required to make substantial adjustments in their current accounts.

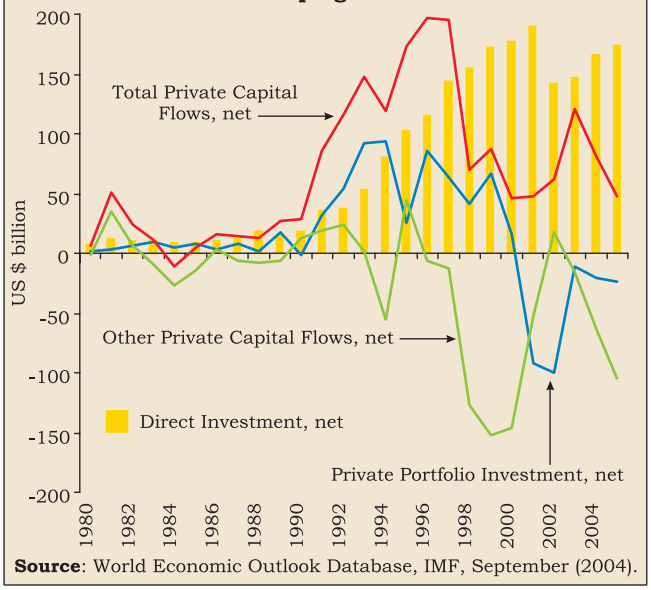
4.7 While trade flows continue to be an important source of global transmission of shocks, a fundamental change that has taken place in recent years is the movements in capital flows. In the aftermath of the World War II, efforts to liberalise international trade in goods made significant progress from multilateral negotiations through various rounds of discussions under the General Agreement on Tariffs and Trade and subsequently, under the World Trade Organisation. Liberalisation of trade in services has, in particular, received a focus in the recent decades. In contrast the post-War period till the early 1970s was largely characterised by capital controls. This was, in turn, the outcome of the fixed but adjustable exchange rate systems under the Bretton Woods system. With the collapse of this system in the early 1970s, flexible exchange rates permitted countries to start liberalising their capital accounts. Initially, advanced economies opened up their capital accounts and in the 1990s, a number of emerging economies opened up their capital accounts. At the same time, it may be noted that while trade liberalisation is generally viewed to be welfare improving, a similar unanimity does not prevail in the case of capital account liberalisation.

4.8 Reflecting this progressive opening up of capital accounts, capital flows to EMEs increased significantly during the 1990s. As a consequence, it is capital flows that now influence exchange rate movements significantly as against trade deficits and economic growth, which were important in the earlier days. The latter do matter, but only over a period of time. Capital flows, on the other hand, have become the primary determinants of exchange rate movements on a day-to-day basis. Second, unlike trade flows, capital flows in "gross" terms which affect the exchange rate can be several times higher than "net" flows on any day. These are also much more sensitive to what everybody else is saying or doing than is the case with foreign trade or economic growth. Therefore, herding becomes unavoidable (Jalan, 2003). Thus, the analysis of capital flows and their behaviour - the volatility on account of the boom-bust pattern - becomes important for the conduct of monetary policy.

4.9 The nature of capital flows to EMEs has undergone significant shifts in the post-World War II period. In the period till the 1980s, capital flows were mainly in the form of aid flows and these were relatively stable. With external and financial liberalisation, net capital flows to developing economies have increased rapidly. This step-up was entirely on account of private capital flows, which increased from fairly low levels - about US $ 15 billion per annum - during the 1980s to a peak of almost US $ 166 billion by mid-1990s before dipping sharply in the aftermath of the East Asian crisis and a recovery in the subsequent period (Chart IV.2). As the Chart shows, the defining characteristic of private capital flows is their volatility. Monetary authorities thus need to understand the nature of these capital flows so as to make a distinction between enduring and volatile components of capital flows. Within private capital flows, direct investment inflows are relatively stable while portfolio and debt flows are highly volatile. Even with the sharp reversals, net private capital flows averaged US $ 122 billion per annum during the 1990s, eight times of that recorded during the 1980s.

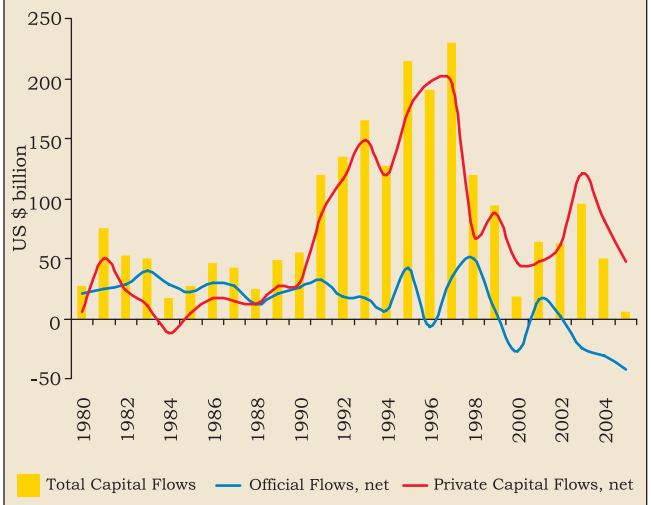
4.10 Official flows on the other hand, at US $ 23 billion per annum during the 1990s were lower than that of US $ 26 billion per annum during the 1980s. Official flows were thus a fifth of private capital flows during the 1990s. Total capital flows to EMEs, therefore, moved in tandem with trends in private capital flows (Chart IV.3). While recent trends in private capital flows suggest an increase in financial integration, other indicators suggest that global financial markets are still not highly integrated (Parry, 1998). Correlation of national savings and national investment – the Feldstein-Horioka puzzle – remains very high, despite the significant opening up of global

Chart IV.2 : Private Capital Flows to Emerging and Developing Economies



Source: World Economic Outlook Database, IMF, September (2004).

Chart IV.3 : Total Capital Flows to Emerging and Developing Economies



Source: World Economic Outlook Database, IMF, September (2004).

markets. However, it needs to be stressed that absorption of capital flows has to be matched by an equivalent current account deficit. This deficit cannot be too high on a sustained basis and if it is so, it has to be turned into a surplus later on. In this backdrop, high correlation between savings-investment is surely not a puzzle. Another piece of evidence that international markets are not highly integrated emerges from the substantial 'home bias' in the composition of investment portfolios. The proportion of foreign investments in total investments is less than 10 per cent in the case of the US and only 15 per cent in the case of Germany. Thus, capital flows to EMEs may rise further if domestic savings-investment correlation weakens over time or if residents increase the holdings of foreign assets in their portfolios.

4.11 Another factor that can lead to a sustained rise in capital flows to emerging economies emanates from the evolving pattern of demographics and this could exacerbate the challenges to monetary policy formulation over the longer term (Mohan, 2004a). In general, economies pass through three stages of demographic transition: (i) high youth dependency (large proportion of population in the 0-14 years group), (ii) rise in working age population (15-59 years) relative to youth dependency, and (iii) rise in elderly dependency (60+ years) relative to working age population. The second stage is regarded as the most productive from the point of view of secular growth since it is associated with the high rates of saving and work force growth relative to the other stages.

4.12 According to estimates made by IMF (2004), both savings and investment rates increase with an increase in the share of working age population. More importantly, the increase in the savings rate outpaces the increase in the investment rate and this increases the current account balance. An increase in the share of elderly population, on the other hand, has the reverse effect - both savings and investment rates decline, and the current account balance deteriorates as the decline in savings exceeds that in investment (Table 4.1). These results confirm that demographic factors have a significant influence on current account balances through their effect on savings and investment.

4.13 Over the next half-century, the population of the world will age faster than during the past half-century as fertility rates decline and life expectancy rises. Developed regions like Europe, North America and Japan have been leading the process of population ageing and are likely to be deep into the third stage of demographic transition. Illustratively, according to estimates of IMF (2004), Japan's current account balance will deteriorate by around 2.5 per cent of its GDP between 2000 and 2050. These regions will switch to importing capital. On the other hand, high performers of East Asia and China are in the second stage of the demographic cycle. East Asia could increasingly become an important supplier of global savings up to 2025; however, rapid population ageing thereafter would reinforce rather than mitigate the inexorable decline of global saving. Increasingly, it would be the moderate and the low performers among the developing countries which would emerge as exporters of international capital. India is entering the second stage of demographic transition and over the next half-century, a significant increase in both saving rates and share of working age population is expected. The regional pattern of global population ageing is, thus, expected to get reflected in the magnitude and direction of international capital flows

Table 4.1: Macroeconomic Impact of Demographic Changes

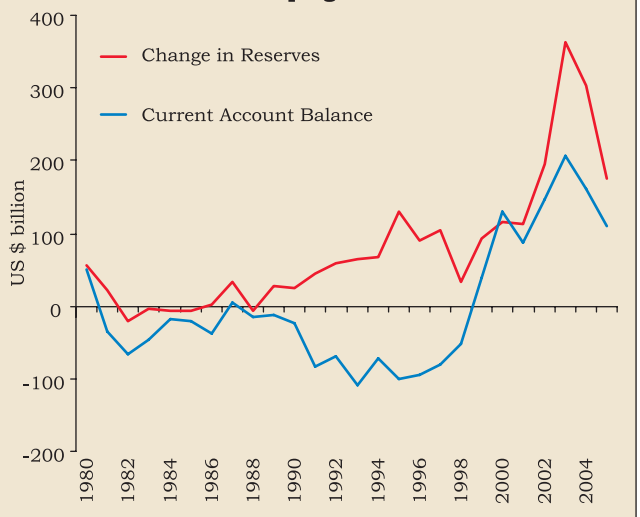
Item	Savings/ GDP	Investment/ GDP	Current Account/ GDP
1	2	3	4
Impact of :			
Share of Working Age Population	0.72	0.31	0.05
Share of Elderly Population	-0.35	-0.14	-0.25

Note : Results are based on panel instrumental variable regressions for a sample of 115 countries.
Source : World Economic Outlook, IMF, September (2004).

with implications for the conduct of monetary policy. While current global imbalances are more due to the US macroeconomic imbalances, the pattern of capital flows that may emerge from demographic transition is likely to be of a more enduring nature.

4.14 The behaviour of the capital flows during the 1990s reveals that these flows can increase rapidly but can be highly volatile. Surges in capital flows and the associated volatility have implications for the conduct of monetary, exchange rate and foreign exchange reserve policies. Emerging market economies, thus, need to be equipped to deal with such volatility in order to ensure monetary and financial stability. A striking feature of the last 3-4 years is the two-way movement of capital between EMEs and mature economies. Notwithstanding the recovery in capital flows, emerging market economies, as a group, have become net exporters of capital to the mature economies since 2000. Three key factors explain the recent movement in capital flows (IMF, 2004). First, EMEs have recorded current account surpluses. As against a deficit of US $ 65 billion per annum during the 1990s, the emerging economies recorded a surplus of US $ 149 billion during 2000-03 (Chart IV.4). The emergence of surpluses reflected the adjustment process in response to the financial crisis in Asia and elsewhere. Countries that experienced crisis had to reduce domestic absorption and increase exports to generate a trade surplus. This process is quite visible in the East Asian countries which have seen a sharp turnaround in their current accounts – as high as 17.8 percentage points of GDP in case of Malaysia and 14.5 percentage points of GDP in case of Thailand (Table 4.2).

Chart IV.4 : Reserves and Current Account: Emerging and Developing Economies



Source: World Economic Outlook Database, IMF, September (2004).

Table 4.2: Current Account Balances in Select Economies

(Per cent to GDP)

Country	1991-1996	1998-2003
1	2	3
China	0.9	2.4
India	**-1.1**	**-0.1**
Indonesia	-1.3	0.5
Korea	-2.3	3.1
Malaysia	-6.4	11.4
Philippines	-3.8	4.6
Thailand	-6.4	8.1
Mexico	-4.2	-2.8

Source : International Economic Trends, Federal Reserve Bank of St. Louis, July (2004).

4.15 Countries affected by the crisis were also forced 'external deleveraging', *i.e.*, a reduction in their external liabilities which also explains the pattern of capital outflows since 2001. This process which started in 1997 is still ongoing in some countries. Although non-crisis countries also exhibited some adjustment, the burden was mainly borne out by the crisis countries. The crisis-countries witnessed an average outflow of US $ 48.5 billion per annum during 2000-03 as compared with an average annual outflow of US $ 45.8 billion by non-crisis countries. The order of correction is better gauged when outflows are scaled by GDP; the outflows in the former group of countries at 2.8 per cent of their GDP were more than three-times of that recorded by non-crisis countries (0.9 per cent of GDP) (Table 4.3).

4.16 Second, global imbalances - large US current account deficit - also explain the reverse capital movements from EMEs. Third, the movements in capital flows reflect the accumulation of reserves to maintain a competitive exchange rate as well as self-insurance. Reflecting all these factors, foreign exchange reserves of the developing countries increased by US $ 1256 billion between December 1996 and June 2004 (Table 4.4). Concomitantly, net foreign assets have emerged as a key driver of reserve money (Table 4.5).

4.17 The need for reserves as self-insurance emanates from the volatile nature of the capital flows. It also reflects weakness in the existing international financial architecture (Reddy, 2003). Capital inflows can reverse quickly, leaving the country exposed to a liquidity crisis. In this context, the distinction between push and pull factors becomes important. While 'push' factors attribute capital flows to conditions in creditor countries, the 'pull' factors refer to conditions in debtor (recipient) countries. The former help explain the timing and

Table 4.3: Net Capital Flows to Emerging Markets

(US $ billion)

Item	1996	1997	1998	1999	2000	2001	2002	2003
1	2	3	4	5	6	7	8	9
All EMEs								
Net Inflows	**74.4 (1.3)**	**47.3 (0.8)**	**104.2 (1.7)**	**5.2 (0.1)**	**-99.1 (-1.6)**	**-49.9 (-0.8)**	**-90.5 (-1.4)**	**-137.7 (-1.9)**
Net Non-resident Inflows	274.9	334.9	255.7	211.8	192.8	132.9	150.0	243.4
Net Resident Inflows	-200.5	-287.6	-151.5	-206.6	-291.9	-182.9	-240.5	-381.1
Crisis Countries								
Net Inflows	**53.6 (2.4)**	**64.8 (2.9)**	**18.7 (1.0)**	**-21.6 (-1.3)**	**-33.9 (-1.9)**	**-30.4 (-1.8)**	**-57.6 (-3.7)**	**-72.0 (-3.9)**
Net Non-resident Inflows	138.8	128.9	76.2	50.8	48.6	-6.3	13.7	35.8
Net Resident Inflows	-85.2	-64.1	-57.5	-72.4	-82.5	-24.1	-71.4	-107.8
Non-crisis Countries								
Net Inflows	**20.9 (0.6)**	**-17.5 (-0.4)**	**85.5 (2.1)**	**26.8 (0.6)**	**-65.2 (-1.4)**	**-19.5 (-0.4)**	**-32.8 (-0.7)**	**-65.8 (-1.2)**
Net Non-resident Inflows	136.2	206.0	179.5	161.0	144.2	139.3	136.3	207.6
Net Resident Inflows	-115.3	-223.5	-93.9	-134.2	-209.4	-158.8	-169.1	-273.4

Note : 1. Crisis countries include Argentina, Brazil, Indonesia, Malaysia, Philippines, Russia, Thailand and Turkey.
2. Figures in brackets are percent to GDP.

Source : Global Financial Stability Report, IMF, September (2004).

magnitude of new capital inflows and the latter explain the geographic distribution of capital inflows. According to Calvo, Leiderman and Reinhart (1994), low US interest rates - hence, push factors - were dominant in explaining capital flows to Latin America in the early 1990s. Similarly, in the most recent episode of capital flows to the EMEs since early 2000, push factors appear to be playing a key role. According to estimates by Ferruci, Herzberg, Soussa and Taylor (2004), almost two-thirds of the compression in bond spreads between October 2002 and early 2004 can be attributed to push factors alone - in particular, the fall in the US short-term interest rates since 2001. This implies a need for caution by EMEs in borrowing too heavily during times of benign external financing environment, as a reversal in credit conditions is more often than not beyond the control of the borrower. Therefore, it would be more apposite if central banks attempt to hold these volatile flows into their reserves. The precautionary demand for reserves has increased, especially in the period after the Asian financial crisis. Aizenman, Lee and Rhee (2004) found that trade openness - the conventional explanatory variable - is no longer a significant factor in explaining international reserves after the crisis. In contrast, financial openness indicators and volatility of export receipts appear to be a significant factor in explaining the reserve accretion (Table 4.6). Precautionary demand for reserves by EMEs apparently outweighs the costs associated with reserve build-up. The overall experience is that capital flows are characteristically volatile, both in terms of longer term waves and even more so in the short term. The longer term waves influence monetary policy thinking during each era, whereas the short term volatility has to be mitigated through day to day monetary policy operations. Monetary authorities, therefore, need to decide as to whether capital flows are durable or reversible. In case, flows are perceived to be reversible, authorities need to be prepared through building up foreign exchange reserves.

Table 4.4: Total Reserves Minus Gold

(US $ billion)

Area/Country	Dec-1996	Dec-2003	June-2004	Variation @
1	2	3	4	5
All Countries	**1647**	**3156**	**3463**	**1816**
Industrial Countries	**789**	**1219**	**1349**	**560**
Japan	217	663	808	591
Europe	89	252	272	183
United States	64	75	72	8
Developing Countries	**858**	**1938**	**2114**	**1256**
Asia	495	1248	1385	890
China,P.R.: Mainland	107	408	475	368
Taiwan Prov.of China	88	207	230	142
Korea	34	155	167	133
China,P.R.:Hong Kong	64	118	121	57
India	**20**	**99**	**115**	**95**
Singapore	77	96	102	25
Russia	11	73	84	73
Mexico	19	59	60	41
Brazil	58	49	50	-8
Malaysia	27	45	54	27

Note : @ Variation between June 2004 and December 1996.
Source : International Financial Statistics (CD-ROM), IMF.

4.18 As the preceding analysis shows, monetary authorities are required to take cognisance of external developments on their domestic economy. In this context,

Table 4.5: Ratio of Net Foreign Assets to Reserve Money

(Per cent)

Country	1990	1996	2000	2001	2002	2003
1	2	3	4	5	6	7
Australia	127.9	56.1	124.7	116.8	115.8	138.4
Brazil	81.7	140.7	113.7	103.0	68.1	80.8
Chile	652.4	537.4	450.8	453.6	490.5	447.9
Colombia	131.3	140.3	189.2	205.5	220.4	189.9
Mexico	99.5	140.1	130.7	127.0	128.8	138.0
China,P.R.: Mainland	12.8	35.6	41.1	47.6	49.5	56.4
India	**11.9**	**44.5**	**65.8**	**74.0**	**98.3**	**117.9**
Indonesia	143.0	164.3	188.0	168.0	163.3	154.6
Korea	78.3	109.5	430.5	434.4	409.0	476.2
Malaysia	149.0	109.6	273.7	292.1	307.9	373.6
Pakistan	13.2	19.3	25.2	42.5	79.9	90.6
Philippines	40.3	91.3	189.8	228.7	210.5	209.5
Singapore	438.9	592.4	753.9	698.6	714.9	790.2
Thailand	194.1	215.5	206.4	203.3	227.7	179.4
Czech Republic	…	108.3	103.2	104.0	276.8	247.5
Hungary	1141.7	243.9	225.5	213.5	149.8	156.1
Poland	55.3	153.2	234.0	166.7	184.9	193.3
Russia	…	62.4	113.8	122.1	127.9	122.8

… **:** Not Available

Source : International Financial Statistics (CD-ROM), IMF.

one issue is: whether *ex ante* coordination of monetary policies would be useful? Obstfeld and Rogoff (2002) argue that, even in a world with significant economic integration, the welfare gains from international coordination are likely to be quantitatively small in comparison to gains from domestic stabilisation policy. Their result is, however, contingent upon the premise that domestic monetary policy rules will improve over time and that international markets will become complete over time. Clarida, Gali and Gertler (2002), on the other hand, argue there may be benefits from coordination. An *ex post* empirical assessment of monetary policy for 14 OECD countries suggests that monetary policy interdependence has increased (Bergin and Jorda, 2004). There is some evidence of increased business cycle synchronisation, at least for advanced economies (Box IV.1).

Exchange Rates

4.19 The experience of living with capital flows since the 1970s has fundamentally altered the context of

Table 4.6: Reserve Adequacy Indicators

(Per cent)

Country	Outstanding Reserves (US $ Billion) 2003	Ratio of Foreign Exchange Reserves to			Spreads *Reserves to GDP
		GDP	Short-term Debt	Bank Deposits	
1	2	3	4	5	6
Brazil	49.1	9.9	1.8	34.9	0.45
China	408.2	28.9	14.2	…	0.17
India	**98.9**	**17.2**	**6.4**	**31.1**	…
Indonesia	36.2	17.4	1.5	34.4	…
Korea	155.3	25.7	3.4	34.7	0.19
Malaysia	44.5	43.2	5.4	46.2	0.43
Mexico	59.0	9.4	2.2	39.3	0.19
Philippines	13.5	17.0	1.6	34.5	0.70
Russia	73.2	16.9	3.1	77.4	0.43
Thailand	42.1	29.5	2.1	32.0	0.20

... : Not Available

Note : Spreads are EMBI Global spreads as of December 31. The last column, therefore, provides an estimate of the opportunity cost of reserves.

Source : Global Financial Stability Report, IMF, September (2004).

Box IV.1

Business Cycle Synchronisation

Forces of globalisation have led to substantial increases in international trade as well as financial flows during the 1990s. Private capital flows (net) to the EMEs during the 1990s were eight times of that during the 1980s while growth in trade has outpaced growth in output. An issue in this context is whether increased integration has led to a larger degree of synchronisation of business cycles across countries. A global shock - say, an increase in global oil prices - will affect all countries simultaneously. As regards country-specific shocks, a number of forces are at work - some tend to increase co-movement while others reduce co-movement (Brooks, Forbes, Imbs and Mody, 2003). For countries quite open to external trade, economic developments in their partner countries can get transmitted through exports and imports and this is expected to increase the co-movement of output across countries. Enhanced financial integration, on the other hand, allows countries to smoothen their consumption through borrowing and lending in international markets. This can weaken the output co-movement. Financial integration can, however, lead to an increase in output co-movement through demand-side effects. Illustratively, if investors from different countries have a significant fraction of their investments in a particular stock market, then large movements in that stock market can induce wealth effects across countries and hence output co-movement (Kose, *et al.*, 2003). Furthermore, due to herd behaviour, capital flows move in similar patterns across countries which can also increase co-movement. Finally, trade as well as financial integration allows countries to specialise in industries in which they have a comparative advantage. This can result in more vulnerability to industry- or country-specific shocks but reduce cross-country output movements. A diversified structure of export destinations tends to weaken the co-movement of business cycles (Anderson, Kwark and Vahid, 1999). In view of various offsetting factors at work, the net impact of trade and financial integration on business cycles synchronisation remains uncertain in theory and, therefore, it becomes an empirical issue to gauge the net effect (Chart IV.5).

Baxter and Kouparitsas (2004) find that variables such as bilateral trade between countries, total trade in each country, sectoral structure, similarity in export and import baskets are significant determinants of business cycle co-movement when considered in isolation. Amongst these variables, however, only bilateral trade is a "robust"[1] determinant of co-movement. Greater similarity in industrial structure is not found to be "robust", in contrast to findings of Imbs (2003).

As regards temporal trends in co-movement of output, most studies find evidence that synchronisation has increased in the case of advanced economies, reflecting faster cross-border transmission of shocks (Kose, *et al.*, 2003; Bordo and Helbling, 2003). Some studies, however, suggest that synchronisation during the 1980s and the 1990s was broadly unchanged from that in the 1960s and the 1970s, mainly due to common international shocks themselves being smaller (Stock and Watson, 2003).

As regards emerging economies, evidence does not suggest any increase in output co-movements - rather, there appears to be a decline in output correlations (Kose, *et al.*, 2003). Cross-country consumption correlations also showed no increase during the 1990s. The empirical evidence, therefore, suggests that developing countries were unable to gain from the benefits of international risk sharing. Business cycles synchronisation in the Asia-Pacific region is more by way of similar structural features such as technological know-how and manufacturing structure than by way of trading linkages (Crosby and Voss, 2002).

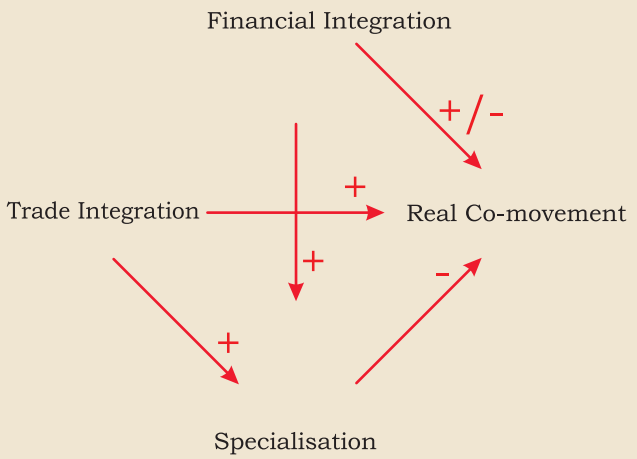
According to IMF (2001), although transmission channels have intensified due to globalisation, there is no global cycle. Country-specific shocks such as German unification and the bursting of the Japanese asset price bubble have interrupted integration trends. Lack of bilateral data complicates the analysis of transmission channels over time. Therefore, it is difficult to decide whether increased correlations were the result of tighter transmission channels or of more frequent common shocks. Cultural similarity and institutional factors such as accounting standards, legal systems, common language and receptiveness to new technologies have a relatively significant impact on growth correlations rather than the traditional transmission channels such as similarity of monetary policy, integration of long-term bond markets and common industry structure (Otto *et al.*, 2001).

To conclude, the empirical evidence suggests that the co-movement between business cycles has increased in recent years. Thus, economic developments abroad now have a larger degree of influence on the domestic economy. Monetary authorities, consequently, need to devote more attention to global economic developments in framing their forecasts of inflation and output. Furthermore, the financial stability objective assumes greater importance due to threats of contagion and herding.

monetary policy. In particular, there is a dramatic shift in the still unsettled debate on the determinants of the exchange rate and the choice of the appropriate exchange rate regime, although the weight of opinion is clearly in favour of a flexible regime. According to conventional wisdom, it was trade flows which were the key determinants of exchange rate movements. In more recent times, the importance of capital flows in determining the exchange rate movements has increased considerably, rendering some of the earlier guideposts of monetary policy formulation possibly anachronistic. On a day-to-day basis, it is capital flows which influence the exchange rate and interest rate arithmetic of the financial markets. Capital flows have

[1] The authors define a variable to be "robust" if it has a significant coefficient in a regression when all other potential explanatory variables are also included.

Chart IV.5 : Integration and Co-movement



Source: Brooks, Forbes, Imbs and Mody (2003).

been observed to cause overshooting of exchange rates as market participants act in concert while pricing information (Chart IV.6). (Jalan, 2003; Mohan, 2004a).

4.20 For more open economies, sharp movements in the exchange rate can have significant effects on domestic inflation as well as on domestic balance sheet in view of liability dollarisation. This raises the issue of appropriate monetary policy response to exchange rate movements. Three alternative views exist on this issue (Ho and McCauley, 2003). According to the first view - the strict constructionist view - monetary policy should respond to the exchange rate only to the extent that it affects inflation. The second view - flexible inflation targeter view - holds that exchange rate can also be a legitimate policy objective alongside inflation and output targets.

4.21 The third view - Singaporean view - believes that for a sufficiently open economy, stabilising inflation requires close management of the exchange rate. Managing the exchange rate, in this view, is not an objective by itself but a means to achieve the objective of low inflation. As EMEs are more exposed to the influence of the exchange rate, they may be required to accord a bigger role in policy assessment and decision-making. Although a real depreciation of the exchange rate may be helpful for external competitiveness and growth, it also increases the vulnerability from factors such as high exchange rate pass-through and liability dollarisation. There is, thus a "fear of floating" (Calvo and Reinhart, 2002) although there is some evidence that exchange rate pass-through to prices has generally tended to decline during the 1990s (see Chapter V). Empirical evidence suggests that not only EMEs but even industrial economies also keep an eye on the exchange rate and often intervene in the foreign exchange market. Out of a sample of 18 countries (emerging as well as industrial countries) studied by Ho and McCauley (*op cit.*), 12 countries intervened in the foreign exchange market, above and beyond the impact of exchange rate on inflation.

4.22 That even industrial economies are quite concerned with exchange rate is amply illustrated by the recent experience of New Zealand. According to the Reserve Bank of New Zealand (2004), "the amplitude of the New Zealand exchange rate cycle has long been a concern. The exchange rate varies to a far greater extent than the underlying economic situation warrants. …Excess exchange rate variation makes engaging in business more difficult, reducing investment

Chart IV.6 : Exchange Rates (*vis-a-vis* US Dollar)

Source : International Financial Statistics (CD-ROM), IMF.

and thereby restricting the opportunities for New Zealand in growth. Excessive exchange rate variability can also make the Bank's task of achieving and maintaining price stability more difficult, potentially leading to unnecessary output, inflation and interest rate variability. … As inflation has been brought down and stabilised around the world and as a result economies have become more stable overall, exchange rate cycles have not noticeably diminished". Therefore, the Reserve Bank of New Zealand whose extant stance was to use foreign exchange reserves to "intervene only if the foreign exchange market became disorderly" recommended, in March 2004, that as one of its monetary policy tools, "it should have the capacity to intervene in the foreign exchange market to influence the level of the exchange rate".

4.23 The above discussion suggests that monetary authorities cannot ignore movements in exchange rates, at least in EMEs. This raises the issue: whether monetary policy reaction functions such as Taylor-type rules should be augmented to include exchange rates. According to Ball (1998), the policy instrument for an open economy should be a monetary conditions index (MCI). MCI is a weighted average of the short-term interest rate and the exchange rate. The underlying assumption of the MCI is that higher interest rates and an appreciation of the exchange rate are qualitatively equivalent, *i.e.*, for an open economy, if the exchange rate were to appreciate, the interest rates should be lowered and *vice versa* to keep output growth and inflation at their desired trajectory. The use of the MCI as an indicator of market conditions, however, may be misleading since it depends upon the nature of the shocks to the exchange rates (Mishkin, 2001). Illustratively, in the presence of cost-push shocks, the interest rate needs to increase - and, not decrease - in combination with exchange rate appreciation to stabilise inflation expectations (Detken and Gaspar, 2003). Notwithstanding this debate on the usefulness of MCI, exchange rate movements remain a source of concern to the policy authorities in emerging markets.

4.24 For the majority of developing countries which continue to depend on export performance as a key to the health of the balance of payments, exchange rate volatility has had significant real effects in terms of fluctuations in employment and output and the distribution of activity between tradables and non-tradables. In the fiercely competitive trading environment, where countries seek to expand market shares aggressively by paring down margins, even a small change in exchange rates can develop into significant and persistent real effects. The heightened exchange rate volatility of the era of capital flows has had adverse implications for all countries except the reserve currency economies. The latter have been experiencing exchange rate movements which are not in alignment with their macro imbalances and the danger of persisting currency misalignments looms large over all non-reserve currency economies (Mohan, 2004a).

Global Macroeconomic Imbalances

4.25 On the positive side, globalisation has contributed to sustained lowering of inflation as well as inflation expectations during the last two decades (see Chapter V). At the same time, globalisation appears to hold a threat for future inflation. One such threat emerges from the US twin deficits. Fiscal as well as current account deficits in the US, at present, are close to 5 per cent of GDP. This order of current account deficit being run by the US would probably not have been funded in the past as readily as it is today. It is the increased degree of financial globalisation that has permitted the financing of such a large order of US current account deficit. However, such a large deficit may not be sustainable and, at some point of time, the US current account deficit has to narrow. As observed by Obstfeld (2004), unusually large current account deficits "should remain high on policymakers' list of concerns, even for the richer and less-constrained countries. Extreme imbalances signal the need for large and perhaps abrupt real exchange rate changes in the future, changes that might have undesired political and financial consequences, given the incompleteness of domestic and international capital markets". The threat to global inflation emerges from the adjustment dynamics that might accompany the reduction in the US current account deficit (Box IV.2). Depreciation of the US dollar would increase external demand and this would put upward pressure on aggregate demand and inflation. The concomitant monetary tightening in the US can have serious implications for the sustainability of growth not only in the US but in several developing countries. According to Ferguson (2004), however, the correction of the US current account deficit, if properly managed, need not lead to undue distress. "To minimise the harmful effects, there is a need for a coordinated and cooperative approach. The current account deficit in the US is, to a large extent, a manifestation of its large saving-investment gap which widened to a high level of 5.3 per cent in 2003. The US, therefore, will have to try to

Box IV.2
Global Macroeconomic Imbalances

The US has been a key engine of the global economic recovery since the late 1990s. Accommodative monetary and fiscal policies have enabled a strong growth in the US economy in the aftermath of the bursting of the information technology bubble. While real activity in the US has provided stimulus to activity in the rest of the world, it has been accompanied by large and growing twin deficits - fiscal as well as current account deficits. The current account deficit of the US has widened from US $ 117 billion in 1996 to an estimated US $ 631 billion in 2004 or from 1.5 per cent of GDP to an estimated 5.4 per cent of GDP. The deficit is expected to remain above five per cent in 2005. Large US current account deficits have been mirrored in huge current account surpluses and rising foreign exchange reserves in the rest of the world, mainly the Asian countries (Table 4.7 and Chart IV.7).

Existing research indicates that large current account deficits typically undergo correction when these are in excess of some threshold. For industrial economies, this threshold is estimated to be five per cent of GDP (Freund, 2000; Milesi-Ferretti and Razin, 2000). For the US, existing studies place the threshold between 2.5-3.5 per cent of GDP (Mann, 2003) and 4.5 per cent of GDP (Obstfeld and Rogoff, 2002). An analysis of the three largest swings in the US current account over the past five decades shows that the exchange rate had a prominent role in these swings. Almost two-thirds of the widening of the US trade deficit from 1996 to 2003 can be attributed to appreciation of the US dollar between 1995 and 2002. In view of (i) income elasticity of US exports being higher than its imports and (ii) US GDP growth being in excess of the rest of the world, exchange rates will have a prominent role in the adjustment of the present current account imbalances. With unchanged growth rates in the US and the rest of the world, the US dollar would need to depreciate by nearly 33 per cent - equivalently, the non-US currencies would have to appreciate, on average, by 50 per cent - to balance the US trade account (Gagnon, Leahy and Thomas, 2004). According to Obstfeld and Rogoff (2004), the trade-weighted US dollar needs to depreciate, at least, by another 20 per cent. While further deepening of the international financial markets can sustain the US current account imbalances, it can only postpone the day of reckoning as the ultimate exchange rate adjustments will have to be more extreme (Obstfeld and Rogoff, *op cit.*).

curb household and government borrowings and strengthen national savings. The Euro area continues to depend largely on external demand. It, therefore, will need to pursue some structural reforms, especially in the labour policies, to boost domestic demand. Japan also needs to continue to take some concrete measures to strengthen its financial system and reduce huge fiscal imbalances" (Mohan, 2004b).

Table 4.7: Global Imbalances on the Current Account

(US $ billion)

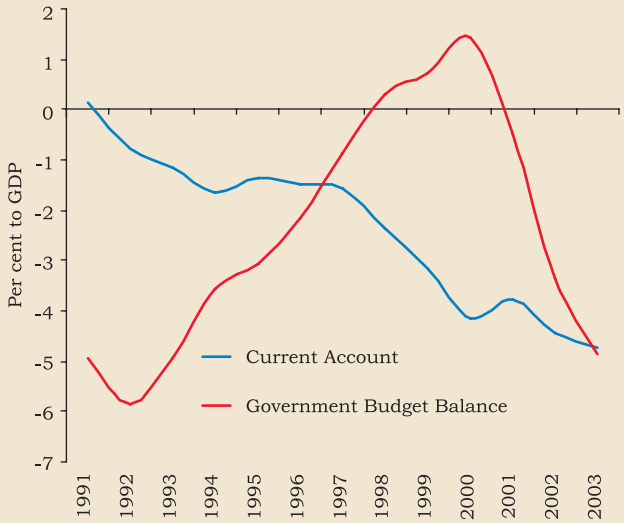
Country/Region	1996	2002	2003	2004	2005 (Projections)
1	2	3	4	5	6
USA	-117	-474	-531	-631	-642
Euro area	78	53	26	72	88
Japan	66	113	136	159	149
Developing Asia	-38	70	86	69	69
Middle East	11	29	58	104	108
As per cent to GDP					
USA	-1.5 (-2.1)	-4.5 (-3.3)	-4.8 (-3.8)	-5.4 (-4.4)	-5.1 (-3.9)
Euro area	1.1	0.8	0.3	0.8	0.9
Japan	1.4	2.8	3.2	3.4	3.2
Developing Asia	-1.9	2.9	3.1	2.2	2.0
Middle East	2.2	4.5	8.1	12.7	12.5

Note : Figures in brackets are fiscal deficit/GDP ratios (General government structural balance as per cent of potential GDP).
Source : World Economic Outlook, IMF, September (2004).

Surges in Capital Flows and Monetary Policy

4.26 As noted earlier, EMEs have been grappling with large surpluses on their current as well as capital accounts in the recent 3-4 years. The excess supplies in the foreign exchange markets pose threat to price stability in EMEs. Following Mundell, it is well-known that the trinity of desirable objectives, *viz.*, a fixed/ managed exchange rate (for relative price stabilisation

Chart IV.7 : Macroeconomic Balances in the US



Source : International Economic Trends, Federal Reserve Bank of St. Louis, July (2004).

purposes and as a credible nominal anchor), an independent monetary policy (for output stabilisation purposes) and an open capital account (for greater efficiency) can not be achieved simultaneously. Since only two out of the three desirable objectives are mutually consistent, the policy makers have to give up one of the objectives leading to what is called "policy trilemma" (Obstfeld and Taylor, 2002). Over the past century, countries have experimented with alternative monetary and exchange rate arrangements. The way out of the trilemma was provided by giving up monetary policy independence during the gold standard era (1870-1914), free movement of capital during the Bretton Woods era and exchange rate fixity in the recent decades. The impossible trinity can also be viewed as a constrained sum in which fractions are possible (McCauley 2001). That is, an independent monetary policy (1) might be combined with semi-fixity of the exchange rate (1/2) and a halfway open capital account (1/2). Capital account openness, therefore, should not be viewed as an all-or-nothing proposition and this appears to be the practice in most of the developing world.

4.27 Empirical evidence shows almost full adjustment of local interest rates to foreign interest rates during the 1990s, irrespective of the exchange rate regime, for most of the countries, with the notable exception of Germany and Japan. The speed of adjustment of domestic rates is, however, faster for pegged exchange rate regimes than under other regimes. The evidence thus suggests falling monetary independence during the 1990s, *albeit* with some degree of temporary monetary independence for flexible exchange rate countries (Calvo and Reinhart, 2002; Obstfeld, Shambaugh and Taylor, 2003; Frankel, Schmukler and Serven, 2002). Monetary authorities attempt to overcome the constraints imposed by the impossible trinity in the short-run through sterilisation using a variety of instruments.

4.28 In a fixed exchange rate regime, excess forex inflows would perforce need to be taken to forex reserves to maintain the desired exchange rate parity. On the other hand, in a fully floating exchange rate regime, the burden of adjustment would be borne by the exchange rate. In case capital flows are persistent and large, the exchange rate may appreciate significantly with implications for external competitiveness and overall macroeconomic stability. Accordingly, in practice, the central banks intervene in the forex markets in almost all countries. At the same time, a more intensive approach to intervention may be warranted in the EMEs as capital flows in these economies are often relatively more volatile and sentiment driven, not necessarily being related to the fundamentals in these markets. Such volatility imposes substantial risks on market agents, which they may not be able to sustain or manage (RBI, 2004b).

4.29 The absorption of foreign exchange by the central banks, however, has its own limitations. Intervention purchases by the central bank result in an expansion in base money and, through the money multiplier process, in broader monetary aggregates and may spillover into domestic inflation. This may hurt external competitiveness, even with an unchanged nominal exchange rate. Thus, the objective of the monetary authority to prevent nominal appreciation would be defeated as the concomitant monetary expansion ends up with similar adverse consequences for exports and, in turn, output and employment.

4.30 It is, therefore, critical that the adverse effect of purchases of foreign currency by the central bank on monetary aggregates and inflation be offset or 'sterilised'. The classical form of sterilisation is through the use of open market operations (OMOs), that is, selling Treasury bills and other instruments to reduce the domestic component of the monetary base. Narrowly defined, sterilisation is the exchange of bonds rather than money for foreign exchange (Schadler *et al.,* 1993). Open market sales of government bonds (or central bank's own bills) suck out liquidity from the financial system and, thus sterilise the expansionary effect of money supply. Sterilisation is the most popular policy response and has been virtually used by all countries facing capital surges during the 1990s. It also avoids the burden on the banking system of higher reserve requirements. Moreover, by limiting the role of banking system in intermediating the flows, sterilisation operations reduce bank's vulnerability to sudden reversal of flows (Lopez-Mejia, 1999). Apart from government bonds/ bills, central banks in a number of countries like Chile, China, Colombia, Indonesia, Korea, Malaysia, Poland, the Philippines, Peru, Russia, Sri Lanka, Taiwan and Thailand have resorted to the issuance of their own securities to conduct open market operations for sterilisation (Box IV.3).

4.31 Sterilisation - whether through Government securities or central bank's own securities - has its own limitations. It is important to know as to whether capital flows are temporary or permanent. In case such flows are believed to be permanent, sterilisation may not be an appropriate policy response. For

Box IV.3

Central Bank Bills

The effective conduct of open market operations by the central bank as a tool for sterilisation is often constrained by the depth of the Government bond markets. This may be due to inadequate volume of Government securities for the conduct of open market operations and undeveloped/underdeveloped markets for Government securities. Many central banks have accordingly taken recourse to issuances of their own securities to absorb excess liquidity. The choice between issuing central bank securities or offering special treasury issues created specially for the purposes of monetary policy has depended mostly on institutional and market considerations (Axilrod, 1998; RBI, 2003d).

Central bank issues have been used to conduct open market operations in Indonesia, where domestic Government debt is not allowed. In the Philippines, the central bank took the same course in the early 1980s because it did not have access to sufficient Government debt. The Bank of Korea (BoK) introduced Monetary Stabilisation Bonds (MSBs) in 1961. The Czech National Bank (CNB) issued its own debt in 1992 to mop up liquidity from the banking system. The National Bank of Poland (NBP) conducted sterilisation operations by introducing central bank securities of different maturities during 1994-97. From 1995 to mid-1997, the Bank of Thailand issued bonds to absorb excess liquidity arising from huge capital inflows from abroad and in the context of the Government's budget surplus. In 1993, the Bank Negara Malaysia began to issue Bank Negara Bills which are similar to Malaysian Government Treasury Bills. This was since treasuries issuance was dwindling in line with the shrinking Government deficit. Bank Negara Malaysia issued BNM bills equivalent to 2 per cent of GDP in 2000; the issuances have increased sharply in recent years, leading to substantial sterilisation costs (RBI 2003d). In Taiwan, the central bank issues Negotiable Certificates of Deposits (NCDs) to mop up excess liquidity from the financial system. The NCDs are issued through competitive/non-competitive bidding in various denominations with maximum maturity of three years and sold, either on outright basis or under repos. The People's Bank of China (PBC) started outright issue of central bank bills from April 22, 2003 in view of the limited Government bond holdings of the central bank.

Country experiences show that excessive reliance on central bank securities for conduct of open market operations puts a strain on the central bank's balance sheet. Costs of sterilisation mount as continuous sterilisation bids up the rates at which successive issuances can be made. This erodes the profitability of the central bank and several central banks have suffered losses - Chile (1.0 per cent of GDP per annum during 1993-98), Colombia (0.5-0.7 per cent in the early 1990s), Mexico (0.2-0.4 per cent during 1990-92) and Poland (1.0 to 1.15 per cent of GDP during 1995-97) (Ariyoshi *et al* 2000; RBI 2003d).

Moreover, issuance of central bank bills results in two sets of competing risk-free papers (along with government securities), with a similar yield curve (RBI, 2003d). In countries with large fiscal deficits, the problem is exacerbated by public confusion regarding the relationship between the two. Where the central bank is vested with the responsibility for public debt management, issuance of the central bank bills can potentially sharpen the trade-off for the central bank between the objectives of monetary policy and those of public debt management. It also leads to fragmentation of debt markets, which can lead to instability in the Government borrowing programme.

economies with imperfect asset substitutability resulting from impediments to free cross border movements of capital and with a fully/partly regulated interest rate regime, sterilisation can be effective to an extent. Sustained sterilisation operations may, however, keep domestic interest rates high. This could attract even larger short-term inflows and thereby increase the overall volume of capital inflows rather than reducing them (Lee 1996; Montiel and Reinhart, 1999; RBI, 2004a). By keeping domestic interest rates high, sterilisation could also alter the composition of capital flows, away from stable long-term FDI inflows and towards volatile short-term and portfolio inflows. The intensity of the open market operations has varied substantially across countries and across time. For example, capital inflows were almost fully sterilised in Chile during the first half of 1990, Indonesia during 1991-92, Malaysia from mid-1991 through early 1993 and Sri Lanka in 1991-93 (Folkerts-Landau and Ito, 1995). Most of the East Asian developing countries have been able to employ sterilised intervention effectively.

4.32 Since domestic securities sold by the central bank in its OMO sales typically earn higher interest rate than that on foreign securities acquired by the central bank, sterilisation operations involve costs, termed as quasi-fiscal costs (QFCs), and these QFCs could turn out to be substantial with adverse implications for the central bank balance sheet *per se* and future conduct of monetary policy. For Latin American countries, these QFCs have been estimated to be between 0.25 and 0.5 percent of GDP (Calvo *et al.*, 1993; Khan and Reinhart, 1995). Although QFCs may not be large *per* se, these could increase significantly during brief surges in capital flows and may influence the future course of central bank sterilisation (Kletzer and Spiegel, 1998). In case, capital flows continue to persist, these QFCs can become quite large and these may render further

sterilisation operations unsustainable. In such a scenario, central banks are quite likely to reduce the scale of their sterilisation operations and will be forced to let burden of adjustment to be borne by exchange rate. Kletzer and Spiegel (2004) find support in favour of this hypothesis for a group of 22 countries using quarterly data between February 1984 and April 1992. On the whole, however, opportunity cost of reserves seldom exceeds 0.5 per cent of GDP (see Table 4.6) (IMF, 2004). Apart from losses on account of interest rate differentials, central banks may be exposed to capital losses in case their exchange rates were to appreciate sharply. According to Higgins and Klitgard (2004), a 10 per cent appreciation of the domestic currency could lead to domestic currency capital losses ranging from 3 per cent of their GDP for Korea and China to 8 per cent for Taiwan and 10 per cent for Singapore.

4.33 Countries have, therefore, often supplemented sterilisation measures with a number of other steps - the "belts and braces" strategy, which combines indirect instruments of monetary policy with some capital controls. The choice of instruments for sterilisation is often critical, especially as the degree of market orientation and the associated incidence of the cost on the central bank and the banking system varies a great deal (Jadhav, 2003). Policy responses have been conditioned by a number of factors, *viz*., the country's anti-inflationary track record, the openness of the economy to foreign trade, the depth of the domestic bond market, the degree of irreversibility of trade reforms, the health of the financial sector, the presence of non-banks in the financial system, the flexibility of fiscal policy and the health of public finances, the strength of the regulatory and supervisory framework, and the market's perception about the credibility and consistency in macroeconomic policies.

4.34 Apart from sterilisation through OMO sales, increase in cash reserve requirements and imposition of Tobin-type tax measures have been used by a number of countries (Table 4.8 and Box IV.4). Recent examples

Table 4.8: Use of Reserve Requirements to Manage Capital Inflows

Country	Increase in Reserve Requirements
1	2
Argentina (1991)	From 40 per cent to 43 per cent (August 1993) #
Brazil (1992)	From 10-15 per cent to 30 per cent on savings deposits; 100 per cent marginal reserve requirement on demand deposits, 20 per cent (subsequently increased to 30 per cent) on time deposits and 15 per cent reserve requirement on loans for the purchases of goods also introduced (July 1994-December 1994)
Chile (1990)	Non-remunerated 20 per cent reserve requirement on deposits and loans in foreign currency to be maintained for one year and a 30 per cent marginal reserve requirement on inter-bank deposits introduced (January 1992-May 1992)
Colombia (1991)	Marginal reserve requirement of 100 per cent imposed on all new deposits; subsequently, replaced by an increase in reserve requirements on most deposits (January 1991-September 1991)
Czech Republic (1992)	From 9 per cent to 12 per cent (August 1994)
China $	Reserve requirement increased in two-steps: from 6 per cent to 7 per cent (effective September 21, 2003) and further to 7.5 per cent (effective April 25, 2004)
Kenya (1992)	From 12 per cent to 20 per cent (October 1993-March 1994)
Malaysia (1989)	From 3.5 per cent to 11.5 per cent (May 1989-1994) @
Mexico (1990)	A compulsory liquidity coefficient for dollar liabilities set at 15 per cent (April 1992)
Sri Lanka (1991)	From 13 per cent to 15 per cent (November 1991 to February 1994)
Thailand (1988)	From 0 per cent to 7 per cent (August 1995).

Note : Figures in brackets next to a country name are the first year of the surge in inflows while the period in brackets in column 2 is the period over which the ratio was increased.

\# On domestic and foreign currency demand deposits. In addition, a three per cent reserve requirement was also introduced on domestic and foreign currency 30-89 day time deposits.

$ In addition to increase in reserve requirements, a differentiated reserve requirement system was also put in place whereby the reserve requirements applied to financial institutions are dependent upon a number of criteria such as capital adequacy, asset quality, non-performing loans.

@ The base for reserve liabilities was extended to include (i) all outstanding ringgit received through swap transactions with non-residents (effective September 16, 1991) and (ii) foreign currency deposits and transactions such as foreign currency borrowing from foreign banking institutions and inter-bank borrowing (effective January 3, 1994).

Sources : 1. Reinhart and Reinhart (1999).
2. People's Bank of China website.

Box IV.4

Tobin Type Taxes : Country Experiences

In the context of large capital flows, countries have used a wide range of instruments. One such instrument consists of explicit taxes or tax-like measures on inflows. The simplest example of an explicit tax is a tax on foreign exchange trading or on short-term cross-border bank loans, commonly known as the Tobin tax. Tobin tax, first proposed in 1972, was originally intended to deter short-term currency speculation. The burden of a Tobin tax is inversely proportional to the length of the transaction, *i.e.*, the shorter the holding period, the heavier the burden of tax (Table 4.9).

Variants of Tobin tax are available in the cross-country experience. An interest equalisation tax that equates the rate of return on domestic and foreign assets was imposed on capital flows in Brazil in 1993 on some classes of foreign exchange transactions. These were expanded in 1994 but scaled back, in 1995, in response to the Mexican crisis. Chile and Colombia have resorted to a system of unremunerated reserve requirement (URR) to discourage short-term capital inflows.

Chile has relied on URR on two occasions: 1978-82 and 1991-98. In both episodes, foreigners wishing to move funds into Chile were required to make non-interest bearing deposits at the central bank - a system equivalent to a tax on capital inflows. During the 1978-82 episode, inflows with maturities below 24 months were prohibited while those with maturities from 24 months to 66 months were subject to reserve requirements of 10-25 per cent of the value of inflows. Chile reintroduced restrictions on capital inflows in June 1991 in the face of a surge in capital inflows. Originally, all portfolio inflows were subject to a URR of 20 per cent. For maturities less than one year, the deposit was required to be maintained for the maturity of inflows; for inflows with maturities above one year, deposit was to be maintained for a period of one year. In view of attempts to avoid the URR by mis-stating portfolio inflows as trade credits or as direct investment inflows, the coverage of URR was extended to trade credits as well as FDI loans in July 1992. Moreover, the URR was raised to 30 percent, and its holding period was set at one year, independent of the length of stay of the flow. In an effort to close additional loopholes, the controls were extended, in 1995, to Chilean stocks traded on the New York Stock Exchange and to international bond issues. In order to reduce the risk of contagion from the Asian financial crisis, URR was reduced to 10 per cent in June 1998 and finally withdrawn in September 1998.

Colombia also introduced capital controls in the form of a URR on external borrowing in September 1993. In an effort to target short-term inflows, the URR was limited to loans with maturities up to 18 months. The URR was subsequently modified several times to better target short-term inflows (with higher rates applied to shorter maturities). As in Chile, following the Asian crisis, the URR was substantially reduced to contain exchange rate pressures.

The effectiveness of these tax measures remains a matter of debate. As these measures are subject to evasion, authorities are forced to widen the coverage repeatedly to make them effective (Valdes-Prieto and Soto, 1998; Cowan and De Gregorio, 1997). In Chile, the controls became effective in discouraging short-term flows only after 1995, when the implicit rate of taxation imposed by the controls increased significantly. However, the reduction in short-term flows was fully compensated by increases in long-term capital inflows and the aggregate capital moving into Chile was not altered by the controls. As there was no significant effect on overall capital flows, the measures could not check real appreciation although controls had some, *albeit* small, effect on domestic interest rates (Soto, 1997; De Gregorio *et al*, 1998; Edwards,1999). As regards their contribution to financial stability, these controls may have been able to protect Chile from relatively small external shocks but were not effective in preventing “contagion” from very large shocks stemming from East Asia in 1997-1999 (Edwards, 1999).

Table 4.9: Tax Rate on Short-term Capital Inflows According to Maturity

(Per cent)

Number of Months	Chile	Colombia
1	2	3
1	95	140
2	90	137
3	74	135
6	55	127
12	30	112
18	16	100
24	9	88
36	3	69
48	1	56
60	0	43

Source : Reinhart and Smith (1998).

include a two-step increase in reserve requirements by China and a differential reserve requirement system (Box IV.5). Countries have also imposed differential reserve requirements between domestic and foreign currency liabilities and/or resident and non-resident deposits. A key limitation of across-the-board reserve requirements is the dead weight cost borne by the market in the form of an indirect tax on the banking system (Jadhav, 2003). Reserve requirements widen deposit-lending rate spreads and promote disintermediation as new institutions and instruments arise to bypass controls, thereby hampering efficient allocation of credit. For a sample of 20 episodes, Reinhart and Reinhart (1999) found that spreads widened in as many as 17 episodes. Both depositors and lenders share the tax: while deposit rates fell in 14

Box IV.5

Sterilisation of Capital Flows: The Chinese Experience

China has emerged as a key driver of world growth. Its real GDP has recorded an annual average growth of almost nine per cent per annum in the recent decade. According to purchasing power estimates, China contributed almost one-third of global growth in the recent three-year period (2000-2003). At the same time, concerns are being expressed that the Chinese economy is getting over-heated due to excessive investment. Excess demand in sectors such as real estate, cement and steel where investment has been very strong is leading to overcapacity. This can cause a boom-bust cycle and may increase non-performing loans. These concerns mainly emanate from substantial external inflows and their impact on the money supply process.

China has recorded surpluses not only on its capital account but also on its current account in the recent decade (Table 4.10 and Chart IV.8). Although both capital and current account surpluses fell in the aftermath of the Asian financial crisis, these have subsequently recovered to their pre-crisis levels. Given the fixed exchange rate, the People's Bank of China (PBC) has been absorbing the excess supplies in the foreign exchange market. Consequently, China's foreign exchange reserves jumped multi-fold from US $ 22 billion in 1993 to US $ 515 billion in September 2004. The rapid increase in foreign exchange reserves has, in turn, led to a high growth rate of broader monetary aggregates. Initially, inflation in China remained subdued and in fact, China experienced deflation during 2002. The liquidity overhang coupled with robust economic activity, however, has led to emergence of inflationary pressures although inflation is, in part, due to supply shocks from food prices.

Since early 1990s, the PBC has been undertaking a number of steps to sterilise the impact of external inflows. Initially, capital controls were used as the main instrument. The PBC also relied on calling back relendings to sterilise the excess money supply. However, with dwindling relending amounts over the years, the scope to change relending for the purpose of sterilisation reduced significantly. Open market operations were initiated in 1996. In view of the negligible holdings of Government bonds by the PBC, it was not possible to carry out OMOs in any significant way to contract the money supply. The PBC, therefore, tried other sterilisation measures such as requiring commercial banks to open special deposit accounts with it, issuing central bank financial bonds, tightening the control over capital account transactions and ceasing high-cost foreign borrowings. It also implemented a series of measures aimed at encouraging capital outflows by easing restrictions on overseas investments by domestic companies, lowering ceilings and easing regulations on Chinese residents to take foreign currency abroad and allowing Hong Kong banks to offer personal renminbi accounts. International financial institutions have also been permitted to issue local currency RMB bonds in the domestic market.

More recently with external flows strengthening further, the PBC, effective April 22, 2003, started outright issue of its own bills with maturities up to one year. In 2003, base money injection of RMB 1146 billion yuan due to forex purchases was offset to the extent of RMB 269 billion yuan through open market operations. By the end of 2003, the PBC had made 63 issues of central bank bills, with a total issuance amount of RMB 723 billion yuan and outstanding amount of RMB 338 billion yuan. In the first half of the year 2004, PBC issued RMB 674.2 billion yuan of central bank bills. By end-June 2004, the outstanding balance of PBC bills had further increased to RMB 603 billion yuan (around US $ 73 billion). In the first half of 2004 PBC bills sterilised nearly one-half of the increase in its foreign exchange reserves.

OMOs have been supplemented with other policy measures. These include a two-step increase in reserve requirements from 6.0 per cent to 7.5 per cent between September 2003 and April 2004. In April 2004, China also took recourse to a differential reserve requirements system. Under this system, reserve requirements applied to financial institutions are dependent upon a number of criteria such as capital adequacy, asset quality and non-performing loans (NPLs). The lower the capital adequacy or the higher the NPLs, the higher the reserve requirement and *vice versa*. Other measures are : adoption of a floating rate system for central bank lending; using foreign exchange reserves to the extent of US $ 45 billion to inject capital into the Bank of China and the China Construction Bank. Moral suasion was intensified to guide credit orientation, improve credit structure and ensure the healthy development of the national economy.

These efforts have been able to contain broad money growth to an extent. The year on year growth rate of M2 fell to 16.2 per cent by end-June 2004 from 20.6 per cent a year back. Base money growth has, however, continued to remain in excess of that a year ago. More recently, effective October 2004, the PBC decided to raise the central bank benchmark rates for deposit and lending by 27 basis points each to, *inter alia,* build on the achievements of macro economic control.

episodes (out of 20 sample episodes), lending rates increased in 12 episodes as banks passed on the costs of reserve requirements to their customers. The limited effectiveness of reserve requirements in the face of a large non-bank financial sector was clearly illustrated in Korea during the episode of capital inflow surge in the early 1990s. The share of deposits held by banks fell from 70 per cent in 1970s to 36 per cent in 1992, partly on account of sterilisation measures and this reduced the intended efficacy of reserve requirements. Despite sterilisation measures, Korea still experienced a large degree of real appreciation (Spiegel, 1995).

Table 4.10: External Sector Indicators: China

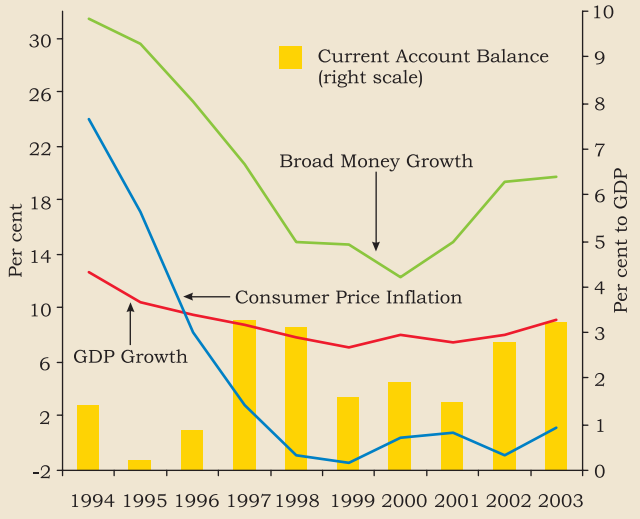
Year	Current Account Balance (US $ billion)	Change in Reserves (US $ billion)
1	2	3
1994	7.7	30.4
1995	1.6	22.0
1996	7.2	31.4
1997	37.0	35.0
1998	31.5	5.0
1999	15.7	9.8
2000	20.5	10.9
2001	17.4	46.6
2002	35.4	74.2
2003	45.9	116.9

Source: 1. World Economic Outlook, IMF, September (2004).
2. People's Bank of China website.

4.35 Empirical evidence suggests that reserve requirements may be effective in the short-run in reducing the volume of total capital inflows and may also help to lengthen the maturity composition of capital flows. The effectiveness may, however, get offset if higher reserve requirements induce more external borrowing as banks pass on the burden to their clients in the form of higher loan rates (Reinhart and Smith, 1998; Laurens and Cardoso, 1998, De Gregorio *et al*, 2000 and Montiel and Reinhart, 1999).

4.36 In order to moderate capital inflows, countries have also resorted to imposing or tightening prudential limits on banks' offshore borrowings and foreign exchange transactions (*e.g.* India, Indonesia, Malaysia and the Philippines).The Bank of Slovenia used

Chart IV.8 : China's Key Macroeconomic Indicators



Source : International Economic Trends, Federal Reserve Bank of St. Louis, July (2004).

reserve requirements specific to foreigners' deposits, introducing in 1994 a 40 per cent non-interest bearing reserve requirement on some foreign loans with a maturity of less than five years. In 1996, this was extended to cover maturities of up to seven years. In 1992, Mexico limited foreign currency liabilities of commercial banks to 10 per cent of their total loan portfolio. In January 1994, Malaysia imposed limits on non-trade related swap transactions on commercial banks. Taiwan put a ceiling on foreign holdings of domestic shares in 1994 and Malaysia limited foreigners' holdings of domestic bank deposits unless they were related to trade or physical investment. Malaysia also prohibited residents from selling short-term money market instruments to foreigners (Annex IV.1).

4.37 In the current episode of surge in capital inflows, Thailand announced measures to restrict short-term external capital inflows. Effective September 2003, financial institutions were allowed to borrow Baht from non-residents or engage in similar transactions without underlying trade or investment for amounts not exceeding 50 million Baht per entity only for contracts over 3 months. Recently, China allowed foreign institutional investors with at least $10 billion in assets to buy yuan-denominated stocks and bonds with a lock-in period of three years.

4.38 As regards the efficacy of capital controls and other prudential measures, empirical evidence suggests that these are unable to reduce the volume of capital flows (Montiel and Reinhart, 1999). The expected effect vanishes over time as market participants find ways to evade the controls. Alternatively, the effectiveness would require progressive widening of the scope of the controls with long-run costs which may outweigh the short-run benefits. Prudential measures are, however, able to alter the composition of capital inflows towards more durable components such as foreign direct investment. Capital controls, therefore, restrict volatile components of capital flows and lengthen the maturity of capital inflows. To that extent, by tilting the composition, controls could be useful as a step to reduce future vulnerability. But, since these do not reduce the overall volume of capital inflows, controls do not provide a higher degree of monetary independence (Edwards, 1999; 2004).

4.39 Shifting of public sector and government deposits from the commercial banks to the central bank and foreign exchange swaps also provide avenues for absorption of liquidity. Foreign exchange swaps - sale of foreign exchange by the central bank against domestic currency and a simultaneous

agreement to buy the same amount at a certain date in the future at the forward exchange rate – however, involve QFCs since such swaps might have to be done at a margin favourable to commercial banks. A few central banks have used standing deposit facilities (overnight/term) to absorb liquidity from the financial system.

4.40 If capital flows persist, the monetary policy instruments would need to be supplemented by other durable macroeconomic policies such as fiscal adjustment, liberalisation of trade policies and capital outflows, and finally, a greater degree of flexibility in the exchange rate. As regards liberalisation of capital outflows, Chile allowed pension funds to invest some of their assets abroad and liberalised investment outflows for selected private companies. Countries such as Taiwan and China have utilised forex assets for foreign direct investment abroad. Taiwan has allowed insurance companies to invest in foreign securities and domestic securities investment and trust companies to raise funds from the domestic market and invest in foreign securities under an aggregate ceiling. China has allowed domestic firms to retain forex earnings rather than surrender to the central bank. Several international financial institutions (IFIs) were allowed to issue local currency bonds in Taiwan and to use swap derivatives for remitting the funds abroad. During 2003, Thailand (i) permitted institutional investors to invest in overseas securities; (ii) encouraged mutual funds to invest on behalf of local residents in the Asian bonds issued by sovereign and quasi-sovereign entities; and (iii) increased the holding period of foreign currency deposits from 3 to 6 months. Efficacy of these measures, however, may be limited as such measures make the host country a more attractive place to invest and therefore, may induce greater inflows.

4.41 Fiscal policy can also be employed to reduce interest-sensitive capital inflows. A tightening of fiscal policy would reduce aggregate demand. This would, therefore, enable a reduction in domestic interest rates and thus help to reduce interest-sensitive component of capital inflows (Begg, 2001). Fiscal restraint as a policy response, however, is constrained by inflexibility of fiscal policy and is, therefore, relatively infrequently used. Within emerging economies, fiscal tightening as a deliberate attempt to manage capital flows during the 1990s was more evident in the East Asian economies *vis-à-vis* Latin America. More recently, Thailand has exhibited substantial fiscal correction.

4.42 As regards exchange rate response, cross-country experience shows that almost all countries allowed greater variability of the nominal exchange rate in the face of sustained capital inflows. In contrast to fiscal policy response, nominal exchange rate appreciation has been more common and larger in Latin America than in East Asia. Use of exchange rate as an instrument of sterilisation also has pitfalls. If nominal appreciation continues for a while, the resultant real appreciation could pose risk to external competitiveness (Lopez-Mejia, 1999).

4.43 The broad conclusions drawn from the foregoing analysis can be summed up thus. Countries faced with large capital inflows have attempted initially to sterilise while allowing some impact on monetary growth. Sterilisation is market based, but it is costly. It is useful if flows are short-term in nature. The danger is, however, that sterilisation may increase interest rates and this may continue to attract more capital. On the other hand, capital controls work against the market, but may be effective in smoothing volatility of inflows. If inflows persist, additional measures may have to be attempted, including a liberalisation of outflow controls, an adjustment or progressive increase in the flexibility of the exchange rate and a further strengthening of the prudential framework for the financial system (Table 4.11).

4.44 In sum, increased global integration implies that a national monetary policy that diverges from the consensus of policies pursued elsewhere elicits rapid capital flows and sharp exchange rate movements (Johnson, 2000). Increasingly, it is recognised that monetary policy cannot alter the movement of capital flows; it can only hope to fashion a credible response to its effects. In this, 'central banks must inoculate themselves against whimsy and keep their eyes on the fundamentals' (Blinder, 1998). Openness and, in particular, capital flows erode the control of the monetary authority over its monopoly - the monetary base - and reduces the credibility of money supply as an intermediate guideline for policy (Mboweni, 2002).

4.45 Thus, even though monetary policy is conducted exclusively for domestic goals, the international linkages have to be taken into account for policy formulation. More than ever before, the choice of monetary arrangements depends on the choices that other countries make (Meltzer, 1997). The structural changes associated with globalisation have led to a higher degree of uncertainty in the environment facing the monetary policy. Such changes have, for instance, loosened the association between output growth and inflation, thereby raising question marks

Table 4.11: Instruments for Managing Capital Inflows: A Cross - Country Survey

Country	Sterilised Intervention through OMOs	Central Bank Securities for OMOs	Deposits with Central Bank	Govern-ment Deposits	Withholding Tax/Tobin Tax/ Unremunerated Reserve Requirements	Liberali-sation of Capital Outflows	Reduction in Tariff Barriers	Increase in Reserve Requirements	Controls on Capital Inflows
1	2	3	4	5	6	7	8	9	10
Brazil	Yes				Yes				Yes
Chile	Yes	Yes			Yes	Yes	Yes	Yes	Yes
China	Yes	Yes	Yes			Yes		Yes	Yes
Colombia	Yes	Yes			Yes	Yes	Yes	Yes	Yes
Indonesia	Yes	Yes	Yes	Yes		Yes	Yes		Yes
Korea	Yes	Yes				Yes	Yes	Yes	
Malaysia	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Mexico	Yes	Yes				Yes	Yes		Yes
Peru		Yes	Yes	Yes				Yes	
Philippines	Yes	Yes				Yes	Yes	Yes	Yes
Singapore			Yes	Yes					
Sri Lanka	Yes	Yes				Yes	Yes	Yes	Yes
Taiwan		Yes	Yes						
Thailand	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes

Sources : RBI, 2003d; Reinhart and Smith, 2001; Mezia, 1999; Hoggarth and Sterne, 1997; and, central bank websites.

on the existing well-tested economic relationships (Trichet, 2004). The uncertainty in regard to the current state of the economy (availability and interpretation of macroeconomic data/indicators) as well as the structure (the monetary transmission mechanism) is heightened *vis-à-vis* a closed economy framework. In an environment of such a heightened uncertainty, it is suggested that monetary policy response should be based on bounded discretion with no activism, smoothness, judgement, flexibility, pre-commitment, time consistency, transparency, and accountability (Solans, 2000).

4.46 The experience with capital flows has important lessons for the choice of the exchange rate regime. The advocacy for corner solutions - a fixed peg *a la* the currency board without monetary policy independence or a freely floating exchange rate retaining discretionary conduct of monetary policy - is distinctly on the decline. The weight of experience seems to be tilting in favour of intermediate regimes with country-specific features, without targets for the level of the exchange rate, the conduct of exchange market interventions to ensure orderly rate movements, and a combination of interest rates and exchange rate interventions to fight extreme market turbulence. In general, emerging market economies have accumulated massive foreign exchange reserves as a circuit-breaker for situations where unidirectional expectations become self-fulfilling. It is a combination of these strategies which will guide monetary authorities through the impossible trinity of a fixed exchange rate, open capital account and an independent monetary policy (Mohan, 2004a).

II. EXTERNAL SECTOR OPENNESS AND CONDUCT OF MONETARY POLICY : THE INDIAN EXPERIENCE

4.47 Structural reforms initiated in the Indian economy during the 1990s virtually encompassed all areas of the economy. At the same time, reforms were marked by a sense of gradualism (Mohan, 2004c). In regard to financial markets, a number of measures have been taken to widen, deepen and integrate various segments of the financial markets. These measures have imparted efficiency to the financial system and are expected to increase the efficacy of monetary policy signals to the real sector. At the same time, financial markets are often characterised by herd behaviour and contagion from abroad can be destabilising and lead to overshooting. Since the capacity of economic agents in developing economies to manage volatility is highly constrained, ensuring orderly conditions in various segments of the markets - money, debt, forex and credit markets - has been a key objective of monetary policy in India.

4.48 As a part of the reform process, widespread and extensive reforms in the external sector have transformed India from a relatively closed economy to a fairly open economy. In the external sector, as in other areas, India has followed a cautious approach to capital account convertibility, exchange rate management, and trade liberalisation. Careful monitoring of capital account transactions has been advocated to ensure an orderly process of

liberalisation and macroeconomic stability, with a view to maintaining sustainability of the balance of payments and overall macroeconomic stability. In particular, the Indian approach to exchange rate management has focussed on managing volatility.

4.49 External demand conditions, capital flows and exchange rates affect the Indian economy much more now than during the 1980s. Empirical evidence confirms that global business cycles have a relatively larger influence on the Indian economy than was the case during the 1980s and exports and industrial production have started exhibiting co-movement with global business cycles. Remittances and trade in services have further augmented the linkages between India and the rest of the world. As regards capital flows, although the period since 1993-94 has been largely marked by persistent surpluses in the balance of payments, the period also witnessed a number of shocks such as the Asian financial crisis, sanctions resulting from the nuclear explosions, credit rating downgrades and the bursting of the information technology bubble in the US. These episodes have had repercussions on capital flows and exchange rates. As discussed in Section I, swings in capital flows, exchange rates and external demand conditions affect not only output and inflation, but also impact upon banking and financial stability. More recently, the unprecedented volume of capital flows during 2003-04 threw new challenges for the conduct of monetary policy. Excessive capital flows can be inflationary as well as can lead to a surge in credit booms. In this milieu, while price stability remains a key objective, ensuring financial stability has also emerged as a key consideration in the conduct of monetary policy in India.

4.50 With the growing openness of the Indian economy, the conduct of monetary policy has undergone significant shifts in operating procedures, instruments and timing. In this regard, the year 1991-92 marks a threshold in the conduct of monetary policy. Sweeping changes in the environment in which it operates were brought on by the unprecedented balance of payments crisis of 1990-92. From being operated almost exclusively in a closed economy context, monetary policy had to contend with the pressures of the open economy dynamics. Three overarching features marked the transition:

(i) the exchange rate, which was hitherto administered, became market determined and ensuring orderly conditions in the foreign exchange market became an objective of exchange rate management;

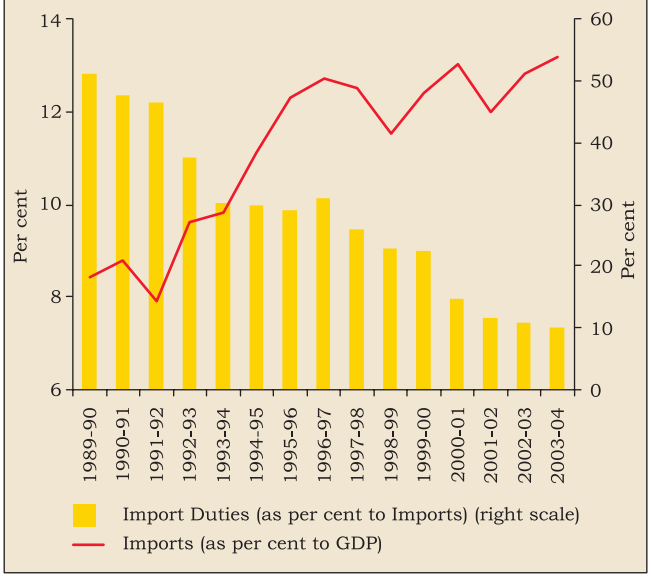
(ii) the vicissitudes in capital flows came to influence the conduct of monetary policy; and,

(iii) lessons of the balance of payments crisis highlighted the need to maintain adequate level of foreign exchange reserves and this in turn both enabled and constrained the conduct of monetary policy.

4.51 Initial conditions for the transformation were, in a sense, brought together by the response to the crisis in 1991-92 to achieve macro-economic stabilisation and structural adjustment. A two-step downward adjustment in the exchange rate of the rupee was effected in July 1991. This was accompanied by simultaneous tightening of monetary policy with increases in the Bank Rate, deposit and lending rates and refinance rates. Along with the exchange rate adjustment, significant structural reforms were effected in trade policy so as to liberalise the system from administrative controls and licences. On the trade front, tariffs were reduced sharply and quotas have been phased out. The peak rate of customs duty has declined from 150 per cent in 1991-92 to 20 per cent in 2004-05. The openness of the economy - merchandise exports and imports as a proportion of GDP - has increased significantly from 15 per cent in 1990-91 to 24 per cent by 2003-04 (Chart IV.9). A more striking feature has been the opening up of the economy to financial flows - direct as well as portfolio investment flows and debt flows.

4.52 Since 1991, there has been a continuous move towards integration of the Indian economy with the world economy. During this continuum of reforms,

Chart IV.9 : Indicators of Openness

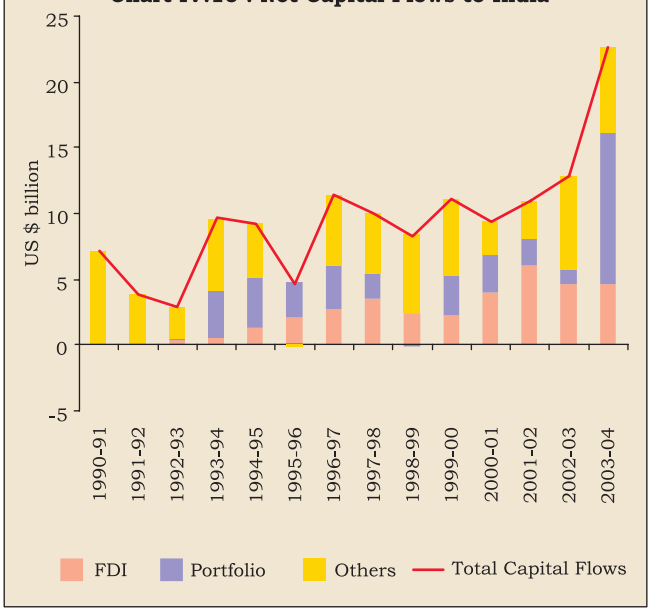


four distinct phases are clearly discernible in terms of the underlying balance of payments conditions, shifts in monetary conditions and the policy responses. These are briefly discussed in the following paragraphs.

4.53 The first phase - the period 1993-95 - was characterised by strong capital inflows accompanied with stability in the exchange rate. During this period, foreign investment inflows - in particular, portfolio investment inflows in the form of foreign institutional investors' (FII) inflows and global depository receipts (GDRs) - increased sharply. Net portfolio inflows increased from negligible levels to more than US $ 3 billion in each of the two years (Chart IV.10). Coupled with curtailment of the current account deficit, there were large overall surpluses in the balance of payments and this led to a significant increase in foreign exchange reserves from their extremely low levels of the crisis period. During this period, the rupee witnessed a remarkable stability *vis-a-vis* the US dollar. The Reserve Bank's passive intervention was motivated by the need to protect export competitiveness by preventing an appreciation of the rupee which would in any case have been against fundamentals (RBI,1994).

4.54 Large accretions to the foreign exchange reserves led to a transformation in the composition of the Reserve Bank's balance sheet and, hence the dynamics of the money supply process. In contrast to the trend of the 1980s, net foreign exchange assets emerged as a key driver of reserve money. As capital flows continued, a number of steps were undertaken

Chart IV.10 : Net Capital Flows to India



to sterilise the monetary impact of capital flows. In the second half of 1993-94, indirect instruments of monetary policy were activated and the Reserve Bank undertook large open market sales of Government securities from its portfolio. Nonetheless, increase in monetary aggregates was higher than that anticipated and excess liquidity led to inflationary pressures in the economy. With average inflation rate at 10.9 per cent during 1994-95, a package of measures was undertaken to sterilise the impact of external flows. These included an increase in the cash reserve ratio and a reduction in export refinance limits. The deceleration in capital inflows in the latter half of 1994-95 reduced the strain on sterilisation of capital inflows and consequently open market operations remained subdued in 1994-95.

4.55 The second phase - the year 1995-96 - was characterised by a deceleration in capital inflows and a widening of the current account deficit. There was a turnaround in the foreign exchange market and the prolonged stability in the exchange rate of the rupee witnessed from March 1993 came under stress in the second half of 1995-96. In response to the upheavals, the Reserve Bank intervened in the market to signal that the fundamentals are in place and to ensure that market correction of the overvalued exchange rate was orderly and calibrated. Exchange market intervention by the Reserve Bank in the spot market was initially supported by a withdrawal of liquidity from the money market to prevent speculative attacks on the exchange rate. These measures were successful in ensuring an orderly correction in the overvaluation of the rupee.

4.56 The third phase - 1996-2001- witnessed return of capital inflows. Although each of the year in this period was characterised by an overall surplus in the balance of payments, the phase was also marked with a few episodes, *albeit* brief, of heightened volatility in capital flows. The volatility was on account of both international and domestic factors - the Asian financial crisis, the spread of contagion to other markets such as Russia and Brazil, border tensions and sanctions imposed after the nuclear tests. This necessitated policy initiatives to manage the volatility in capital inflows, including monetary measures (such as increases in the Bank Rate, the repo rate and the cash reserve ratio), sales of foreign currency in the market to meet temporary demand-supply mismatches and administrative measures (Annex IV.2). Monetary measures were temporary, often reversed within a period of 2-3 months, consistent with the policy objective of ensuring orderly conditions. Recourse was

also taken to mobilise deposits from non-residents through special schemes such as Resurgent India Bonds and India Millennium Deposits. Notwithstanding brief episodes of volatility, capital flows remained vastly in excess of current account deficits - which remained moderate in the face of low domestic absorption. As a result, the foreign exchange reserves increased, on an average, by nearly US $ 4.1 billion per year. During this phase, changes in reserve money were, therefore, largely dominated by the accretions to net foreign exchange assets of the Reserve Bank. As a result, the ratio of net foreign assets to reserve money increased from 38 per cent at end-March 1996 to 65 per cent by end-March 2001 (Chart IV.11).

4.57 The fourth phase - 2001-02 onwards - posed new challenges for the conduct of monetary policy. This period has been marked by sustained surges in capital inflows coupled with surpluses in current account in the balance of payments. The turnaround in the current account balance was mainly due to a higher invisible surplus. On the capital account, there was unprecedented volume of net inflows. Even as debt creating flows ebbed in response to policy changes such as prepayment of high cost official debt and rationalisation of interest rates on NRI deposits, non-debt creating flows, particularly portfolio investments surged ahead. With both current and capital accounts in surplus, foreign exchange markets were marked by persistent excess supply conditions. These excess supplies were absorbed by the Reserve Bank and, as a result, its foreign exchange reserves more than doubled during the 3-year period from US $ 42.3 billion at end-March 2001 to US $ 113.0 billion at end-March 2004 - an average increase of US $ 23.6 billion per annum (Chart IV.12). Concomitantly, the ratio of net foreign assets to reserve money increased from 65 per cent at end-March 2001 to more than 100 per cent by end-March 2004. The concomitant excess supply in the foreign exchange market - reflected in the overall balance of payments surpluses - was absorbed by the Reserve Bank in line with its exchange rate and foreign exchange reserves policies. The level of reserves held by any country is, of course, really a consequence of the exchange rate policy being pursued (RBI, 2004a). The overall approach to the management of India's foreign exchange reserves in recent years has reflected the changing composition of capital account of the balance of payments and the liquidity risks associated with different types of flows within the parameters of reserve adequacy. The policy for reserve management is built upon factors and contingencies such as the size of the current account deficit, the size of short term liabilities (including current repayment obligations on long term loans), the potential variability in portfolio investment and other types of capital flows and unanticipated external shocks. The policy objective is to ensure that excluding short-term variations in response to market movements, the quantum of reserves in the long run is in line with the growth in the economy and the size of risk adjusted capital flows. With the changing profile of capital flows, the traditional approach of assessing reserve adequacy in terms of import cover has been broadened to include a

Chart IV.11 : Composition of Reserve Money

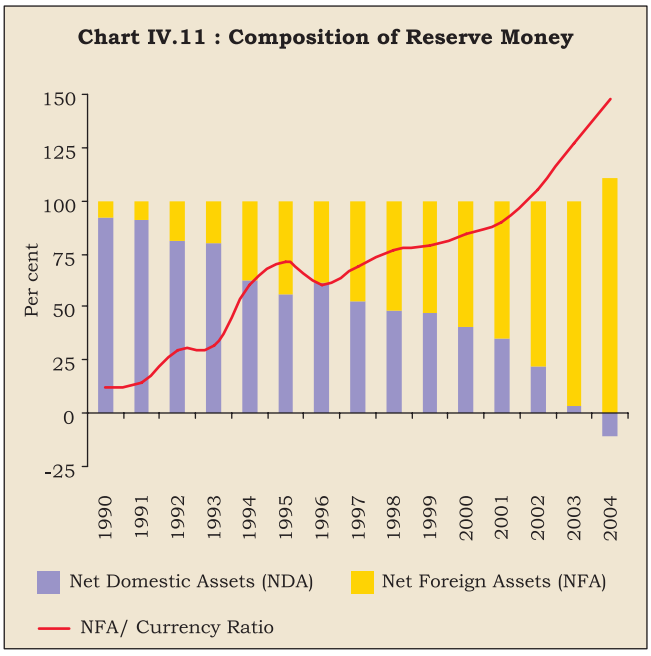
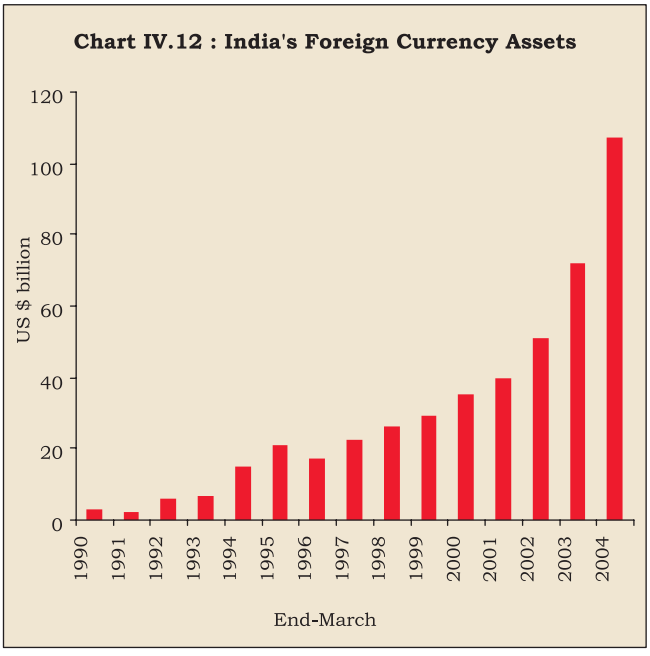


Chart IV.12 : India's Foreign Currency Assets



number of parameters which take into account the size, composition and the risk profiles of various types of capital flows as well as the types of external shocks to which the economy is vulnerable. There is considerable merit in taking a national balance sheet approach to the external sector and to provide cushions through official reserves in response to increasing external liabilities on account of the private sector. Further, it is useful to recognise the comfort and the confidence provided to the investors by the level of reserves in the context of volatility in capital flows (RBI, 2004b).

4.58 A number of steps have been taken to offset the expansionary impact of external flows on domestic money supply. These include:

- Increase in the minimum maturity of non-resident deposits to one year to attract stable flows as also to minimise the country's short-term external debt.
- LIBOR-linked interest rate ceilings on foreign currency denominated deposits since 1997.
- LIBOR-linked interest rate ceilings on non-resident rupee deposits effective July 2003 to provide consistency in the interest rates offered to non-resident Indians. The ceiling was initially fixed at 250 basis points above LIBOR. It was tightened and reduced to only 100 basis points above LIBOR effective September 15, 2003 and to 25 basis points above LIBOR effective October 18, 2003. The ceiling was tightened further to the LIBOR itself, effective April 17, 2004. More recently, the ceiling has been relaxed to 50 basis points above LIBOR, effective October 26, 2004. Available empirical evidence suggests that non-resident deposits are influenced by standard risk and return variables. In particular, these deposits respond favourably to changes in relative interest rates (Gordon and Gupta, 2004; Mohanty, Kapur and Sahoo, 2000).
- Substantial expansion of the automatic route of FDI abroad by Indian residents.
- Greater flexibility to corporates on pre-payment of their external commercial borrowings.
- Liberalisation of surrender requirements for exporters enabling them to hold up to 100 per cent of their proceeds in foreign currency accounts.
- Extension of foreign currency account facilities to other residents.
- Allowing banks to liberally invest abroad in high quality instruments.
- Pre-payment of US $ 6.9 billion of debt owed to multilateral and bilateral agencies by the Government of India during 2002-03 and 2003-04.
- An increase of 50 basis points in the cash reserve ratio (CRR) from 4.5 per cent to 5.0 per cent, effective October 2004.
- Finally, appreciation of the nominal exchange rate of the rupee *vis-à-vis* the US dollar (Chart IV.13).

4.59 Notwithstanding these measures, the overall balance of payments surpluses not only persisted but also widened in each of the years since 2001-02. Accordingly, a key instrument of managing capital flows has been sterilisation through outright open market sales of Government of India securities by the Reserve Bank from its portfolio. In recent years, these have been supported by sucking of liquidity through operations under the Liquidity Adjustment Facility. The scale of sterilisation operations - in particular, in the fourth phase (2001-02 onwards) - can be gauged from movements in the outstanding net Reserve Bank credit to the Central Government (NRBICG). Although balance of payments had been recording an overall surplus in each of the years since 1993-94 (with exception of one year, 1995-96), outstanding NRBICG also increased in all years except one even as open market operations were undertaken. In contrast, in the most recent phase, NRBICG has recorded sharp declines. Illustratively, the NRBICG declined from Rs.1,67,308 crore at end-May 2001 to Rs.4,626 crore by December 10, 2004 (Table 4.12).

4.60 The finite stock of the Government of India securities with the Reserve Bank brought into sharp

Chart IV.13 : Movements in the Exchange Rate

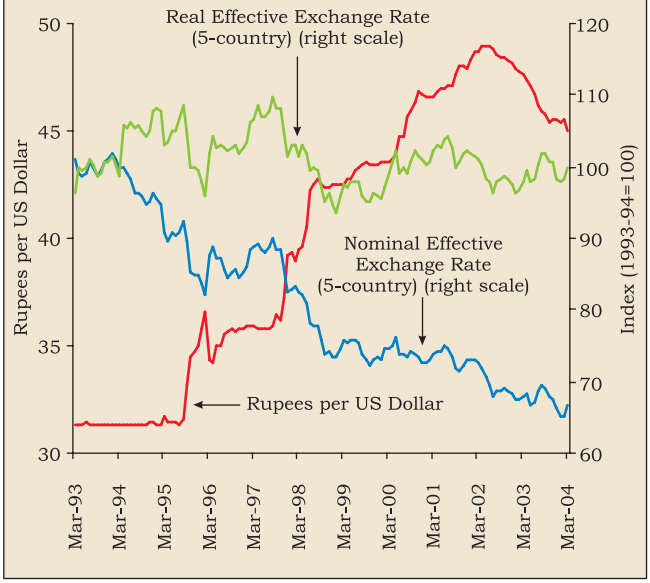


Table 4.12: Sterilisation Operations of the Reserve Bank of India

(Rupees crore)

Year	Increase in Foreign Currency Assets	Net Open Market Sales @	Outsatanding Amount Absorbed under Liquidity Adjustment Facility (end-period)	Balances under Market Stabilisation Scheme # (end-period)	Outstanding Net Reserve Bank Credit to Centre (end-period)
1	2	3	4	5	6
1996-97	21,922	6,885	–	–	1,20,702
1997-98	22,139	-5,414	240	–	1,33,617
1998-99	22,905	-11,857	200	–	1,45,416
1999-2000	27,512	8,370	325	–	1,39,829
2000-01	31,558	-11,827	400	–	1,46,534
2001-02	64,636	1,443	3,510	–	1,41,384
2002-03	92,358	17,605	2,415	–	1,12,985
2003-04	1,24,739	20,349	34,645	–	36,920
2004-05 (up to December 10)	85,836	603	15,820	51,334	4,626

@ Net of devolvement/private placement on the Reserve Bank. Minus sign indicates purchases.
# Market Stabilisation Scheme came in to operation effective April 2004.
Source : Reserve Bank of India.

focus the limitations on the Reserve Bank's ability to sterilise capital flows in future and its implications for liquidity management and inflation. For instance, the Reserve Bank's Annual Policy Statement for the year 2004-05 observed: "the lagged effect of persistence of excess liquidity on aggregate demand cannot be ignored as it could have some potential inflationary impact". At the same time, the challenge of sterilisation, in the Indian case, is not very acute, *per se*, because the large order of fiscal deficit allows the banking system to park the surplus liquidity emanating from capital flows in gilt-edged paper (Jadhav, 2003).

4.61 Against this backdrop, the Reserve Bank constituted an Internal Working Group on Instruments for Sterilisation (RBI, 2003d). The Group recommended, *inter alia,* that use of CRR as an instrument of sterilisation, under extreme conditions of excess liquidity and when other options are exhausted, should not be ruled out altogether by a prudent monetary authority ready to meet all eventualities[2]. The Group stressed the need to take into account the consolidated balance sheet of the Government and the Reserve Bank as it is immaterial as to whether sterilisation costs are borne by the Reserve Bank or the Government since, in the consolidated balance sheet framework, the net cost is the same. Accordingly, the Group strongly recommended against the introduction of central bank bills/bonds, in the context of current fiscal situation and considerations of market fragmentation. A key recommendation of the Group was the introduction of Market Stabilisation Bills/ Bonds (MSBs) for mopping up liquidity from the system. The Group also recommended that surplus balances of the Government may be maintained with the Reserve Bank without any payment of interest so as to release securities for open market operations.

4.62 Following these recommendations, a Market Stabilisation Scheme (MSS) was introduced in April 2004 wherein Government of India dated securities/Treasury Bills are being issued to absorb liquidity. These dated securities/Treasury Bills are the same as those issued for normal market borrowings and this avoids segmentation of the market. By December 10, 2004, the outstanding issuances under MSS were Rs.51,334 crore (see Chapter II). The issuance of securities under the MSS is expected to enable the Reserve Bank to improve liquidity management in the system, to maintain stability in the foreign exchange market and to conduct monetary policy in accordance with the stated objectives (Reddy, 2004b). Moreover, the MSS scheme will bring transparency in regard to costs associated with sterilisation operations. Hitherto, the costs of sterilisation were fully borne by the Reserve Bank in the first instance and its impact was transmitted to the Government in the form of lower profit transfers. With the introduction of the MSS, the cost in terms of interest payments would be borne by the Government itself in a transparent manner.

4.63 Sterilisation operations, as discussed above, have been a key instrument of managing capital flows. Reflecting these operations, the net Reserve Bank credit to the Central Government has declined in the

[2] As noted earlier, effective October 2004, the CRR was raised from 4.5 per cent to 5.0 per cent, based on a review of current liquidity conditions. The medium-term policy objective of the Reserve Bank is to reduce CRR to its statutory minimum of 3.0 per cent while retaining the option to use CRR in both directions for liquidity management, as and when essential, in addition to other instruments.

recent years while net foreign assets have been increasing. In this context, a critical issue is: whether it is the reduction in net domestic assets (NDA) that caused subsequent capital inflows or whether the reduction in NDA offset the previous capital inflows. The former view would suggest that capital inflows reflect higher money demand by residents and, if so, sterilisation operations are ineffective. This would occur if sterilisation operations place upward pressure on interest rates and the assets are perfect substitutes. In this case, even a small rise in domestic interest rates would attract large capital inflows rendering sterilisation operations ineffective (Kouri and Porter, 1974; Schadler *et al.,* 1993). For India, evidence suggests that sterilisation operations have been effective. Over the period 1995-2004, close to two-thirds of capital flows were sterilised by the Reserve Bank through open market sales/repo operations[3] (Box IV.6). This enabled the Reserve Bank to keep base money growth close to the desired trajectory (Box IV.7).

Box IV.6

Capital Flows and Sterilisation

Following Kouri and Porter (1974), the ability of a central bank to carry out sterilisation operations effectively can be examined by analysing the relationship between a central bank's net domestic assets (NDA) and its net foreign assets (NFA). The "offset" coefficient - the response of net foreign assets to net domestic assets - measures the degree to which capital inflows offset the effect of a change in NDA on money supply. An offset coefficient close to unity would imply that the efforts of the monetary authority to tighten monetary policy would induce equal and offsetting foreign inflows leaving no scope for independent monetary policy. In contrast, an offset coefficient of zero would provide the monetary authority with complete discretion in the conduct of monetary policy.

A number of studies have, therefore, attempted to estimate offset coefficients (Table 4.13). In most of the studies, offset coefficients are less than (-) 0.5 which suggests that monetary authorities have some scope for sterilisation. Moreover, consistent with the hypothesis of increasing capital mobility in the 1990s and the consequent declining monetary policy independence, there is evidence that the (absolute) offset coefficients have increased. For India, the estimated offset coefficient [(-) 0.3 during 1993-97] suggests that sterilisation operations conducted during this period enabled sufficient independence for monetary policy to pursue domestic goals (Pattanaik, 1997).

For India, available evidence indicates a uni-directional causality from NFA to NDA, *i.e.,* capital inflows were not induced by domestic monetary conditions. The sterilisation coefficient - the response of change in NDA to that in NFA - is found to be (-) 0.92, *i.e.,* an increase of Rs.100 in NFA induced a policy response of sterilisation that drained away NDA worth Rs.92 from the system (RBI, 2004a). All accretions to NFA do not have a monetary impact; for instance, aid receipts, revaluation and the Reserve Bank's income on its foreign assets contribute to NFA but have no monetary impact, obviating the need for sterilisation to that extent. As such, following RBI (2004a), sterilisation efforts can be gauged by examining the impact of the Reserve Bank's net market purchases/sales of foreign currency from/to authorised dealers (ADPURC) on the net Reserve Bank credit to the Centre (NRBICC), and not the entire NDA. For India, data on market sales/ purchases are available effective October 1995. As in the previous case, Granger causality tests indicate a uni-directional causality from changes in foreign exchange purchases to reduction in NRBICC[4]. The sterilisation coefficient is 0.63, *i.e.*, Rs.100 increase in foreign currency purchases from ADs induces sterilisation operations involving sales of Government securities worth Rs.63 from the Reserve Bank[5].

[3] Such open market sales transferred the Government securities from the balance sheet of the Reserve Bank to that of the commercial banks. In an environment of softening interest rates, investment in government securities turned out to be relatively attractive and profitable for the commercial banks. At the same time, investments in government securities are subject to market risks arising from fluctuations in market rates of interest. With the upturn of the interest rate cycle, there could be an adverse impact on banks' profitability. In this context, it is relevant to observe that the Reserve Bank had advised banks to build-up Investment Fluctuation Reserves to meet such eventualities (see Chapter VI).

[4] In a bivariate VAR of net monthly sales/purchases of foreign exchange from ADs (ADPURC) and monthly variations in net Reserve Bank credit to Centre (DRBICCG) over the period October 1995 to March 2004, the null hypothesis of Granger non-causality of DRBICCG can not be rejected (chi-square of 0.03 at p-value of 0.87). On the other hand, the null hypothesis of Granger non-causality of ADPURC can be easily rejected (chi-square of 5.90 at p-value of 0.02). The VAR was estimated with one lag based on Schwarz Bayesian Information Criterion (SBIC).

[5] The estimated equation, using monthly data over October 1995 to March 2004, is:

DRBICCG = 1233 - 0.63 ADPURC - 230.1 DIIP(-1) + 5437 DCRRAVG.

(1.8)* (6.1)*** (2.2)* (6.6)***

$\bar{R}^2$ = 0.55 DW = 2.46

The figures in brackets are t-values; *, ** and *** denote significance at 10, 5 and 1 per cent level, respectively. DRBICCG and ADPURC are defined as before. DIIP and DCRRAVG are monthly variations in the index of industrial production and average CRR, respectively. In addition, monthly dummies for April, May, August, September and November turned out to be significant and were included in the estimated equation.

Table 4.13: Offset Coefficients - A Cross-Country Survey

Study	Country	Offset Coefficient
1	2	3
Schadler *et al* (1993)	Chile	-0.14
	Colombia	-0.5
	Egypt	-0.1
	Mexico	-0.3
	Spain	-0.0
	Thailand	-0.8
Kim (1995)	Korea	-0.37 to -0.44 (1980-94)
Lee (1996)	Indonesia	-0.31 (1982-92)
	Korea	-0.16 (1983-93)
	Spain	-0.35 (1983-91)
	Thailand	-0.94 (1982-91)
Bond (1999)	Indonesia	- 0.21 (1984-89)
		- 0.33 (1990-95)
	Thailand	-0.21 (1984-87)
		-0.41 (1988-95)
Pattanaik (1997)	India	(-) 0.3 (1993-97)

Note : Figures in brackets are the sample period.

Exchange Rate Management

4.64 As noted earlier, the day-to-day movements in exchange rates have been largely market-determined. The objective of exchange rate management has been to ensure that the external value of the rupee is realistic and credible as evidenced by a sustainable current account deficit and manageable foreign exchange situation. Subject to this predominant objective, the exchange rate policy is guided by the need to reduce excess volatility, prevent the emergence of destabilising speculative activities, help maintain adequate level of reserves, and develop an orderly foreign exchange market. However, the foreign exchange market in India, like other developing countries, is not yet very deep and broad and is characterised by uneven flow of demand and supply over different periods. The market is also characterised

Box IV.7

Capital Flows and Reserve Money Dynamics

Given the large volume of capital flows and their sterilisation by the Reserve Bank, it would also be interesting to know the dynamics of the adjustment process through which shocks to exchange rate, net foreign assets and net domestic assets impinge upon each other. Following Moreno (1996), these dynamics can be examined in a vector autoregression (VAR) framework. Moreno *(op cit.)* undertook his analysis for Korea and Taiwan and found that sterilisation is an important element of the response to shocks to foreign assets, *i.e.,* monetary authorities try to neutralise the effect of net foreign assets on base money. On the other hand, monetary authorities are ready to accept fluctuations in exchange rate and domestic money supply from changes in their domestic assets. This Box follows a similar methodology to examine the dynamics in the Indian context. A four-variable VAR is estimated over the period April 1994 to March 2004 using monthly data. The variables included were (in the following order): (i) exchange rate of the Indian rupee *vis-a-vis* the US dollar, (ii) wholesale prices, (iii) net foreign assets (NFA) of the Reserve Bank and (iv) net domestic assets (NDA) of the Reserve Bank. As noted in Box IV.6 causality runs from NFA to NDA. Accordingly, the ordering of NFA before NDA in the VAR can be considered appropriate. All the variables are in logarithmic form[6] and the VAR was estimated with a trend term. Monthly dummies were included as exogenous variables to account for seasonality.

Analysis of impulse responses is undertaken to study the dynamics. A positive shock to (*i.e.*, an increase in) net foreign assets leads to an immediate policy response that tends to sterilise these capital flows. This is reflected in a decline in net domestic assets of the Reserve Bank. The OMO sales are able to almost fully offset the increase in net foreign assets. In contrast to a large increase in NFA, reserve money movements are fairly muted[7]. Reserve money shows a marginal increasing trend for the first six months after the shock and gradually returns to its baseline (Chart IV.14). As regards exchange rate, a shock to NFA has the expected effect. Exchange rate appreciates immediately after the shock and the peak appreciation occurs nearly a year after the initial shock.

A positive shock to net domestic assets leads to a commensurate increase in reserve money. In subsequent months, net foreign assets decline and offset the increase in NDA. As a result, reserve money remains above the baseline for almost one year. Reflecting the expansionary effect of the base money, exchange rate depreciates with a lag of about six months. Depreciation reaches its peak around two years after the shock and the exchange rate stabilises at its new level (Chart IV.15).

Finally, a positive shock to the exchange rate (*i.e.*, a depreciation of the rupee) leads to a fall in net foreign assets of the Reserve Bank. The decline in NFA reflects market sales of foreign currency by the Reserve Bank consistent with its stated policy objective of meeting temporary demand-supply gaps in order to ensure orderly conditions in the foreign exchange market. In the process, the Reserve Bank acquires domestic securities against sales of foreign currency and this leads to an increase in net domestic assets. The impulse responses indicate that the increase in NDA more or less offsets the decline in NFA. As a result of almost complete sterilisation, the reserve money is broadly unchanged. Thus, in response to volatility in foreign exchange market, the Reserve Bank makes sales of foreign currency to ensure orderly correction while trying to insulate domestic monetary conditions (Chart IV.16).

Taken together, the empirical evidence suggests that the Reserve Bank was able to offset the expansionary effect of foreign capital flows on domestic money supply, consistent with its macroeconomic objectives.

[6] As net domestic assets (NDA) have turned negative over the latter part of the sample, following Moreno (1996), these have been proxied by the difference between log of reserve money and log of net foreign assets.

[7] Although reserve money is not a part of the VAR, the response of reserve money to various shocks is computed as the sum of the responses of NDA and NFA to various shocks.

Chart IV.14 : Response to Net Foreign Assets Shock

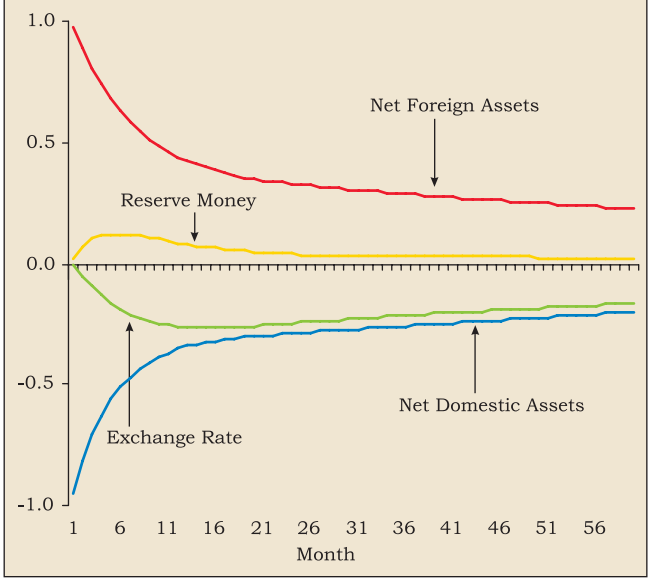
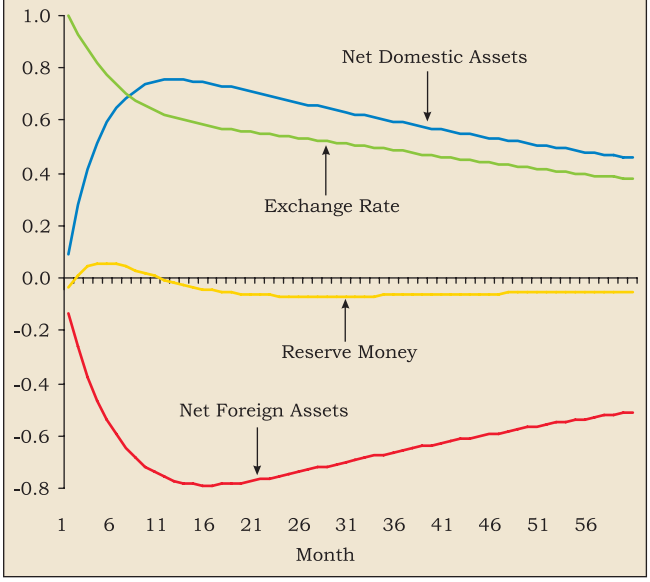
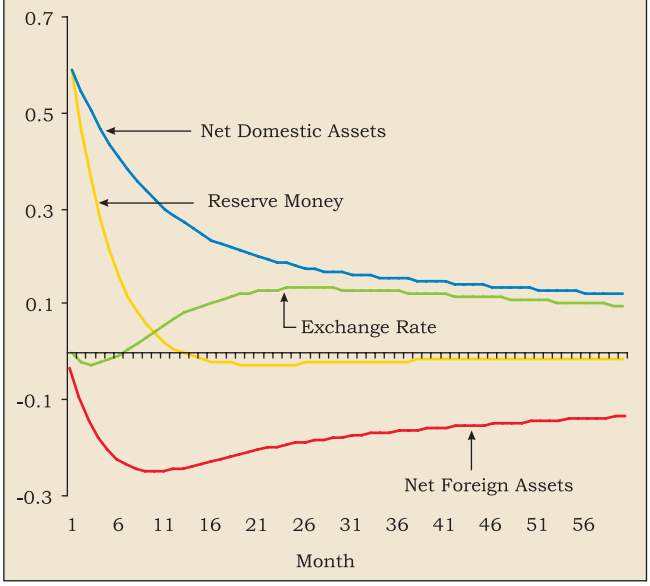


Chart IV.16 : Response to Exchange Rate Shock



by a few major players and lumpy public sector demands particularly on account of payments of oil imports and servicing of public debt. This can lead to adverse expectations, which tend to be self-fulfilling in nature, given their effect on "leads and lags" in payments and receipts. Often, a self-sustaining triangle can develop comprising the supply-demand mismatch, increased inter-bank activity to take advantage, and accentuated volatility triggered by negative sentiments. In thin and underdeveloped markets dominated by a few leading operators, there is a natural tendency to do what everyone else is doing in the event of any adverse development rather than taking a contra position (RBI, 2001). The consequent volatility that sets in may not be in tune with the fundamentals.

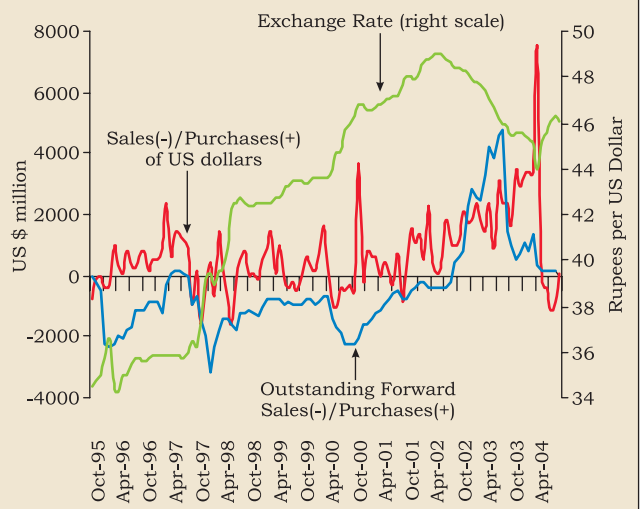
Chart IV.15 : Response to Net Domestic Assets Shock



4.65 It is essential to recognise that the capacity of economic agents in developing economies, particularly poorer segments, to manage volatility in all prices, goods or foreign exchange is highly constrained and there is a legitimate role for non-volatility as a public good (Reddy, 2004a). After the liberalisation of the exchange rate regime in the mid-1990s, the Reserve Bank had, therefore, to chart its own course of exchange rate management, learning from the contemporary experiences. There is now a well-laid out policy response to sudden changes in capital flows so as to stabilise markets: on demand-side, including monetary tightening and changes in the cost of import finance as well as on supply-side, including the Reserve Bank's operations in the foreign exchange market and changes in the cost of delaying export proceeds (Jadhav, 2003) (Charts IV.17 and IV.18). The Reserve Bank has been prepared to make sales and purchases of foreign currency in order to even out lumpy demand and supply in the relatively thin forex market and to smoothen jerky movements. However, such intervention is not governed by a predetermined target or band around the exchange rate (Jalan, 1999).

4.66 The broad principles that have guided India after the Asian crisis of 1997 are: (i) careful monitoring and management of the exchange rate without a fixed

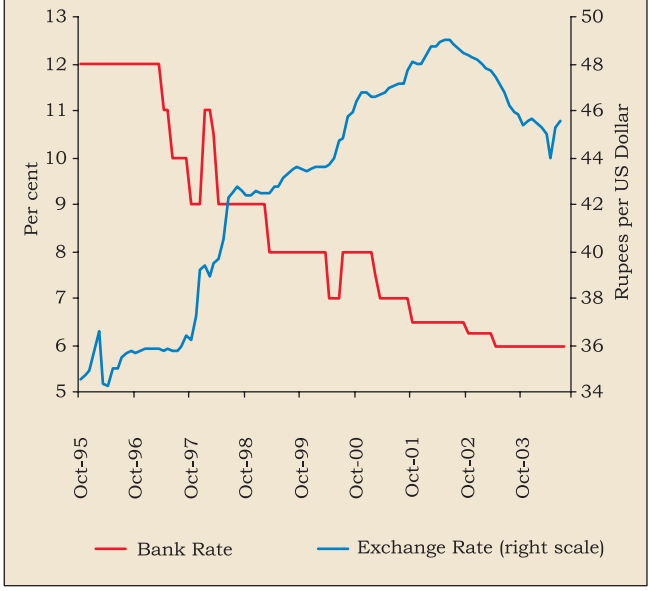
Chart IV.17 : Foreign Exchange Market Operations of the Reserve Bank



or pre-announced target or a band; (ii) flexibility in the exchange rate together with ability to intervene, if and when necessary; (iii) a policy to build a higher level of foreign exchange reserves which takes into account not only anticipated current account deficits but also 'liquidity at risk' arising from unanticipated capital movements; and (iv) a judicious management of the capital account (Jalan, 2002).

4.67 India's exchange rate policy of focusing on managing volatility with no fixed rate target while allowing the underlying demand and supply conditions to determine the exchange rate movements over a period in an orderly way has stood the test of time. As a result of these timely and coordinated measures, India was successful in containing the contagion effect of the Asian crisis. In addition, safeguards developed over a period of time also helped in limiting the contagion; these included: low current account deficit; comfortable foreign exchange reserves; low level of short-term debt; and absence of asset price inflation or credit boom. These positive features were the result of prudent policies pursued over the years notably, cap on external commercial borrowings with restrictions on end-use, low exposure of banks to real estate and stock market, insulation from large intermediation of overseas capital by the banking sector, close monitoring of off-balance sheet items and tight legislative, regulatory and prudential control over non-bank entities (RBI, 2004a). The Indian approach to exchange rate management has been described as ideal for Asia (Jalan, 2003). The Indian experience highlights the need for emerging market economies to allow greater flexibility in exchange rates but the authorities should also have the capacity to intervene in foreign exchange markets in view of herding behaviour. A key lesson is that flexibility and pragmatism are required in the management of exchange rate in developing countries, rather than adherence to strict theoretical rules (RBI, 2004a).

Chart IV.18 : Interest Rate and Exchange Rate



4.68 A key part of the policy package, as noted earlier, is the use of monetary measures to ensure orderly conditions in the foreign exchange market. This Section briefly addresses the efficacy of such measures in influencing the exchange rate. According to the uncovered interest parity (UIP) condition, an increase in the domestic interest rate should be associated with a depreciation of the domestic currency to equalise returns on domestic and foreign assets. However, cross-country empirical evidence strongly rejects UIP. The failure of UIP provides a rationale for monetary measures to influence exchange rates in the short-run. Econometric evidence suggests that positive monetary policy shocks, *inter alia,* induce an appreciation of the domestic currency (Christianio *et al.* 1999; Peersman and Smets, 2001). In the Indian context, existing studies also indicate that monetary policy tightening measures have been successful in restoring orderly conditions in the foreign exchange market (Pattanaik and Mitra, 2001; Pattnaik, Kapur and Dhal, 2003). Both these studies find that increase in interest rates has the expected effect of strengthening the exchange rate in the short-run; over time, however, the effect peters out, consistent with the theory.

4.69 These results are re-confirmed by analysis presented in Chapter VII. Impulse responses based on a 5-variable VAR - industrial production, wholesale price index, Bank Rate, broad money and exchange rate - show that interest rate increases temporarily in response to an exogenous positive exchange rate shock. Similarly, impulse responses indicate that exchange rate appreciates in response to a positive interest rate shock. The results, thus, suggest that monetary policy measures taken to ensure orderly conditions in the foreign exchange market have the desired impact.

4.70 In brief, in the face of sustained capital flows and, in the recent years, surpluses on the current account, the foreign exchange market has been characterised by excess supply conditions. Authorities in India have responded to these excess supplies through a multi-pronged approach. In the context of large forex inflows, an ongoing view is taken for operational purposes on: (a) the extent of forex market intervention and consequent build-up of reserves; and (b) whether to sterilise or not and if so, to what extent. Operations involving sterilisation are undertaken in the context of a policy response which has to be viewed as a package encompassing exchange rate policy, level of reserves, interest rate policy along with considerations related to domestic liquidity, financial market conditions as a whole, and degree of openness of the economy. The policy response depends on several considerations involving trade-offs between the short term and the long term; judgement on whether capital flows are temporary or enduring; as well as on the operation of self-correcting mechanisms in the market and market responses in terms of sentiments. Whereas the distinction between short term and long term flows is conceptually clear, in practice, it is not always easy to distinguish between the two for operational purposes. Moreover, at any given time, some flows could be of an enduring nature whereas others could be short term and, hence, reversible. More important, what appears to be short-term, could tend to last longer and *vice versa,* imparting a dynamic dimension to judgment about their relative composition (RBI, 2003d). In a scenario of uncertainty facing the authorities in determining temporary or permanent nature of inflows, it is prudent to presume that such flows are temporary till such time that they are firmly established to be of a permanent nature (RBI, 2004c).

4.71 Notwithstanding the large scale capital inflows, sterilisation operations coupled with other measures to manage the capital account have been largely able to keep money supply in line with desired trajectory. Furthermore, in contrast to experiences and fears often expressed with sterilisation, interest rates in India softened over the period across the spectrum. Illustratively, the Bank Rate has halved from 12 per cent to six per cent between March 1997 and March 2004. The yields on Government of India securities (10-year paper) fell from 13.4 per cent to 5.2 per cent over the same period although these have increased somewhat in the subsequent months (see Chapter II).

Business Cycle Synchronisation

4.72 Apart from influences operating through movement of capital inflows and outflows, external demand and supply shocks can impact upon the domestic economy, especially in view of the growing openness of the economy. Illustratively, domestic prices of key commodities/groups such as iron and steel exhibited co-movements with international prices during 2003-04. Inflation, therefore, in the short-run can be influenced by external developments. Variations in external demand conditions coupled with exchange rate movements affect exports and imports and therefore, domestic demand and output. In view of the growing openness, there has been a renewed interest to assess the degree of synchronisation of output in India with that in its major trading partners.

4.73 Business cycles abroad have a relatively larger influence on the Indian economy than was the case during the 1980s and exports and industrial production have started exhibiting co-movement with global business cycles (RBI, 2002). Mall (2001) finds that the Indian output cycles are positively correlated with the UK and the US cycles, especially during the post-1980s. Exogenous oil shocks were found to be more important than non-oil global shocks, which, in turn, were stronger than country-specific shocks. Moreover, correlation between investment and private consumption cycles of India and those from each of the select countries - US, UK, Japan and Germany – turned from negative to positive, *albeit* small in magnitude, in the post-1980 period. Cyclical output of advanced economies has a unidirectional causal effect on India's cyclical output (Chitre, 2003). According to Dua and Banerji (2001a, 2001b), business cycles in India are more similar in character to those of the market economies in the post-1991 liberalisation phase. The cycles were, however, driven more by endogenous factors than by exogenous shocks. As regards co-movement with ASEAN countries, although there is evidence of

synchronisation of growth cycles, similarity seemed to be purely coincidental and driven by domestic factors rather than greater inter-linkages with the ASEAN countries. The cyclical downturn of the Indian economy in synchrony with the East Asian crisis of 1997 is thus to be seen in this light (Mukherjee, 2003).

4.74 This Section updates the analysis undertaken in RBI (2004a) to examine the degree of synchronicity of the Indian business cycle with world output as well as its major trading partners - developed as well as emerging economies. The empirical analysis covers the period 1980-2003. Apart from using overall GDP, non-agricultural GDP and industrial GDP are also used to capture co-movement, since agricultural sector - largely weather driven - still has a significant share in the Indian GDP.

4.75 Results show that the synchronicity of the business cycles in India with the world, as a whole, has increased in the post-opening phase (1991-2003) *vis-à-vis* the pre-opening phase (1980-90) (Table 4.14). Amongst major trading partners, cyclical synchronicity of India appears to have strengthened with most of the advanced economies during the post-1990 period *vis-à-vis* the pre-1990 period. Amongst developing country partners, synchronicity was lower with the East Asian partners during the 1990s. This decline in synchronicity with the East Asian trading partners could perhaps be reflecting the aftermath of the Asian financial crisis. While these economies were severely affected by the crisis, India was relatively unaffected, in large part due to prudent macroeconomic policies adopted by India since the early 1990s. Amongst other major economies, there is evidence of co-movement with China during the 1990s *vis-à-vis* negative correlation in the 1980s (Chart IV.19).

4.76 In addition to analysis of correlation of business cycles, an examination of their amplitude is useful as it is indicative of the severity of expansion and contraction of activities. Amplitude is influenced,

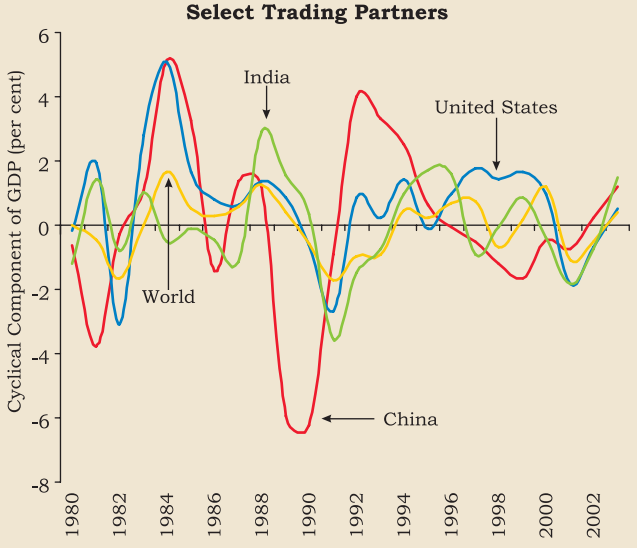
Table 4.14: Bilateral Correlation of India's Business Cycles with its Major Trading Partners

	1980-2003			1980-1990			1991-2003		
	GDP	Non-Agricultural GDP	Industrial GDP	GDP	Non-Agricultural GDP	Industrial GDP	GDP	Non-Agricultural GDP	Industrial GDP
1	2	3	4	5	6	7	8	9	10
Australia	0.42	0.45	0.29	0.15	0.26	-0.05	0.72	0.67	0.60
Belgium	0.19	0.21	0.01	0.12	0.09	-0.25	0.21	0.24	0.11
Brazil	-0.23	0.08	-0.07	-0.54	-0.12	-0.59	0.26	0.40	0.59
Canada	0.41	0.44	0.27	0.26	0.26	-0.05	0.53	0.59	0.49
China	-0.16	-0.13	-0.08	-0.29	-0.33	-0.41	0.06	0.06	0.30
Germany	-0.02	-0.20	-0.21	0.31	0.04	-0.05	-0.28	-0.35	-0.33
Hong Kong	-0.04	-0.05	0.10	-0.09	-0.11	-0.01	0.02	-0.02	0.20
Indonesia	0.07	0.11	0.26	0.10	0.08	-0.03	0.07	0.13	0.35
Japan	0.40	0.20	0.19	0.54	0.37	0.11	0.27	0.08	0.20
Korea	0.17	0.17	0.36	0.25	0.09	0.53	0.12	0.18	0.30
Malaysia	0.21	0.12	0.30	0.39	0.10	0.35	0.15	0.14	0.30
New Zealand	0.17	0.34	0.44	-0.40	-0.23	-0.15	0.62	0.65	0.80
Philippines	0.40	0.39	0.48	0.31	0.30	0.46	0.65	0.65	0.69
Singapore	0.31	0.20	0.39	0.39	0.15	0.48	0.26	0.26	0.37
Thailand	0.33	0.28	0.47	0.58	0.38	0.41	0.25	0.24	0.48
U.K.	0.43	0.49	0.49	0.13	0.24	0.23	0.69	0.67	0.69
U.S.A.	0.43	0.35	0.24	0.23	0.21	0.10	0.63	0.48	0.35
World	**0.52**	**0.50**	**0.40**	**0.22**	**0.29**	**-0.01**	**0.72**	**0.60**	**0.61**
Memo:									
Advanced Economies	0.51	0.42	0.30	0.39	0.38	0.12	0.59	0.45	0.40
Middle East	-0.36	-0.31	-0.26	-0.40	-0.17	-0.10	-0.37	-0.50	-0.46
Newly industrialised Asian economies	0.14	0.16	0.32	0.05	0.05	0.35	0.19	0.20	0.31
Other emerging market and developing countries	0.37	0.45	0.40	-0.19	0.01	-0.31	0.67	0.61	0.70

Note : Bilateral correlation coefficients indicate the correlation between the cyclical components of growth in GDP of India and the respective trading partner**.** The cyclical component is obtained by applying Hodrick-Prescott filter to the annual GDP growth rates.

Source : Computed from World Economic Outlook Database, IMF, September (2004).

Chart IV.19 : Business Cycles: India and Select Trading Partners



Source : Computed from World Economic Outlook Database, IMF, September (2004).

inter alia, by the degree of openness of an economy. Often globalisation is held responsible for increasing volatility of business cycles (Buch, 2002). Theoretically, however, the effects of integration on business cycle volatility are not clear. Increased volatility could as well be an outcome of the rapidly and badly coordinated capital account liberalisation across the countries. For India, results suggest that the amplitude of the business cycle was higher in the post-1990 period, *albeit* still lower than some of its key trading partners (Table 4.15).

4.77 The evidence on business cycles thus indicates that co-movement of output in India with the world output has increased in the 1990s. Domestic macroeconomic policies have, therefore, to take into account impact of such developments abroad on the domestic economy. As the Reserve Bank's Monetary and Credit Policy Statement of 2001-02 noted: "...Monetary management has now become much more complex than was the case even a few years ago. This is because of several factors, such as, the on-going integration of financial markets across the world, the phenomenal increase in financial turnover, liberalisation of the economy, and the rapidity with which unanticipated domestic and international tremors get transmitted to financial markets across the world because of the new technology...The need to quickly change the policy stance in the light of emerging situation has also been the experience of other monetary authorities including the US and European central

Table 4.15: Amplitude of Business Cycles: India and Major Trading Partners

(Per cent)

	1980-2003	1980-90	1991-2003
1	2	3	4
Australia	1.7	2.1	1.4
Belgium	1.3	1.4	1.3
Brazil	3.5	4.8	1.9
Canada	2.1	2.4	1.8
China	2.8	3.6	1.8
Germany	1.3	1.3	1.4
Hong Kong SAR	3.8	4.4	3.3
India (GDP)	**1.4**	**1.3**	**1.5**
India (Non-agricultural GDP)	**1.5**	**1.0**	**1.9**
India (Industrial GDP)	**3.1**	**2.3**	**3.7**
Indonesia	3.9	2.2	5.1
Japan	1.4	1.4	1.5
Korea	3.5	2.8	4.2
Malaysia	3.8	3.0	4.4
New Zealand	2.1	2.3	2.1
Philippines	3.3	4.5	2.0
Singapore	3.4	3.6	3.5
Thailand	3.8	2.4	4.7
United Kingdom	1.6	1.8	1.5
United States	1.7	2.0	1.4
World	**0.9**	**0.9**	**0.9**
Memo:			
Advanced economies	1.0	1.1	0.9
Middle East	1.9	2.3	1.5
Newly industrialised Asian economies	2.4	2.3	2.7
Other emerging market and developing countries	1.0	0.9	1.1

Note : Amplitude refers to standard deviation of the cyclical component of the growth in GDP. The cyclical component is obtained by applying Hodrick-Prescott filter to the annual GDP growth rates.

Source : Computed from World Economic Outlook Database, IMF, September (2004).

banks... Keeping these realities in view, it is particularly important for banks and financial institutions to make adequate allowances for unforeseen contingencies in their business plans, and fully take into account the implications of changes in the monetary and external environment on their operations..." (RBI, 2001).

III. CONCLUDING OBSERVATIONS

4.78 The decade of the 1990s has witnessed a further spread of globalisation. World trade has continued to expand at a rate higher than that of the world output. A more striking phenomenon during the 1990s was the increased financial openness which has led to a sharp surge in capital flows but with concomitant elevated volatility. Greater trade and

financial openness can increase cross-linkages and interdependence between economies. Monetary policy authorities are, therefore, required to make an assessment of these developments on domestic output and inflation in formulation of their policies. As it is, monetary policy operates in an uncertain environment. These uncertainties are exacerbated in an environment of greater trade and financial integration.

4.79 A particular aspect of globalisation that has heavily dominated the conduct of monetary policy in the emerging market economies (EMEs) in recent years has emanated from the behaviour of capital flows. Boom-bust pattern of capital flows to the EMEs has brought into sharp focus the constraints imposed by the 'impossible trinity'. The EMEs have been juggling to prevent excessive monetary expansion even as they pursue an open capital account and attempt to modulate the speed of change in the value of the local currency. In the process, the central banks in these economies have mainly relied on sterilisation as the policy response and build-up substantial reserves in episodes of punitive capital flows. Foreign exchange reserves reflect a precautionary demand and self-insurance necessitated by volatility of capital flows. This response of EMEs may be all the more appropriate since capital flows in the past 3-4 years are believed, in a large part, due to "push" factors. Another cause of concern for monetary authorities, at the present juncture, emanates from global imbalances, in particular, the US twin deficits. At some stage, the large US current account deficit would have to undergo correction. The concern mainly arises from the consequences for the global economy that may follow from the adjustment dynamics as the US current account adjusts towards sustainable levels.

4.80 Like other EMEs, India too has attracted large capital flows, the effect of which has been augmented, in recent years, by surpluses in the current account. Capital flows have been largely stable, reflecting a cautious approach to capital account liberalisation. Nonetheless, there have been a few episodes of volatility in capital flows. Overall, however, the period since 1993-94 has witnessed persistent surpluses in balance of payments. External sector developments, have, therefore, come to influence dynamics of monetary base and monetary aggregates. A multi-pronged approach has been followed to manage the external flows to ensure domestic economic and financial stability. The key features of the package of measures include: liberalisation of policies in regard to capital account outflows; encouraging pre-payment of external borrowings; alignment of interest rates on non-resident deposits; and, greater flexibility in exchange rate. These measures have been supplemented with sterilisation operations to minimise the inflationary impact of the flows and to ensure domestic financial stability.

4.81 Operations involving sterilisation are undertaken in the context of a policy response which has to be viewed as a package encompassing exchange rate policy, level of reserves, interest rate policy along with considerations related to domestic liquidity, financial market conditions as a whole, and degree of openness of the economy. Notwithstanding the large scale of sterilisation operations, interest rates in India have softened across the spectrum.

4.82 The recent experience with exchange rates has highlighted the need for developing countries to allow greater flexibility in exchange rates but the authorities should also have the capacity to intervene in foreign exchange markets in view of herd behaviour. With progressive opening of the emerging markets to financial flows, capital flows are playing an increased role in exchange rate determination and often reflected in higher exchange rate volatility. Against this background, India's exchange rate policy of focusing on managing volatility with no fixed rate target while allowing the underlying demand and supply conditions to determine the exchange rate movements over a period in an orderly way has stood the test of time. A key lesson of the Indian approach is that flexibility and pragmatism are required in the management of exchange rate in developing countries, rather than adherence to strict theoretical rules.

4.83 In retrospect, thus, the opening up of the Indian economy to external flows had a significant impact on the conduct of monetary policy. First, apart from price stability and credit availability, financial stability has gradually emerged as a key consideration in the conduct of monetary policy. Second, the instruments and operating procedures of monetary policy had to be constantly refined to meet the challenges thrown up by the vicissitudes of capital flows and a market-determined exchange rate. Existing arrangements to modulate liquidity had to be supplemented with innovations such as Market Stabilisation Scheme to absorb liquidity. These refinements coupled with prudential external sector management have indeed helped India to maintain monetary as well as financial stability even as the 1990s witnessed severe financial crises in many developing and emerging economies.

Annex IV.1

Management of Capital Inflows: Restrictions and Prudential Requirements – Country Experiences

Indonesia (1990)

- Measures imposed to discourage offshore borrowing, including limits on banks' net open-market foreign exchange positions and on off-balance-sheet positions. The three-month swap premium raised by 5 percentage points.
- All state-related offshore commercial borrowing made subject to prior approval and annual ceilings were set for new commitments over the next five years.

Malaysia (1989)

- Limits on non-trade-related swap transactions imposed on commercial banks.
- Banks subjected to a ceiling on their non-trade or non-investment related external liabilities.
- Residents prohibited from selling short-term monetary instruments to non-residents.
- Commercial banks were required to place with Bank Negara the ringgit funds of foreign banking institutions (Vostro accounts) held in non-interest-bearing accounts. During January-May 1994, these accounts were considered part of the eligible liabilities base for the calculation of required reserves, resulting in a negative effective interest rate on Vostro balances.

Philippines (1992)

- Bangko Central discouraged forward cover arrangements with non-resident financial institutions.

Thailand (1988)

- Banks and finance companies (a) net foreign exchange positions not to exceed 20 per cent of capital (subsequently increased to 25 per cent) and (b) net foreign liabilities not to exceed 20 per cent of capital.
- Residents disallowed from holding foreign currency deposits except only for trade-related purposes.
- Reserve requirements, to be held in the form of non-interest-bearing deposits at the Bank of Thailand, on short-term non-resident baht accounts raised from two to seven per cent. The seven per cent reserve requirement extended to finance companies short-term (less than one year) promissory notes held by non-residents. Offshore borrowing with maturities of less than one year (excepting loans for trade purposes) by commercial banks, finance companies, and finance and security companies also subjected to 7 per cent minimum reserve requirement.

Thailand (2003)

- Restrictions on interest payments imposed, effective October 14, 2003, on short-term borrowing in Baht from non-residents to prevent Thai Baht speculation. These include: (i) non-residents can maintain only current or saving accounts for settlement of international trade and investment transactions; deposits for other purposes must have maturity of at least six months; (ii) a deposit ceiling of 300 million Baht (equivalent of around US $ 7.5 million) per non-resident account; and (iii) financial institutions not to pay interest to overseas holders of Thai cheque and savings accounts.

Taiwan

- Restrictions on short-term financial transactions are used; for example, each qualified foreign institutional investor (QFII) is permitted to invest up to US $ 3 billion while individuals are permitted to invest up to US $ 5 million.

Eastern Europe and Latin America

Chile (1990)

- Non-remunerated 20 per cent (subsequently increased to 30 per cent) reserve requirement (to be deposited at the central bank for a period of one year) on liabilities in foreign currency for direct borrowing by firms.
- The stamp tax of 1.2 per cent a year (previously paid on domestic currency credits only) applied to foreign loans as well (excepting trade loans).

Colombia (1991)

- A 3 per cent withholding tax imposed on foreign exchange receipts from personal services rendered abroad and other transfers (but allowed to be claimed as credit against income tax liability).
- Banco de la Republica increased its commission on its cash purchases of foreign exchange from 1.5 to 5 per cent.
- Non-remunerated reserve requirement to be deposited at the central bank on liabilities in foreign currency for direct borrowing by firms. The reserve requirement to be maintained for the duration of the loan and applied to all loans with a maturity of five years or less, except

(Contd....)

(Concld.)

for trade credit with a maturity of four months or less. The percentage of the requirement declined as the maturity lengthened, from 140 per cent for funds that are 30 days or less to 42.8 per cent for five-year funds.

Czech Republic (1992)

- The central bank introduced a fee of 0.25 per cent on its foreign exchange transactions with banks, with the aim of discouraging short-term speculative flows.
- Limit on net short-term (less than one year) foreign borrowing by banks introduced.
- Each bank to ensure that its net short-term liabilities to non-residents, in all currencies, do not exceed the lower of 30 per cent of claims on non-residents or Kc 500 million.
- Administrative approval procedures imposed to slow down short-term borrowing by non-banks.

Mexico (1990)

- Foreign currency liabilities of commercial banks limited to 10 per cent of their total loan portfolio. Banks had to place 5 per cent of these liabilities in highly liquid instruments.

Brazil (1992)

- Between October 1994 and March 10, 1995, following measures imposed: (a) one per cent tax on foreign investment in the stock market, (b) tax on Brazilian companies issuing bonds overseas raised from 3 to 7 per cent of the total and (c) tax paid by foreigners on fixed-interest investments in Brazil raised from 5 to 9 per cent.

Note : Dates in brackets refer to the first year of the surge in inflows.

Sources :

1. Reinhart and Smith (1998).
2. Central bank websites.

Annex IV.2
Monetary Measures for Exchange Rate Management: India

1995-96

- **October 30, 1995**

  - Effective October 31, 1995 with a view to discouraging excessive use of bank credit to finance imports, outstandings under the import credit limit were subject to a 15 per cent interest rate surcharge.

- **November 29, 1995**

  - With a view to making the Foreign Currency Non-Resident Accounts (Banks)[FCNR(B)] Scheme more attractive to banks and to enable them to market FCNR(B) deposits more competitively, the increase in liabilities under the FCNR(B) Scheme over the level outstanding as on November 24, 1995 was exempted from CRR, effective fortnight beginning November 25, 1995.

- **December 6, 1995**

  - With a view to enabling banks to better balance the cost of FCNR (B) deposits and the return on the deployment of their funds, average CRR on the outstanding liabilities under the FCNR (B) scheme as on November 24, 1995 was reduced from 14.5 per cent to 7.5 per cent effective fortnight beginning December 9, 1995.

- **February 7, 1996**

  - With a view to removing the distortion in the effective interest rates on post shipment export credit denominated in foreign currency (PSCFC) facility being significantly lower than under foreign currency post-shipment credit, the PSCFC was terminated effective February 8, 1996.

  - Effective February 8, 1996 the interest rate on Post-shipment Export Rupee Credit for over 90 days and up to 180 days was deregulated.

  - Effective February 8, 1996 outstandings under the import credit limit were subject to a 25 per cent interest rate surcharge.

1997-98

- **December 2, 1997**

  - The CRR on net demand and time liabilities (NDTL) of scheduled commercial banks was raised by 0.5 percentage points to 10.0 per cent, effective fortnight beginning December 6, 1997.

  - The incremental CRR of 10.0 per cent on NRE and NRNR deposit schemes was removed effective fortnight beginning December 6, 1997.

- **December 17, 1997**

  - Effective December 18, 1997, banks were to charge a minimum interest rate of 20.0 per cent per annum, on overdue export bills from the date of advance. Earlier banks were free to charge any rate of interest on overdue export bills which were not realised within the due date.

  - An interest rate surcharge of 15.0 per cent of the lending rate on bank credit for imports was introduced, effective December 18, 1997.

- **December 31, 1997**

  - Effective January 1, 1998, the interest rate on post shipment rupee export credit beyond 90 days and up to six months was reduced from 15.0 per cent to 13.0 per cent.

- **January 16, 1998**

  - The Bank Rate was raised by two percentage points to 11.0 per cent per annum, effective January 17, 1998.

  - The repo rate was raised by 2 percentage points to 9 per cent, effective January 17, 1998.

  - CRR was raised by 0.5 percentage point to 10.5 per cent of NDTL of scheduled commercial banks effective fortnight beginning January 17, 1998.

  - Effective fortnight beginning January 17, 1998, all scheduled commercial banks were to be provided export credit refinance to the extent of 50 per cent of the increase in outstanding export credit eligible for refinance (as against 100 per cent earlier) over the level of such credit as on February 16, 1996.

  - Effective January 17, 1998, the interest rate surcharge on bank credit for imports (excluding export related imports) was raised from 15 per cent of the lending rate to 30 per cent.

1998-99

- **June 11, 1998**

  - To enable exporters to avail of export credit in foreign currency more effectively at internationally competitive

(Contd....)

(Concld.)

rates, banks were to charge a spread of not more than 1.5 percentage points over LIBOR.

- **June 13, 1998**

  - The Reserve Bank reduced the fixed repo rate by one percentage point to 5 per cent, effective June 15, 1998.

- **August 6, 1998**

  - A temporary revision in the interest rates charged up to March 31, 1999 by the scheduled commercial banks on pre-shipment and post-shipment rupee export credit was effected. It was decided that scheduled commercial banks would be provided export credit refinance at 2.0 percentage points below the Bank Rate (*i.e.,* 7.0 per cent per annum).

- **August 20, 1998**

  - As a temporary measure, in order to absorb excess liquidity, the CRR to be maintained by the scheduled commercial banks against their NDTL (excluding liabilities subject to zero CRR prescription) was increased from 10 per cent to 11 per cent, effective fortnight beginning August 29, 1998.

- **August 21, 1998**

  - The fixed repo rate was increased by three percentage points to 8 per cent from 5 per cent.

2000-01

- **May 25, 2000**

  - An interest rate surcharge of 50 per cent of the lending rate on import finance was imposed with effect from May 26, 2000, as a temporary measure on all non-essential imports.

  -Banks were advised to charge interest at 25 per cent per annum (minimum) from the date the bills fall due for payment in respect for overdue export bills in order to discourage any delay in realisation of export proceeds.

- **July 21, 2000**

  - The Bank Rate was increased by 1 percentage point from 7 per cent to 8 per cent effective July 21, 2000.

  - CRR was increased by 0.5 percentage point from 8 per cent to 8.5 per cent in two stages by 0.25 percentage point each effective from fortnights beginning July 29, 2000 and August 12, 2000, respectively.

  - The limits available to banks for refinance facilities including the collateralized lending facility (CLF) were reduced temporarily to the extent of 50 per cent of the eligible limits under two equal stages effective from July 29, 2000 and August 12, 2000.

V MONETARY POLICY AND INFLATION

5.1 It is now widely agreed that monetary policy can contribute to sustainable growth by maintaining price stability. Price stability, in turn, may be defined as a rate of inflation that is sufficiently low that households and businesses do not have to take it into account in making everyday decisions. High inflation has an adverse effect on growth due to a number of factors: distortion of relative prices which lowers economic efficiency; redistribution of wealth between debtors and creditors; aversion to long-term contracts and excessive resources are devoted to hedging inflation risks. In developing economies, in particular, an additional cost of high inflation emanates from its adverse effects on the poor population. Maintenance of low and stable inflation has thus emerged as a key objective of monetary policy and a noteworthy development during the 1980s and the 1990s was the reduction in inflation across a number of countries, irrespective of their stages of development. This reduction in inflation is believed to be on account of improvements in the conduct of monetary policy, although there is an ongoing debate on this in view of other factors such as globalisation, deregulation, competition and prudent fiscal policies that might have also played a role. In advanced economies, inflation rates in the recent decade have averaged around 2-3 per cent per annum - consistent with the establishment of reasonable price stability. In developing and emerging economies too, inflation rates have declined significantly.

5.2 The current phase of low global inflation is comparable with the pre-World War II phenomenon when inflation rates across regions were quite low. In the post-World War-II period, however, price levels showed a clear upward trend, with inflation rates rather than price levels clustering around a stationary level following price shocks. In particular, the collapse of the Bretton Woods arrangement was associated with a surge in inflation during the 1970s. Commodity price shocks, especially oil prices, coupled with expansionary demand management policies including Vietnam-war related fiscal expansion in the US provided a significant impetus to inflation. The belief that there existed a stable long-run trade-off between inflation and output as well as overestimation of potential output also contributed to the accommodative stance of monetary policies during this period. With inflation in double digits, deliberate disinflation strategies were put in place in a number of advanced economies during the 1980s and these were successful in reducing inflation. In particular, co-ordinated fiscal and monetary policies were deployed to curtail demand pressures in the economy.

5.3 Ongoing improvements in the conduct of monetary policy and other economic reforms helped to reduce inflation further during the 1990s. Structural reforms in labour markets, increased competition brought in by the forces of globalisation and fiscal consolidation contributed to low inflation. In order to keep inflation as well as inflation expectations low and stable, efforts to improve monetary-fiscal coordination have been strengthened through emphasis on fiscal rules.

5.4 Low and stable inflation - called the 'Death of Inflation' - has been accompanied with a relatively higher stability in economic activity and the period has been termed as a NICE - Non-Inflationary Consistently Expansionary - decade (King, 2004). However, low levels of inflation can also be a source of concern. Inflation during 2001-03 had fallen to such low levels in various countries following the global slowdown that it raised concerns of a generalised deflation. Aggressive monetary policy easing, however, prevented a generalised deflation. More recently, with signs of economic recovery, central banks have started withdrawing monetary stimuli in a measured manner.

5.5 The world has thus experienced a significant rise and fall in inflation. Concomitantly, the past half-century has also seen major changes in monetary policy frameworks. The debate on 'rules' *versus* 'discretion' led to a renewed focus on price stability by central banks, and issues such as central bank independence have come to the forefront. A number of central banks have adopted explicit inflation targets under an inflation targeting (IT) regime.

5.6 Like other economies, India too witnessed a rise in inflation during the 1970s and 1980s reflecting a mix of expansionary fiscal policy, accommodative monetary policy and supply shocks. In the aftermath of the balance of payments

difficulties, inflation rose further during the first half of the 1990s reflecting a variety of factors. Improved monetary-fiscal interface and other reforms imparted greater flexibility to the Reserve Bank in its monetary management since the mid-1990s, even though it had to contend with large capital flows. Equipped with abundant food stocks and foreign exchange reserves, the Reserve Bank has been able to contain inflation. Significant success in reining in inflation has helped to lower inflation expectations while the tolerable level of inflation has also come down.

5.7 Against this background, this Chapter covers issues related to the final objective of monetary process, *viz.,* price stability. Section I examines the international inflation record of the last half-century - the rise during the 1970s and the subsequent moderation. It undertakes a critical assessment of the various factors leading to this inflation behaviour. The brief experience till date of inflation targeting framework is critically analysed. Issues such as the conduct of monetary policy in a low inflation environment in the context of the recent threat of deflation, growth-inflation trade-off and exchange-rate pass-through to domestic prices are also addressed. Finally, this Section undertakes an assessment of the impact of oil shocks on economic activity and inflation. Section II focuses on the behaviour of inflation in India. It explores various factors that led to inflationary pressures during the 1970s and 1980s and the subsequent containment since mid-1990s. Relevance of core measures of inflation and inflation targeting for an emerging economy like India is critically assessed. In view of recent divergence between alternative indicators of inflation, an empirical exercise is undertaken to examine their long-run behaviour. Finally, the Section attempts to model inflation process in India. In view of the growing openness of the Indian economy coupled with a market-determined exchange rate system, an attempt is also made to estimate pass-through of exchange rate to domestic inflation. Concluding observations are presented in the final section.

I. GLOBAL INFLATION EXPERIENCE

5.8 Sustained inflation is a relatively modern phenomenon (IMF, 1996). The international experience until World War II was one of long run stability in prices, with periods of inflation - generally war induced - getting offset by periods of deflation. Average inflation was lower in the first half of the 20th century than that in the second half of the century (Christiano and Fitzgerald, 2003) (Table 5.1). At the same time, this pattern of increasing prices followed by declining prices rendered inflation more volatile in the period before the World War II *vis-à-vis* the post-War period. Following disturbances in the inter-war period and due to factors like changes in macroeconomic policies and varying degrees of supply shocks, the world experienced rising price levels from the late 1960s. Before the 1970s, the gold-dollar nominal anchor of the Bretton Woods system acted as a constraint on accommodative policies as long as the US maintained low inflation, because of other countries commitment to maintain the exchange value of their currency. In the post-Bretton Woods era, however, the freedom to pursue independent monetary policy emerged as a key factor contributing to high inflation during the 1970s.

5.9 Since the late 1960s, expansionary fiscal policies and accommodative monetary policies contributed to a strong cyclical upswing in the global economy creating supply-demand imbalances in many non-fuel primary commodities. In the US, for instance, the Vietnam war and tax cuts expanded the fiscal deficit. Fiscal deficits in advanced economies expanded from 1.2 per cent of GDP during the 1960s to 3.4 per cent during the 1970s. Capacity constraints were already putting upward pressure on wages and prices and as the oil price shock hit in 1973, many countries pursued accommodative monetary policies to offset the adverse output and employment effects of the shock. Consequently, inflation surged to double digits in many countries including the US, the UK and Japan. In response, monetary policies were tightened but inflation persisted - the period of the 1970s has come to be called the 'Great Inflation' (Meltzer, 2004) (Table 5.2 and Chart V.1).

Table 5.1: Inflation: A Historical Perspective

(Consumer price inflation in per cent)

Country Group	1900-13	1930-39	1950-60	1961-70	1971-80	1981-90	1991-95	1996-2000	2000
1	2	3	4	5	6	7	8	9	10
Advanced Economies	1.5	0.2	4.3	4.0	10.8	8.1	3.9	2.0	2.5
Selected Emerging Market Economies	1.2	1.6	15.2	18.3	29.8	139.7	94.4	23.4	7.8

Source : World Economic Outlook, May 2002, IMF.

Table 5.2: Consumer Price Inflation - A Cross-Country Survey

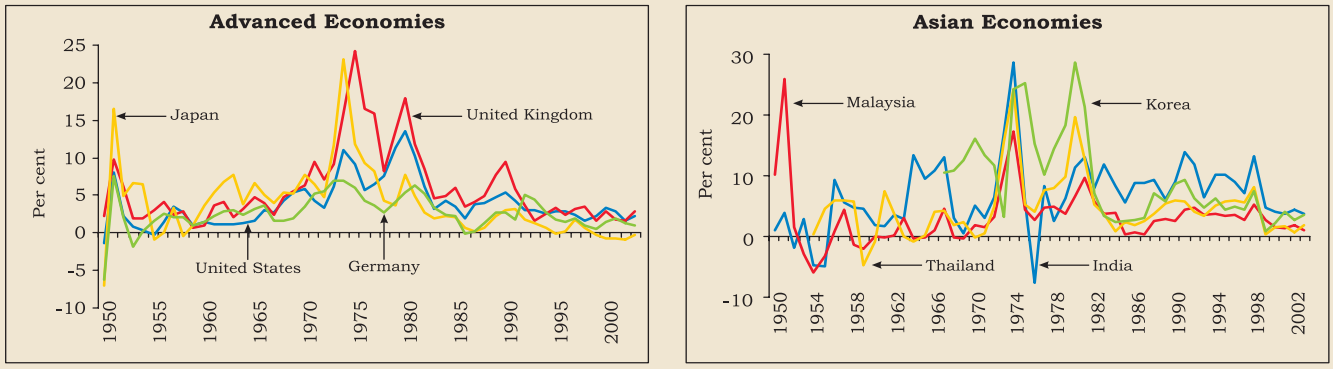
(Per cent)

Country	1950s	1960s	1970s	1980s	1990s	1990-94	1995-99	2000-03
1	2	3	4	5	6	7	8	9
Developed Economies								
Australia	6.5	2.5	9.8	8.4	2.5	3.0	2.0	3.7
Canada	2.4	2.5	7.4	6.5	2.2	2.8	1.6	2.6
France	6.2	3.9	8.9	7.4	1.9	2.5	1.2	1.8
Germany	1.1	2.4	4.9	2.9	2.3	3.3	1.3	1.5
Japan	3.0	5.4	9.1	2.5	1.2	2.0	0.4	-0.6
New Zealand	5.0	3.2	11.5	12.0	2.0	2.4	1.7	2.4
Switzerland	1.1	3.1	5.0	3.3	2.3	3.9	0.8	1.0
US	1.8	2.3	7.1	5.6	3.0	3.6	2.4	2.5
UK	3.5	3.5	12.6	7.4	3.7	4.6	2.8	2.3
Developing Economies								
Argentina	30.4	22.9	132.9	565.7	252.9	505.1	0.8	9.3
Brazil	–	–	–	354.5 @	843.3	1667.2	19.4	9.3
Chile	37.9	25.1	174.6	21.4	11.8	17.5	6.0	3.2
Egypt	0.9	2.9	7.8	17.4	10.5	14.1	6.9	3.0
India	**2.1**	**6.0**	**7.5**	**9.1**	**9.5**	**10.2**	**8.9**	**4.0**
Indonesia	40.8 #	213.3	16.9	9.6	14.5	8.6	20.4	8.6
Israel	2.4	5.2	32.7	129.7	11.2	14.3	8.2	2.2
Korea	–	11.3 *	15.2	8.4	5.7	7.0	4.4	3.1
Malaysia	2.7	0.8	5.5	3.7	3.7	3.8	3.5	1.5
Mexico	7.7	2.7	14.7	69.0	20.4	16.3	24.5	6.4
Philippines	0.5	4.7	14.6	14.2	9.5	11.1	7.9	4.1
Singapore	–	1.2 ##	5.9	2.8	1.9	2.9	1.0	0.6
South Africa	2.5 ^	2.5	9.7	14.6	9.9	12.4	7.3	6.5
Thailand	3.0	2.2	8.0	5.8	5.0	4.8	5.1	1.4

\# Average for the period 1958 and 1959.
* Average for the period 1967 to 1969. ## Average for 1961-69.
^ Average for the period 1955 to 1959. @ Average for the period 1981 to 1989.
Sources : International Financial Statistics, August 2004 and IFS Yearbook, 2003, IMF.

5.10 A number of factors contributed to the surge in inflation. In addition to supply shocks, the high inflation in the 1970s is believed to have been due to lax monetary policies. Although nominal interest rates were raised, it appears that they did not keep pace with the rise in inflation rates. As a result, despite increases in short-term nominal interest rates, real interest rates declined (Table 5.3). Estimates of monetary policy reaction functions like the Taylor rule that relate short-term policy rate to inflation and output show that the coefficient on the inflation rates was less than unity for the period prior to the 1980s (Table 5.4) (Clarida, Gertler and Gali, 1998). Falling real interest rates during the 1970s provided a further boost to aggregate demand and, in turn, this kept inflation high. One reason as to why

Chart V.1 : Consumer Prices in Selected Economies



Source : International Financial Statistics CD-Rom, August 2004, IMF.

Table 5.3: Short-term Real Interest Rates

(Per cent)

Country	1960s	1970s	1980s	1990s	2000-03
1	2	3	4	5	6
United States	1.8	-0.3	2.7	1.5	0.0
United Kingdom	1.5	-4.9	2.9	1.6	1.0
Japan	0.9	-3.1	2.0	0.8	0.8
Germany	1.3	1.1	3.5	3.3	2.1

Note : Short-term real interest rate is short-term nominal interest rate less consumer price inflation.

Source : International Financial Statistics CD-Rom, August 2004, IMF.

Table 5.4: Taylor Rule Coefficients for the US

Study	Pre-1979 Period	Post-1979 Period
1	2	3
Judd and Rudebusch (1998)	0.85 (1970-78)	1.69 (1979-87) 1.57 (1987-97)
Clarida, Gali and Gertler (2000)	0.83 (1960-79)	2.15 (1979-96)

Note : Figures in parentheses indicate the estimation period.

Sources : Clarida, Gali and Gertler (2000); Judd and Rudebusch (1998).

monetary authorities were accommodative during the 1970s could perhaps be attributed to the belief that there existed a long-run trade-off between inflation and output, *i.e.,* monetary policy makers could achieve permanently lower unemployment by accepting a little more inflation (Box V.1). Initially,

Box V.1

Growth-Inflation Trade-off

The possibility of a trade-off between inflation and output was first highlighted by Phillips (1958) who found a negative relationship between wage inflation and unemployment behaviour for the UK economy. While this gave an impression that the inflation-output trade-off, later known as the Phillips Curve, could be stable, Friedman (1968) and Phelps (1967) were strongly critical of the possibility of a stable long-run trade-off. In particular, both of them stressed that the trade-off would vanish once the role of expectations is incorporated in the simple Phillips Curve. The expectations augmented Phillips Curve would not be upward sloping; rather, it would be vertical at the economy's natural rate of unemployment, indicative of no long-run trade-off. The attempts of monetary authorities to reduce unemployment below its natural rate (alternatively, to increase output above its potential) would be reflected in higher inflation. The predictions of Friedman-Phelps were fully supported by the developments in the early 1970s as higher inflation was not accompanied by output gains; rather, the phenomenon of stagflation - higher inflation and lower output - was witnessed. While the Friedman-Phelps view discounted the proposition of a long-run trade-off, the possibility of even a short-run predictable trade-off also came under attack with the onslaught of rational expectations school of thought. The short-run trade-off continues to remain an issue of contention.

A short-run trade-off can arise on account of nominal and real rigidities in the economy (the New Keynesian perspective) or imperfect information (Lucas, 1973). In the latter view, as in 'misperceptions' model or 'signal extraction problem' of Lucas (1973), quantity supplied is a function of relative price movements (prices of firms' own goods *vis-a-vis* that of overall prices in the economy) but economic agents have imperfect information on aggregate price level movements in the economy. If the agents perceive the movements in the prices of their own goods as reflecting relative price movements, nominal demand shocks originating from monetary policy would have real impact leading to an observed trade-off. On the other hand, if the agents believe that the movements in the prices of their goods are only mirroring the aggregate price level movements, *i.e.*, they perceive no change in relative prices, nominal demand shocks will have no effect at all on real output and will lead only to changes in the prices. The trade-off, therefore, depends upon the perception of economic agents. If the past demand shocks have been large, economic agents may attribute all the price level movements to aggregate prices and perceive no relative price shocks. In this case, there are no real effects and no trade-off would arise. On the other hand, if the past nominal disturbances have been small, the price movements may be viewed as mainly reflecting relative movements which would lead to changes in real output and, hence, an observed trade-off. Even though models with rational expectations rule out a systematic short-run inflation-output trade-off, imperfect information produces the observed short-run trade-off.

In contrast to the new classical emphasis on flexible wages and prices, the New Keynesian view attributes the short-run trade-off to nominal and real wage rigidities in the economy that may arise on account of menu costs, overlapping contracts, asynchronised timing of price changes and aggregate demand externalities. Nominal rigidities can result from optimising choices of agents and the real effects of nominal demand shocks can be large even if the frictions preventing full nominal flexibility are small. Macroeconomic effects of such small rigidities can be substantial in the presence of externalities (Ball *et al.*, 1988). In this framework, nominal shocks have real effects because nominal prices change infrequently. An increase in the average rate of inflation causes firms to adjust prices more frequently to keep up with the rising price level. In turn, more frequent price changes imply that prices adjust more quickly to nominal shocks, and thus the shocks have smaller real effects. Countries with lower inflation levels are, therefore, expected to have relatively flat short-run Phillips Curves and hence, higher trade-offs (higher sacrifice ratios) and vice versa. Thus, as in the Lucas model, real effects of nominal shocks arise, *albeit* for different reasons: while the imperfect information model focuses on the variability of nominal shocks, the new Keynesians focus on the level of average inflation in generating real effects. In brief, it is now recognised that there is no long-run trade-off. The short-run trade-off is, at best, temporary when the economy is adjusting to shocks to aggregate demand and that too as long as expected inflation is lower than actual inflation (Jadhav, 2003).

the trade-off argument appeared to be holding true as unemployment fell and inflation rose only moderately during the later part of the 1960s. However, the developments during the 1970s showed no such trade-off and the actual outcome was stagflation - high inflation and high unemployment - validating the Friedman-Phelps critique which stressed no exploitable long-run trade-off. Although a consensus has emerged on the basis of empirical evidence that in the long run there is no trade-off between employment and inflation, it is the inconclusive evidence in the short-run that poses a challenge for monetary management(Reddy, 2001).

5.11 More recently, the view that central banks made a deliberate attempt to exploit the inflation-output trade-off during the 1970s has been subjected to a critical analysis. It has been argued that inflation increased during the 1970s because policymakers overestimated the degree of productive potential in the economy (Orphanides, 2003). Overestimation of potential gross domestic product (GDP) prompted policymakers to provide excessive monetary stimulus resulting in the "Great Inflation". The misplaced belief in the potential efficacy of wage-price controls also played a key role (Romer and Romer, 2002; Orphanides, 2001). The monetary policy neglect hypothesis - monetary policy was not seen as essential for inflation control and the job was delegated to income policies (wage and price controls) - led to a combination of easy monetary policy and use of other means to control inflation resulting in the breakout of inflation in the 1960s and 1970s (Nelson and Nikolov, 2002). A centralised wage bargaining and indexation system left most of the countries with higher inflationary expectations (IMF, *op cit.*). These alternative hypotheses notwithstanding, the primary cause of the "Great Inflation" was over-expansionary monetary and fiscal policies beginning in the mid-1960s and continuing, in fits and starts, well into the 1970s (Bernanke, 2003).

5.12 In contrast to the mainstream view which stresses oil shocks as one of the factors contributing to high inflation during the 1970s, Barsky and Kilian (2004) argue that oil price increases and, for that matter, increases in other commodity prices as well during the 1970s were the effect of expansionary monetary policies being followed at that time. Monetary fluctuations help to explain the historical movements of the prices of oil and other commodities including the surge in the prices of industrial commodities that preceded the 1973-74 oil price hike. In this view, major oil price increases were not as essential a part of the causal mechanism that generated the stagflation of the 1970s as is often thought. The causality is thus not from oil shocks to inflation but from macroeconomic variables to oil prices. Strong economic expansions strengthen cartels such as oil cartels while recessions weaken them.

5.13 The high and erratic inflation of the 1970s was also associated with periods of exceptionally poor economic performance in terms of marked instability in output and employment in the industrial countries (Table 5.5).

5.14 Recurrence of high inflation and the cumulative worsening of government finances brought into sharp focus both, the limitations of fiscal activism and the heavy costs of monetary instability (Jadhav, 2003). Therefore, central banks in advanced economies - notably, the US - resorted to deliberate disinflation measures. Monetary policies were tightened from the late 1970s onwards to rein in inflation and inflationary expectations (Chart V.2).

Table 5.5: Growth in Real GDP

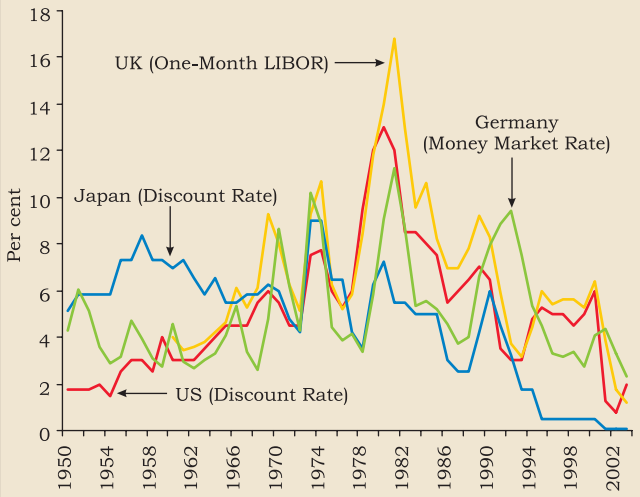
(Per cent)

Country Group	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-01
1	2	3	4	5	6	7	8
World	**4.2**	**3.9**	**2.6**	**4.0**	**3.4**	**3.8**	**3.1**
Industrial Countries	**3.9**	**3.3**	**2.1**	**3.6**	**2.1**	**2.9**	**2.0 ***
Developing Countries	**4.8**	**5.0**	**3.6**	**4.7**	**5.2**	**4.8**	**4.3**
Africa	6.4	2.9	1.3	3.7	1.7	3.3	3.7
Asia	4.4	6.0	6.7	7.5	7.8	6.2	6.7 **
Europe	..	..	2.3	3.0	-1.7	3.5	3.0 *
Middle East	10.7	4.7	1.2	0.4	4.8	3.7	4.0
Western Hemisphere	6.6	5.2	1.6	2.5	3.5	2.5	2.9

.. Not available. * 2000-02 ** 2000

Sources : 1. International Financial Statistics Yearbook, 2000 and 2003, IMF.
2. World Economic Outlook, September 2004, IMF.

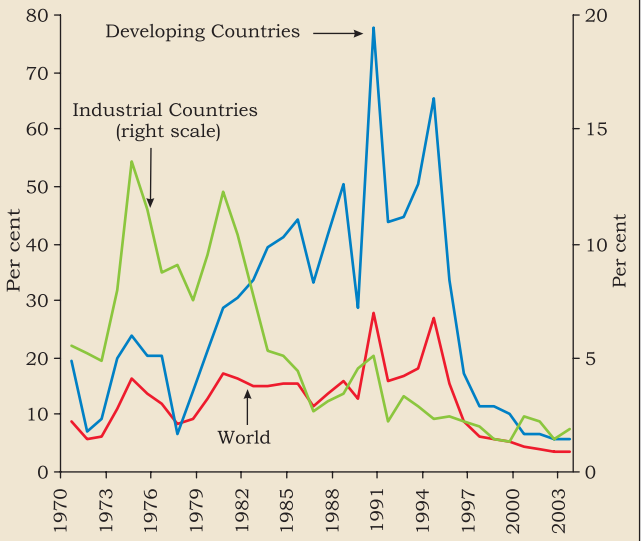
Chart V.2 : International Short-term Interest Rates



Source : International Financial Statistics CD-Rom, August 2004, IMF.

5.15 Strong contractionary measures led to a global recession but subsequently inflation was brought down. Reduction in inflation was thus not painless and the transition to low inflation involved substantial costs in terms of output and employment losses (Ball, 1994). Countries such as Germany, Switzerland and, to a certain extent, Japan which had responded earlier to control inflation following the first oil shock, were relatively better off; although they could not escape the global downturn, macroeconomic consequences of the second oil shock were less severe. Inflation in advanced economies fell from an average of 9.3 per cent per annum in the second half of the 1970s and 8.2 per cent in the first half of the 1980s to 3.6 per cent in the second half of the 1980s (Table 5.6 and Charts V.3-V.4). The decline was facilitated by a significant easing in oil prices, setting the stage for broad-based economic recovery.

Chart V.3 : Consumer Price Inflation by Regions



Source : International Financial Statistics CD-Rom, August 2004, IMF.

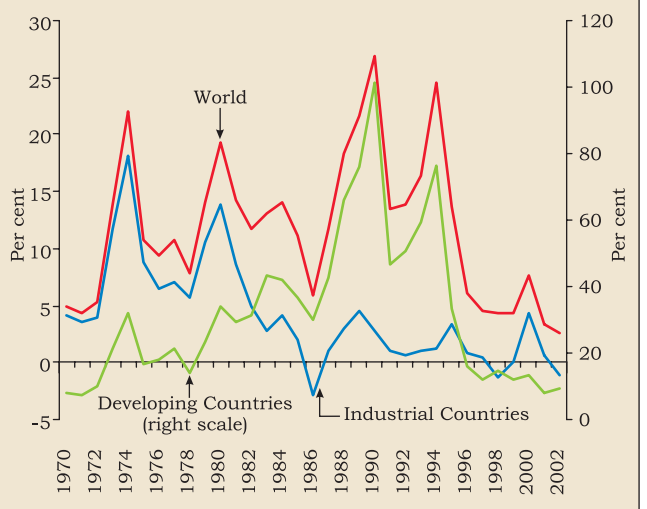
Table 5.6: Global Consumer Price Inflation

(Per cent per annum)

Country Group	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-03
1	2	3	4	5	6	7	8
Average Inflation Rates							
World	**9.6**	**11.3**	**15.7**	**13.9**	**21.2**	**8.3**	**3.9**
Industrial Countries	7.4	9.3	8.2	3.6	3.2	1.9	2.0
Developing Countries	**16.0**	**16.6**	**34.7**	**39.5**	**56.3**	**16.9**	**6.2**
Africa	7.9	17.3	16.9	17.6	34.2	17.5	9.8
Asia	12.2	7.6	10.8	7.2	9.2	6.9	2.1
Europe	7.7	15.7	29.2	46.3	128.6	56.0	18.2
Middle East	7.7	14.7	19.0	20.6	12.9	11.8	5.9
Western Hemisphere	33.6	31.3	77.5	104.7	242.4	18.7	8.6
Standard Deviation of Inflation							
World	**4.4**	**2.4**	**0.9**	**1.9**	**5.7**	**4.2**	**0.4**
Industrial Countries	3.6	1.4	3.1	0.8	1.2	0.5	0.4
Developing Countries	**7.3**	**6.2**	**5.5**	**8.7**	**14.8**	**9.8**	**0.5**
Africa	3.5	1.9	1.7	1.4	12.2	10.5	2.7
Asia	11.3	3.3	3.5	2.2	3.2	3.7	0.4
Europe	1.9	6.4	17.6	30.5	49.4	37.7	6.1
Middle East	5.5	3.0	1.9	6.0	2.0	6.5	1.1
Western Hemisphere	21.7	24.4	28.4	23.2	143.8	13.0	1.9

Source : International Financial Statistics CD-Rom, August 2004, IMF.

Chart V.4 : Producers' Price Inflation by Regions



Source : International Financial Statistics Year Book 2000 and 2003.

5.16 Inflation moderated further in advanced economies during the 1990s. In contrast to the behaviour during the 1970s, estimates of Taylor rules show that the coefficient on inflation has exceeded unity in the period since early 1980s, *i.e.*, in response to inflation threats, short-term nominal interest rates increased more than the increase in the inflation rate (see Table 5.4). Thus, real interest rates rose as inflation tended to go up which enabled a contractionary pull on aggregate demand and helped to contain inflation (Clarida *et al., op cit.*). A key factor that has contributed to low and stable inflation during the 1990s has been the institutional changes in the conduct of monetary policy - independent central banks, increased transparency and greater accountability - which has enhanced the reputation of monetary authorities and increased public credibility in their ability to deliver low inflation. Supporting economic policies - fiscal consolidation and structural reforms in the labour and product markets - also helped attain price stability. Efforts towards fiscal consolidation have been strengthened with clear-cut fiscal rules such as the Maastricht Treaty and the Stability and Growth Pact in the Euro area (see Chapter III).

5.17 Globalisation is also believed to have contributed to low and stable inflation. Lower trade barriers, deregulation, increased innovation and greater competition induced by the forces of globalisation have contributed to growth in cross-border trade exceeding that in output. Production of tradable goods has expanded rapidly and domestic economies are, therefore, increasingly exposed to the rigours of international competition and comparative advantage (Greenspan, 2004). This reduces unwarranted price mark-ups. Competition among countries to attract and retain mobile production factors also forces governments to reduce inefficiencies, ensure fiscal discipline as well as macroeconomic stability. The focus on macroeconomic stability is one of the factors that has led to greater central bank independence and, in turn, lower inflation (Wagner, 2001). Greater competition in the economy makes prices more flexible which reduces the impact of unanticipated inflation on output. This lowers the incentive for the monetary authority to systematically raise output above the potential (Rogoff, 2003). At the same time, there may be limits to globalisation and the speed of innovation since it is not apparent that globalisation will continue to progress at the same pace as seen in recent decades. Accordingly, as Fed Chairman Greenspan (2004) has recently observed, the structure of the transitional paradigm is necessarily sketchy as "we have not experienced a sufficient number of economic turning points to judge the causal linkages among increased globalisation, improved monetary policy, significant disinflation and greater economic stability".

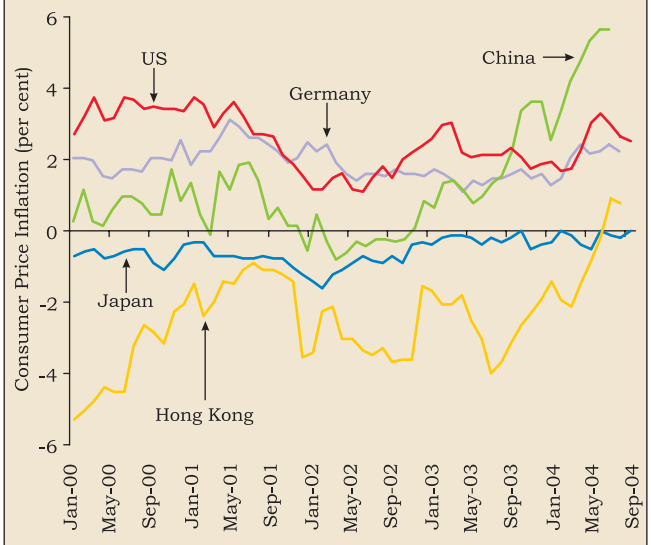
5.18 Low and stable inflation has also been attributed to technological advances in architecture and engineering as well as development of lighter but stronger materials. These technological advances have resulted in "downsized" output, evident in the huge expansion of the money value of output and trade but not in tonnage. As a consequence, material intensity of production has declined reflecting, "the substitution, in effect, of ideas for physical matter in the creation of economic value" (Greenspan, 1998). This has contributed to the secular decline in commodity prices, notwithstanding short spells of spikes in these prices. Concerns over increasing commodity price volatility around this declining trend have, however, increasingly engaged monetary policy attention in the short-run (Mohan, 2004). Declining share of commodity prices in final goods prices has been one important reason as to why consumer prices in most countries did not witness any sharp rise in 2003-04 even as commodity prices increased sharply during the period. The increase in commodity prices was reflected mainly in producer prices.

5.19 It is important to note that this moderation in inflation has not come at the cost of output volatility. Rather, the evidence suggests that output volatility has declined in the major advanced economies. For

example, the standard deviation of growth rate of GDP in the US during 1984-2002 was two-thirds of that during 1960-83 (Stock and Watson, 2003). Relatively stable GDP growth in recent decades is attributed to a number of factors such as more effective monetary policy, the increasing share of services in GDP, better inventory management and improved consumption-smoothing on account of financial innovations and deregulation. Good luck - absence of major supply disruptions and other such macroeconomic shocks in the recent decades - is also considered as one of the contributory factors. According to estimates by Stock and Watson (2002) for the US economy, almost 20-30 per cent of reduction in output volatility can be attributed to improved policy, another 20-30 per cent is on account of 'identified' good luck in the form of productivity and commodity price shocks while the remaining part - a substantial 40-60 per cent - is due to 'unknown' forms of good luck (the regression residuals).

5.20 Following the recent global slowdown of 2000-03, the fall in aggregate demand in the advanced economies put further downward pressures on the already low inflation. Illustratively, core inflation fell to less than one per cent in the US during 2003. Coupled with the ongoing protracted deflation in Japan at that time and deflation in a few other economies such as China, this raised serious concerns about a generalised deflation (Chart V.5). Deflation in China - 'good' deflation - was largely the result of a fast growth on the supply side. Policy concerns mainly arise from deflation that emanates from inadequate aggregate demand. In this case, expectations of falling prices encourage agents to defer purchases, thereby discouraging growth. Deflation does more macroeconomic damage than an equal and opposite amount of inflation and monetary policy may turn ineffective at very low inflation rates (DeLong 1999). These concerns with deflation arise, primarily on account of the zero bound on nominal interest rates which constrains the ability of monetary policy to pursue an accommodative stance (Box V.2).

Chart V.5 : Deflation Risks



Source : International Financial Statistics CD-Rom November 2004, IMF.

5.21 An issue of debate in the context of global disinflation during the 1990s has been the role of China. In view of a sharp rise in its exports coupled with, at least till last year, a deflationary movement in its domestic prices, a view has gained that China has been a source of downward pressure on global prices. Estimates by Kamin, Marazzi and Schindler (2004) suggest that the impact of Chinese exports on global inflation has been fairly modest. China's exports could have reduced (i) global inflation by 30 basis points (bp) per annum; (ii) US import price inflation by 80 bp but, in view of the US being a relatively closed economy, the impact on producer and consumer prices has likely been quite small; and, (iii) import unit values inflation by 10-25 basis points in the OECD countries. However, these estimates should be treated as upper bounds since they ignore the fact that China's rapid export growth has also been associated with equally rapid import growth and China is, therefore, contributing to not only global supply but also to global demand. This has been vividly reflected in the sharp rise in global commodity prices beginning early 2003.

Inflation in Developing Countries

5.22 Inflation cycles in developing economies broadly resemble those in advanced economies. Inflation in the developing economies accelerated during the 1970s and the 1980s before moderating from the second half of the 1990s. The decline in the subsequent period has been dramatic (see Tables 5.2 and 5.6). Inflation fell from 56 per cent in the first half of the 1990s to six per cent in 2000-03. The decline is widespread. In Latin America and the countries in transition, inflation has fallen from 230 per cent and 360 per cent, respectively, during 1990-94 to less than 10 per cent in 2003. Out of 184 members of the IMF, 44 countries had inflation greater than 40 per cent in 1992. In 2003, this number fell to three (Rogoff, 2003). At the same time, in terms of magnitude, the developing world is not a homogeneous group.

Box V.2

Monetary Policy in a Low Inflationary Environment

Inflation in a number of economies fell below one per cent in early 2003 and, in some cases, inflation even turned negative. This raised serious concerns about a generalised global deflation and its adverse consequences. In particular, the episode highlighted the limitations of monetary policy in countering deflation. The constraints on monetary policy arise due to a lower bound of zero on nominal interest rates and the concomitant 'liquidity trap'. Coupled with downward nominal wage rigidities, a lower bound of zero on nominal rate restricts the ability of the monetary policy to drive down real interest rates. Rather, with falling prices, real interest rates would increase and further reduce domestic demand leading to a vicious circle. Due to the zero interest rate floor, the probability of a deflationary spiral increases sharply - from nil for an inflation target of two per cent and above to 11 per cent when inflation target is zero (IMF, 2003). If the shocks are large, the deflationary spiral cannot be reversed by adjustment of the short-term nominal interest rate alone. Deflation's adverse effects also take place through financial fragility due to debt-deflation cycle - harm to bank's balance sheets from reduced collateral and from debtors' diminished ability to service loans and widening of risk premium on corporate bonds in view of worsening balance sheets.

In view of these adverse consequences, the first principle is to avoid the deflationary spiral itself and this can be done by having an inflation target 'consistently on the high side of zero' (Akerlof *et al*. 2000). Central banks have, therefore, generally adopted inflation targets - whether implicit or explicit - of around two per cent. Furthermore, central banks and fiscal authorities should be prepared for the worst and accordingly make advance contingency plans for a series of emergency measures (Svensson, 1999). These measures could include:

- In an environment of low inflation, central banks should take sufficient insurance against downside risks through a precautionary easing of monetary policy (Ahearne, Gagnon, Haltmaier and Kamin, 2002; Bernanke, 2004).
- Easing of fiscal policy to boost domestic demand.
- Open market purchases of long-term bonds (which would reinflate asset prices through portfolio rebalancing and the expectations channel and enable reduction in external finance premium), and, if need be, more unorthodox open market interventions in corporate bonds, property and stocks.
- Increase inflation expectations, *i.e.*, "credibly promise to be irresponsible" (Krugman, 1998).
- Depreciation of the exchange rate coupled with a price level target path (Svensson, 1999).
- Carry-tax on money (both reserve balances and currency) in order to lower short-term rates significantly below zero; an occasional carry-tax could be superior to perennially incurring a positive inflation rate (Goodfriend, 2000). However, the possibility of currency substitution could weaken the efficacy of a tax on currency.

As the Japanese experience shows, deflation can be quite protracted and the efficacy of the above proposals is debatable. Since the ability of monetary policy to avoid or counteract the deflationary spiral is uncertain, a policy of prevention rather than cure has been stressed. Monetary policy should be non-linear, *i.e.*, respond more aggressively to shortfalls of output from its potential than to a positive output gap so as to avoid deflationary spiral in the first place. This principle appears to have been the dominating feature of monetary policy reaction in response to the threat of deflation during 2003.

Central banks pursued aggressive easing of monetary policy. Short-term policy rates in a number of advanced economies were cut quite sharply to their record lows in the past four decades. For instance, the US Federal Reserve reduced the Federal Funds rate by 550 basis points from 6.5 per cent in November 2000 to one per cent by June 2003. Not only the actual rates were cut, the Federal Reserve committed itself to maintaining low rates “for a considerable period” to reassure financial markets and to keep inflation expectations stable (Bernanke, 2003). These measures appear to have succeeded in preventing the deflationary spiral. With a pick-up in economic activity and signs of incipient inflation, a number of central banks around the world started raising policy rates from late 2003 onwards.

Countries in Asia appear to be an exception and the inflation rates in these countries have been closer to that of the developed economies, reflecting fiscal prudence and sound macroeconomic management.

5.23 A key distinguishing feature of the developing world is their chronic fiscal deficits on account of low tax bases. Coupled with underdeveloped financial sector, high fiscal deficits increase the reliance of the governments in these economies on seigniorage revenues. The monetisation of government budget deficits fuels inflationary pressures, leading to a vicious nexus between fiscal deficits, money supply and inflation. More recent versions of the fiscal dominance theory suggest that high fiscal deficits can increase prices even without any increase in money supply - money supply adjusts to prices and not the other way around (Box V.3). The breakdown of the Bretton Woods system made it easier for the

Box V.3

Fiscal Theory of the Price Level

Traditionally, it is believed that inflation is ultimately a monetary phenomenon, *i.e.,* sustained and high inflation is the outcome of excessive money supply. More recently, a significant body of literature has argued that general price level determination is essentially a fiscal, rather than a monetary, phenomenon (Woodford, 1997 and Cochrane, 1999). In the new 'fiscal theory of the price level' (FTPL) view, an independent central bank is not sufficient to ensure price stability. Price stability requires not only an appropriate monetary policy, but also an appropriate fiscal policy.

FTPL essentially extends the unpleasant monetarist arithmetic (UMA) proposition of Sargent and Wallace (1981). The UMA proposition analysed the build-up of public debt and its inflationary implications in the context of a conflict between the monetary and fiscal authorities. It argued that, if real interest rates exceed the real growth rate, then bond financing may turn out to be more inflationary than money financing in the long-run. The reliance on bond-financing continues to raise the public debt over time in an explosive manner. At some point, the monetary authority would then be forced to provide seigniorage revenues to finance not only the future government primary deficits but also to service the existing public debt, forcing the creation of additional high-powered money, culminating in additional inflation. Therefore, fighting current inflation through tight monetary policy works only temporarily; eventually, it leads to higher inflation. In other words, an increase in primary fiscal deficits, at some time, requires a permanent increase in the inflation rate to ensure that the government's inter-temporal budget constraint is satisfied. If economic agents have rational expectations, a tight monetary policy today leads to higher inflation not only eventually but starting today; tighter money today lacks even a temporary ability to fight inflation (Sargent and Wallace, *op cit.*).

The UMA hypothesis - a weak form of FTPL - is consistent with Friedman's dictum, since here fiscal policy affects prices and inflation only through its effect on money. The more recent stronger versions of the FTPL de-emphasise the role of money in the causal process. In this non-Ricardian view, the inter-temporal budget constraint is perceived not as a constraint on fiscal policy but as an equilibrium condition. When something threatens to disturb the inter-temporal equilibrium, the market-clearing mechanism moves the price level to restore equality, *i.e.*, price level adjusts to equilibrate the real value of nominal government debt with the present value of surpluses.

$$\frac{\text{Nominal Debt}}{\text{Price Level}} = \text{Present Value of Surpluses.}$$

Thus, prices increase without any increase in money supply *per se* and the causation is from prices to money rather than the conventional money to prices. In FTPL, the above equation determines the price level in much the same way that MV= PY determines the price level in the quantity theory (Cochrane, 1999). The underlying premise of the FTPL is that the government can behave in a fundamentally different way from households: while households face inter-temporal budget constraints, the government does not face this same requirement. The government can follow non-Ricardian fiscal policies under which inter-temporal budget constraint is satisfied for some, but not all, price paths.

However, the key building block of the FTPL - government is not subject to inter-temporal budget constraint - is debatable (Buiter, 2002; McCallum, 2003). The fiscal theory of the price level rests on a fundamental confusion between equilibrium conditions and budget constraints. Policy conclusions drawn from FTPL would be harmful if they influenced the actual policy behaviour of the fiscal and monetary authorities and "when reality dawns, the result could be painful fiscal tightening, government default or unplanned recourse to inflation tax" (Buiter, 1999).

developing economies to explore seigniorage revenues in the 1970s and the 1980s until public apathy to inflation became an increasingly binding domestic constraint (IMF, 2002). Non-monetary factors - supply shocks due to the continued predominance of the agricultural sector - further complicate monetary management by blurring the role of demand side factors in the inflation process. Sharp devaluations in developing economies have often been fully transmitted to domestic prices which puts additional pressures on inflation. However, it may be noted that inflation hardly rose in Thailand, Indonesia and South Korea in the aftermath of the Asian crisis despite substantial devaluation of their currencies. In the case of transition economies, administered pricing as well as backward-looking wage indexation necessitated large adjustments in relative prices to catch up with free market prices at the demise of central planning.

5.24 An empirical analysis of 24 inflation episodes in 15 EMEs between 1980 and 2001 suggests that increases in output gap, agricultural shocks and expansionary fiscal policies raise the probability of inflation. A more democratic environment and an increase in capital flows (relative to GDP) reduce the probability of inflation starts (Domac and Yucel, 2004). A reduction of one percentage point in fiscal deficit/ GDP ratio reduces inflation by 2-6 percentage points (Catao and Terrones, 2003). In order to reduce

Table 5.7: Fiscal Deficits in Emerging Market Economies

(Per cent to GDP)

Region	1971-80	1981-85	1986-90	1991-95	1996-2000
1	2	3	4	5	6
All Emerging Markets	**5.1**	**5.7**	**3.9**	**2.6**	**2.7**
Latin America	2.1	4.1	4.9	1.0	2.0
Asia	3.5	5.0	3.2	1.2	2.8
Europe	2.5	2.4	2.5	4.4	3.4
Africa and the Middle East	12.4	11.2	5.3	3.7	2.4

Source : World Economic Outlook, May 2002, IMF.

inflation, macroeconomic policies in developing economies during the 1980s and 1990s, therefore, focused on fiscal consolidation and structural reforms to provide monetary policy necessary flexibility in its operations. Indeed, fiscal deficits in EMEs are now less than half of their levels in 1970s and 1980s (Table 5.7). Taken together with the earlier noted estimated impact of fiscal deficits on inflation, this suggests that inflation could have declined by 5-15 percentage points on account of the lower fiscal deficits (IMF, 2002).

5.25 Developing countries also benefited from lower import prices due to low inflation that had already been achieved in advanced economies. Openness to trade and liberalisation fostered competitive pressures which also contributed to lowering of inflation. Reduction or elimination of indexation of wage and financial contracts helped to reduce inflation inertia. Finally, as in advanced economies, improvements in the institutional design of monetary policy - increased central bank independence - with increased policy emphasis on price stability as an objective of monetary policy helped in lowering inflation in developing economies (IMF, *op cit.*).

Exchange Rate Pass-through

5.26 Sharp swings in exchange rates have become quite common as has been the recent experience of movements in the US dollar vis-à-vis the euro since 2000. Such sharp movements in exchange rates have significant implications for inflation process. One reason as to why emerging economies do not adopt flexible exchange rates is the alleged "fear of floating" (Calvo and Reinhart, 2002). This fear of floating is, *inter alia*, on account of a high and immediate pass through from exchange rate to prices, *i.e.*, sharp movements in the exchange rate can induce equivalent movements in domestic inflation. The degree of pass-through is important for the conduct of forward looking monetary policy (Ball, 1999).

5.27 The role of pass-through in explaining inflation received little attention in the traditional open-economy macroeconomic models because the assumptions of Purchasing Power Parity (PPP) implied complete and immediate pass-through. More recent research has approached this issue from the industrial organisation perspective and has stressed upon industry- or market-specific factors to explain the pricing behaviour of producers. Under imperfect competition, "pricing to market" may take place when markets are segmented and firms with some monopoly power price discriminate across countries. Incomplete pass-through results from third-degree price discrimination which allows destination prices to be stable in the face of exchange rate fluctuations due to nominal rigidity and local currency pricing (Devereux and Engel, 2002), market segmentation and presence of local distribution costs (Choudhri, Faruqee and Hakura, 2002) and adjustment in mark-ups for maintaining market share (McCarthy, 2000). The incomplete pass-through - 'exchange rate disconnect' - has important implications for monetary policy as it affects both the forecasts of inflation and also the effects of monetary policy on inflation.

5.28 Analysis across the distribution chain shows that pass-through is highest for imported goods at the dock and the lowest for consumer prices (Frankel, Parsley and Wei, 2004; Faruqee, 2004) (Table 5.8). Pass-through is largest and fastest for non-oil import price shocks followed by exchange rate shocks and oil price shocks (Hahn, 2003). Pass-through to import prices is relatively quick and, in the long-run, more or less complete. Illustratively, for a sample of 25 OECD countries over the period 1975-99, Campa and Goldberg (2002) find that short-run pass-through coefficient to import prices is 0.61 while the long-run coefficient is 0.77; similarly, for a sample of 11 industrialised countries over the sample period 1977-2001, Bailliu and Fujii (2004) estimates these coefficients at 0.75 and 0.91, respectively. In contrast, pass-through to producer prices and consumer prices is much lower at 0.20 and 0.08, respectively, in the short-run; the corresponding long-run coefficients are 0.16 and 0.30 (Bailiu and Fujii *op cit.*). Lower pass-through to consumer prices reflects the fact that local distribution costs are a large part of retail prices. Distribution costs are estimated to be 45-65 per cent of the final goods price in the case of the USA, 55-65 per cent in the euro area and even higher at 65-70 per cent in Japan (Faruqee, 2004).

Table 5.8: Exchange Rate Pass-through Coefficients

Response at Quarter:	Canada	France	Germany	Italy	Japan	U.K.	Average
1	2	3	4	5	6	7	8
Consumer Prices							
1	-0.02	0.00	0.15	0.02	-0.01	0.02	0.02
4	0.08	0.10	0.20	0.14	0.04	0.10	0.11
10	0.20	0.09	0.36	0.26	0.09	0.11	0.19
Producer Prices							
1	0.03	-0.09	0.02	0.10	0.02	0.01	0.01
4	0.22	-0.14	0.17	0.34	0.13	0.06	0.13
10	0.28	-0.07	0.16	0.33	0.12	0.05	0.15
Import Prices							
1	0.34	0.32	0.39	0.50	0.80	0.37	0.45
4	0.51	0.68	0.77	0.70	1.34	0.40	0.73
10	-0.18	0.18	0.27	0.13	0.79	0.16	0.22
Export Prices							
1	0.23	0.30	0.03	0.29	0.50	0.17	0.25
4	0.30	0.39	0.16	0.59	0.50	0.23	0.36
10	0.19	0.24	0.06	0.25	0.44	0.07	0.21
Terms of Trade							
1	-0.11	-0.03	-0.36	-0.21	-0.30	-0.20	-0.20
4	-0.21	-.0.28	-.0.61	-0.11	-0.84	-.017	-0.37
10	0.37	0.06	-0.21	0.12	-0.35	-0.09	-0.02

Source : Choudhri, Faruqee and Hakura, 2002.

5.29 Moreover, there is evidence that exchange rate pass-through to domestic inflation has tended to decline during the 1990s across a number of countries. Illustratively, the 1992 depreciation and the 1996 appreciation in the UK, the 1992 depreciation in Sweden, and the 1999 depreciation in Brazil showed a significantly small pass-through of exchange rate fluctuations to retail prices (Cunningham and Haldane, 1999). For a sample of 11 industrial countries, Gagnon and Ihrig (2001) find that the pass-through to consumer price inflation almost halved in the 1990s compared to the pre-1990s period (from 0.12 to 0.06). Similar results are reported by McCarthy (2000) for nine OECD countries; his results show that pass-through more than halved in the US, UK, Japan and France and to a lesser extent in other countries during the period 1983-96 compared to the earlier period 1976-82. There is evidence that pass-through has declined in developing countries also during the 1990s and the extent of decline in these countries is estimated to be larger than that in advanced economies (Frankel, Parsley and Wei, *op cit.*)

5.30 Interestingly, the decline in the pass-through during the 1990s has taken place in an environment characterised by a greater openness to external trade. A key explanation for the decline in the pass-through is the increased commitment of monetary policy towards maintaining price stability. When a central bank is committed to price stability, the pass-through is lower because inflation expectations do not rise proportionally with the movement in the exchange rate. This occurs as the central bank applies countervailing measures to contain aggregate demand contemporaneously and firms believe that the central bank will be successful in its objective. As the decade of the 1990s was one of low and stable inflation, the decline in pass-through may be correlated with this low inflation environment (Gagnon and Ihrig, 2001; Taylor, 2000; Choudhri and Hakura, 2001) (Table 5.9).

Table 5.9: Exchange Rate Pass-through and Inflation Regime

Country Group	Pass-through Coefficient after Quarters			
	1	2	4	20
1	2	3	4	5
Low Inflation Countries	0.04	0.08	0.14	0.16
Moderate Inflation Countries	0.09	0.19	0.33	0.35
High Inflation Countries	0.22	0.32	0.50	0.56

Note : Low -, moderate- and high-inflation groups are defined as consisting of countries with average inflation rates less than 10 per cent, between 10 and 30 per cent, and, more than 30 per cent, respectively.

Source : Choudhri and Hakura (2001).

5.31 Financial innovations such as availability of hedging products can also lower pass-through by permitting importers to ignore temporary shocks. Another view suggests that the decline in the pass-through could be due to a change in the composition of imports towards sectors with low pass-through rather than a decline across all sectors (Campa and Goldberg, 2002). Available evidence for industrialised economies, at least, confirms that their import composition has shifted in favour of sectors with low pass-through such as the manufacturing sector. According to Burstein, Eichenbaum and Rebelo (2003), the low observed pass-through might be due to disappearance of newly expensive goods from consumption and their replacement by inferior local substitutes.

Inflation Targeting

5.32 The choice of the nominal anchor is crucial for anchoring agents' expectations for maintaining price stability. Monetary regimes have evolved over time in order to reduce the inflationary bias in the economy through various refinements under the broader debate on 'rules' *versus* 'discretion' in policy making and more recently, "constrained discretion" which believes that the doctrines of 'rules' and 'discretion' are not mutually exclusive (Bernanke, 2003). In practice, there has been widespread use of either monetary or exchange rate targets as nominal anchors for policy. Since the mid-1980s, developments in financial markets and ongoing financial innovations brought about by financial liberalisation have rendered monetary targeting less effective. Exchange rate pegging aimed at controlling inflation by importing credibility from abroad (from a large successful low inflation anchor country) also turned out to be increasingly fragile, as countries opened their economies to external flows. The weaknesses with these intermediate targeting frameworks led to a search for alternative frameworks for ensuring price stability. One such framework that has become popular during the 1990s is 'Inflation Targeting'. Under this approach, central banks target the final objective *i.e.*, inflation itself rather than targeting any intermediate variable. Inflation targeting is considered as a mechanism to overcome inflationary bias in monetary policy through transparency, accountability and credibility (Box V.4).

5.33 The experience of inflation targeting countries to date appears to have been satisfactory. This is evident in the case of emerging countries starting from high levels of inflation as well as for industrial countries with lower inflation. Inflation in IT countries is less persistent than those in non-IT countries (Kuttner, 2004). At the same time, the decade of the 1990s has also been one of a generalised fall in inflation worldwide. Even countries that have not adopted IT have seen a significant decline in inflation or have been able to maintain low inflation. There is no unique or even best way of monetary policy making and different approaches or frameworks can lead to successful policies by adapting better to diverse institutional, economic and social environments (Issing, 2004). Moreover, some evidence suggests that average inflation as well as its volatility in prominent non-IT industrial countries has, in fact, been somewhat lower than that in prominent IT industrial countries. IT is not found to have any beneficial effect on the level of long-term interest rates (Gramlich, 2003; Ball and Sheridan, 2003). Although transparency is a key feature of IT, most IT central banks are extremely reluctant to discuss concerns about output fluctuations even though their actions show that they do care about them (Mishkin, 2004).

5.34 The ongoing slowdown in global economic activity and the threat of deflation has weakened the analytical edifice of the IT framework (Mohan, 2004a). The relevance of a single inflation target for a large economy, in particular, can be debated. Regional disparities warrant different short-run monetary policy approaches to its objectives. Indeed, there is a growing sense that by the time the current phase of the global business cycle has run itself out, inflation targeting may not be seen to have stood the test of time. The effectiveness of inflation targeting regime is also debatable, given the stylised evidence that monetary policy decisions affect prices with a lag of around two years, and more exogenous shocks can occur in this period.

5.35 It is also argued that an IT framework reduces the flexibility available to a central bank in reacting to shocks (Kohn, 2003). Although a number of EMEs have adopted IT, they face additional problems. These economies are typically more open and it exposes them to large exchange rate shocks which can have a significant influence on short-run inflation. Boom-bust pattern of capital flows can lead to substantial movements in exchange rate. Illustratively, Brazil was faced with a negative swing of US $ 30 billion - six per cent of its GDP - in net capital flows during 2002 that led to a sharp nominal depreciation of 50 per cent. Inflation rate reached 12.5 per cent, breaching the target of four per cent (Fraga, Minella and Goldfaj, 2003). EMEs may have to manage exchange rates

Box V.4

Inflation Targeting

Inflation targeting is a framework for monetary policy characterised by the public announcement of official quantitative targets (or target ranges) for the inflation rate and by explicit acknowledgment that low, stable inflation is monetary policy's primary long-run goal (Bernanke *et al.*, 1999). Following the pioneering approach of the Reserve Bank of New Zealand in 1989, more than 20 central banks have formally adopted an 'inflation targeting' (IT) framework. Adoption of IT has occurred in two distinct waves: between 1989 and 1995, seven countries adopted IT. This was followed by a three-year hiatus and then, beginning with the Czech Republic in January 1998, another 14 countries adopted IT (Kuttner, 2004).

Inflation targeting central banks have also typically placed a heavy emphasis on communication, transparency, and accountability; indeed, the announcement of the inflation target itself was motivated in large part as a means of clarifying the central bank's objectives and plans for the public. Inflation targeting encompasses five elements: 1) the public announcement of medium-term numerical targets for inflation; 2) an institutional commitment to price stability as the primary goal of monetary policy, to which other goals are subordinated; 3) an information inclusive strategy in which many variables, and not just monetary aggregates or the exchange rate are used for setting policy instruments; 4) increased transparency of the monetary policy strategy through communication with the public and the markets about the plans, objectives, and decisions of the monetary authorities; and 5) increased accountability of the central bank for attaining its objectives. Inflation targeting is "a way of thinking about policy", rather than "an automatic answer to all the difficult policy questions" (King, 1999).

A survey of the practices in the IT countries shows that the inflation target is close to two per cent in the advanced economies and somewhat higher in emerging economies (Annex V.1). A measure of consumer price inflation is the underlying target - in most cases, headline measures are preferred over 'core' measures of inflation for their clarity and easy understanding. In view of various supply shocks, all IT central banks, in practice, retain flexibility by attempting to meet the target on average rather than at all points of time. Various 'escape clauses' also provide maneuverability to these central banks. Thus, all central banks that have adopted IT follow a flexible version of the framework and not strict IT (Svensson, 1999).

Inflation forecast serves as the intermediate target. Monetary policy is conducted to bridge the gap between the inflation forecast and the mandated inflation target in a forward-looking manner. The success of this strategy thus is contingent upon the quality of inflation forecast and the central bank's commitment to policy decisions as well as effective communication of the decision process to the public for credibility gain.

Inflation targeting has several advantages as a medium-term strategy for monetary policy. In contrast to an exchange rate peg, inflation targeting enables monetary policy to focus on domestic considerations and to respond to shocks to the domestic economy. In contrast to monetary targeting, inflation targeting has the advantage that a stable relationship between money and inflation is not critical to its success: the strategy does not depend on such a relationship, but instead uses all available information to determine the best settings for the instruments of monetary policy. Inflation targeting also has the key advantage that it is easily understood by the public and is thus highly transparent. Inflation targeting central banks have taken public outreach a step further: they publish Inflation Report-type documents to clearly present their views about the past and future performance of inflation and monetary policy. The Inflation Reports provide good practical examples of communication with the public about the central bank's policy commitments. Better information on the part of market participants about central bank actions and intentions increases the degree to which central bank policy decisions can actually affect the expectations, and this increases the effectiveness of monetary policy.

more heavily since they are more commodity-price sensitive than advanced economies and commodity price fluctuations can wreak havoc with the forecastability of consumer price inflation (Eichengreen, 2002). An empirical evaluation of the experience of EMEs that have adopted IT confirms that IT is a more challenging task in such economies compared to developed economies that have adopted IT. While inflation in EMEs was indeed lower after they adopted IT, their performance was relatively worse *vis-à-vis* developed IT countries. Deviation of inflation from its targets is found to be larger and more common (Fraga, Minella and Goldfaj, 2003). The main strength of IT in EMEs is in its capacity to keep inflation under control once it is low (IMF, 2002). Inflation targeting by itself is not a sufficient condition for success. As with any other monetary regime, its success depends on the consistency and credibility with which it is applied. Erroneous or irresponsible fiscal, exchange rate and monetary policies will condemn to failure any monetary regime and inflation targeting is no exception (Loayza and Soto, 2002).

5.36 In contrast to most recent papers which assess the performance of IT countries versus non-IT countries, Fatás, Mihov and Rose (2004) focus on

the macroeconomic performance of the three key monetary regimes: exchange rate targeting countries, money growth targeting countries and IT countries. They find that what matters most for macroeconomic performance - low and stable inflation and output stability - is clear-cut quantitative goals by the monetary authority. Both having and hitting quantitative targets for monetary policy is found to be systematically and robustly associated with lower inflation. The exact form of the monetary target matters somewhat, but is less important than having some quantitative target. Successfully achieving a quantitative monetary goal is also associated with less volatile output.

5.37 In a similar vein, Sterne (2004) makes a distinction between inflation targeting and inflation targets. While only around 20 central banks follow the inflation targeting approach, a large number of central banks - such as, India - make public some sort of loose inflation targets (which could take the form of inflation forecasts/projections rather than targets *per se*). According to one survey, out of 95 countries, as many as 57 countries had some sort of inflation target/ projection/forecast (Table 5.10). Such inflation targets/ forecasts increase transparency and help to reinforce societies support for low inflation policies. They also provide a platform to the central bank to voice its independent opinion. In cases where inflation targets/ forecasts are missed, a central bank can provide analytical insights by identifying factors (say, fiscal dominance) contributing to missing the target. This can increase the costs to the government of ignoring the central bank advice. Explicit inflation targets and a credible commitment to them helps to stabilise financial markets. Gurkanyak, Sack and Swanson (2003) find that long-term forward interest rates in the US often react considerably to surprises in macroeconomic data releases and monetary policy announcements. In contrast, in the UK - which has an explicit inflation target - long-term forward interest rates demonstrate less excess sensitivity.

Table 5.10: Number of Countries Using Inflation Targets

Year	Countries with Inflation Target	Of which: Inflation Targeting Countries
1	2	3
1990	7	1
1993	23	9
1995	37	11
2000	56	17
2001	57	18

Source : Mahadeva and Sterne (2002).

5.38 A stylised fact in regard to inflation is that it is highly persistent, *i.e.*, if there is a shock that raises inflation today, inflation continues to remain high in the future and *vice versa.* High persistence (a unit root) indicates that inflation expectations are not well-anchored and policy efforts to reduce inflation will have to bear significant output losses. In this context, increased transparency in monetary policy formulation with priority to price stability as a key objective is expected to provide an anchor to inflation expectations and hence lower the persistence of inflation (Clark, 2003). This has an important implication: any future shock that raises inflation temporarily will not lead to a permanent rise in inflation expectations and actual inflation. Empirical evidence on persistence of inflation remains mixed. IMF (2002) suggests that inflation has become more predictable and less persistent. Levin, Natalucci and Piger (2004) find that IT anchors inflation expectations and, therefore, inflation is less persistent in IT countries than in non-IT countries. On the other hand, Cecchetti and Debelle (2004) and Marques (2004) argue that there has not been much change in persistence. Once a structural break in the mean of inflation is taken into account, there is no evidence that inflation persistence has been high in the previous decades.

Impact of Oil Price Shocks

5.39 In view of the recent sharp increase in international crude oil prices, this Section undertakes an assessment of their impact on economic activity. Nominal international crude oil prices have increased sharply recording new highs in the second half of 2004. The increase, however, needs to be viewed keeping in mind the sharp decline during the period 1999-2000. Notwithstanding this order of increase, prices in real terms remain less than the levels reached in 1981. An increase in oil prices affects both supply and demand in the economy. A hike in oil prices leads to an increase in the input costs for firms, reduces their profits which induces them to lower their output. As oil dependency has declined in industrialised countries over time, this supply side effect has weakened in these economies. In contrast, this effect remains significant for developing economies, in view of their increased oil dependency. On the demand side, higher oil prices reduce consumption and investment in the economy. Both supply and demand effects reinforce each other leading to a reduction in output. Consequent variations in exchange rate can add to these effects. High inflation might lead to a tightening of monetary policy,

which could further reduce output. Furthermore, high oil prices transfer income to oil producers. As oil producers have a lower propensity to consume than oil consumers, global demand falls (IMF, 2004).

5.40 According to IMF (2004), a permanent increase of US $ 5 per barrel in crude oil prices is estimated to reduce world output by 0.3 per cent a year after the hike. Although the recent increase in oil prices is large enough to constitute a shock to the system (Bernanke, 2004), the impact is likely to prove less consequential to economic growth and inflation than in the 1970s (Greenspan, 2004). Inflation is estimated to increase by 60-70 basis points in major developing regions - more than three-times the increase on industrial economies (Table 5.11). Recent research stresses that the effect on economic activity may be asymmetric - the adverse effect of an increase in oil prices is larger than the beneficial effect of an equivalent decline in oil prices. Furthermore, the beneficial effect is statistically insignificant. Studies that take such non-linearity into account suggest that a doubling of oil prices reduces output by 3.5-5 per cent in the US and by 1-2 per cent in the euro area (Jimenez-Rodriguez and Sanchez, 2004).

5.41 To conclude this section, an assessment of the inflation record of the past half-century shows that while, in the short-run, supply shocks can lead to large changes in the headline inflation, persistent high inflation is ultimately the outcome of lax monetary policies - as witnessed during the 1970s. Monetary tightening was insufficient during the 1970s and real interest rates actually trended lower. With inflation in double digits, central banks adopted deliberate disinflation strategies beginning late 1970s. Monetary policies were tightened and industrial economies could reduce inflation significantly by the second half of the 1980s, *albeit* at costs of large output and employment losses. Developing countries have also been able to reduce inflation during the 1990s as fiscal consolidation and structural reforms provided flexibility to monetary policy in meeting its price stability objectives.

Table 5.11: Impact of a Permanent US $ 5 a Barrel Increase in Oil Prices

(Per cent)

Region/Country	Impact after One Year on		
	Output	Inflation	Trade Balance
1	2	3	4
World	-0.3	..	..
Industrial Countries	-0.3	0.2	-0.1
USA	-0.4 (-0.03 to –0.05)	0.3	-0.1
Euro Area	-0.4 (-0.01 to -0.02)	0.3	-0.1
Japan	-0.2 (+0.02 to +0.05)	0.1	-0.2
Developing Economies			
Latin America	-0.1	0.6	0.0
Asia	-0.4	0.7	-0.5
China	-0.4	0.4	-0.3
India	-0.5	1.3	-0.6

Note : Figures in brackets give the cumulative impact of one per cent increase in oil prices on output after three years as estimated by Jimenez-Rodriguez and Sanchez (2004).

Sources : IMF (2004); Jimenez-Rodriguez and Sanchez, 2004.

5.42 In view of difficulties encountered with monetary targeting and exchange rate pegged regimes, a number of central banks including emerging economies have adopted IT frameworks. Although these IT countries were able to reduce inflation or maintain low inflation during the 1990s, stylised evidence shows that even non-IT countries were successful in this endeavour. EMEs which have adopted IT face a number of constraints. This is reflected in their performance which is relatively worse than that of advanced economies. An explicit numerical target is good for anchoring inflation but it comes at a cost. If the explicit inflation target cannot be achieved it weakens the credibility of the central bank (Mohan, 2004a). Thus it may not be appropriate to formulate monetary policy based on a simplistic inflation target or a single point inflexible point target as argued by many.

5.43 Sharp variations in exchange rates can have a large influence on inflation in the short-run and this is one reason for "fear of floating". Empirical evidence suggests that, even as economies have opened up, exchange rate pass-through to domestic prices has declined during the 1990s for advanced as well as developing economies. Success of monetary policy in maintaining low and stable inflation is considered to be one of factors that explain the decline in pass-through. Overall, improvements in the institutional design of the conduct of monetary policy such as greater independence to central banks have been a key factor that led to containment of inflation during the 1990s. A key lesson is that monetary policy can contribute to growth and employment by ensuring price stability - defined as low and stable inflation. Although there is uncertainty about how economies operate and about monetary policy itself, uncertainty is no excuse for not pursuing price stability.

5.44 Since increased globalisation and competition has been one of the factors that has contributed towards containment of inflation, countries'

perspective on inflation needs to be informed increasingly by world price trends, particularly in commodities of interest to them. An important consideration for reining inflationary expectations relates to the need to have clarity on price stability, effective communication, consistency in conduct of policy and transparency in explaining actions. Central banks should speak clearly to markets and listen to markets more carefully to ensure the intended objectives of policy.

II. INFLATION: THE INDIAN EXPERIENCE

5.45 Price stability has been an important objective of monetary policy in India. Compared with many developing economies, the Indian inflation experience can be considered satisfactory, despite recurrent supply shocks and continuing fiscal imbalances (Reddy, 1999). This is attributed to relatively better monetary management coupled with judicious supply management through buffer stocks of foodgrains and imports of sensitive commodities which contained the adverse effects of supply shocks and reined in inflation. Nonetheless, inflation increased during the 1970s and remained high thereafter till mid-1990s. In the period since 1996-97, inflation has edged lower reflecting concerted policy efforts.

Wholesale Price Inflation

5.46 Annual rate of inflation measured by variations in the wholesale price index (WPI) over the past five decades averaged 6.6 per cent in India. Inflation was very low during the 1950s averaging 1.7 per cent, but was quite volatile and annual inflation ranged between (-) 12.5 per cent and 13.8 per cent. The volatility was mainly on account of agricultural failures. Inflation accelerated to 6.4 per cent during the 1960s partly induced by the two wars during 1962 and 1965 and crop failures in 1965-66 when agricultural production fell by more than 16 per cent.

5.47 Inflation accelerated further during the 1970s due to both supply and demand shocks. The supply shocks emanated mainly from oil and food prices. Reflecting the first oil shock of 1973, import price deflator (measured as year-on-year changes in the unit value index of imports) surged by 43.0 per cent and 72.8 per cent during 1973-74 and 1974-75, respectively. In line with the sharp increase in average international crude oil prices by over 250 per cent in 1974, domestic fuel prices increased sharply from an annual average of about 4.7 per cent during the three years preceding the first oil crisis to about 26.5 per cent on average during the three years beginning 1973-74. The adverse impact of the oil price shocks got accentuated by the drought conditions in 1972-73, 1974-75 and 1979-80 which resulted in significant declines in agricultural output. Thus, higher fuel prices and agricultural commodity prices got reflected in overall inflation (Chart V.6). Sharp increases in money supply - even as output growth decelerated during the 1970s - added to demand pressures. Consequently, inflation moved up further in the 1970s, averaging about 9.0 per cent.

5.48 During the 1980s, demand pressures emanating from an expansionary fiscal policy and its monetisation coupled with intermittent supply shocks kept inflation high. Inflation averaged 8.0 per cent per annum during the 1980s, somewhat lower than that of 9.0 per cent per annum during the 1970s. Fiscal deficit of the Centre widened from 3.8 per cent of GDP during the 1970s to 6.8 per cent during the 1980s. A large part of this burden was borne by the Reserve Bank - almost 32 per cent of the fiscal deficit was financed by the Reserve Bank during the 1980s (25 per cent during the 1970s). Monetised deficit almost doubled from 1.1 per cent of GDP during the 1970s to 2.1 per cent during the 1980s. Consequently, the net Reserve Bank credit to the Centre expanded by 20.0 per cent per annum during the 1980s as compared with 14.5 per cent per annum during the 1970s and this led to an acceleration in reserve money growth. Broad money growth could, however, be contained to rates lower than the 1970s, as a result of increases in cash reserve requirements (Chart V.7). Exchange rate pressures also added to inflation.

Chart V.6 : Major Groups' Share in Overall WPI Inflation in India

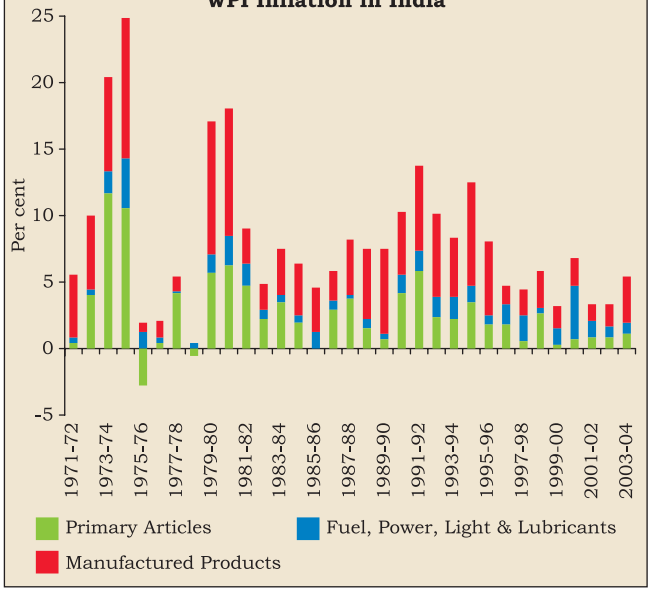
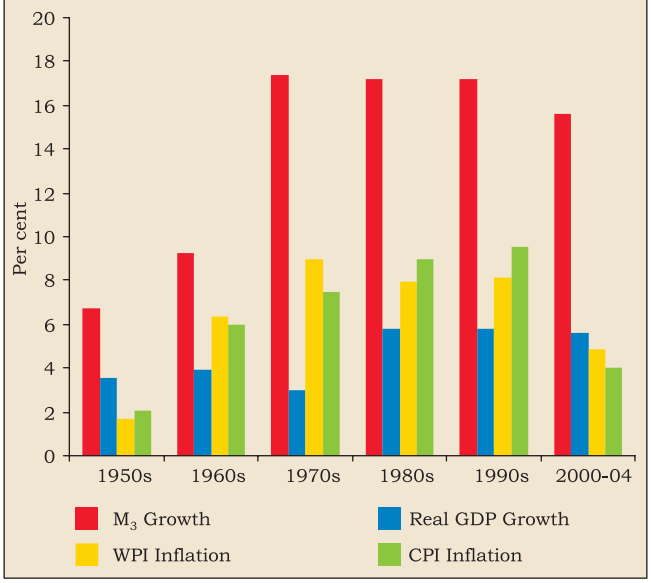


Chart V.7 : Money, Output and Prices in India



Exchange rate of the rupee *vis-à-vis* the US dollar depreciated by around seven per cent per annum during the 1980s in contrast to less than one per cent annual deprecation during the 1970s. Supply shocks added to inflation pressures. During the second oil crisis, average international crude oil prices increased by over 130 per cent in 1979. Concomitantly, domestic fuel price inflation increased sharply from an average of below 4.0 per cent in the three years before the crisis to an average of above 20 per cent during the three years of the crisis beginning 1979-80, with a peak of 25.3 per cent in 1980-81. After reaching 18.2 per cent in 1980-81 due to the second oil crisis, inflation remained in single digit throughout the 1980s.

5.49 Empirical evidence confirmed the adverse effects of excessive monetary expansion, emanating from the monetisation of the fiscal deficit, on inflation (Rangarajan and Arif, 1990). The experience of the 1980s also highlighted the inflation-fiscal-monetary nexus (Rangarajan, Basu and Jadhav, 1989; RBI, 2002a). Because of higher elasticity of government expenditure with respect to inflation relative to that of government receipts, higher inflation meant an enlarged fiscal deficit which, in turn, necessitated increased monetisation. This led to a further increase in inflation, starting a vicious circle of high inflation, high deficits and high monetisation.

5.50 Inflationary pressures accelerated in the first half of the 1990s. High fiscal and current account deficits of the 1980s culminated in the balance of payments difficulties during 1990-91. As part of the macroeconomic stabilisation programme and structural reforms undertaken in the aftermath of the crisis, exchange rate depreciated substantially. Between end-March 1991 and end-March 1992, the Indian rupee depreciated by nearly 37 per cent. Notwithstanding the limited openness of the Indian economy, this order of depreciation added to inflationary pressures. The exchange rate depreciated by more than 11 per cent per annum during the first half of the 1990s, almost double that during the second half of the 1980s. Hikes in procurement prices as well as supply-demand imbalances in essential commodities like pulses, oilseeds and edibles oils further added to inflation. A part of the hike in procurement prices was intentional so as to restore the terms of trade for agriculture. Primary articles inflation accelerated to 18.1 per cent in 1991-92 from 13.0 per cent a year back. Extremely low foreign exchange reserves - foreign currency assets at US $ 2.2 billion at end-March 1991, equivalent to less than one month of imports - constrained the ability to import to meet the demand gaps. The sustained rise in fuel prices at a double-digit rate (of about 13 per cent) in the first half of the 1990s had its impact on inflation not only directly but also through the second round effects.

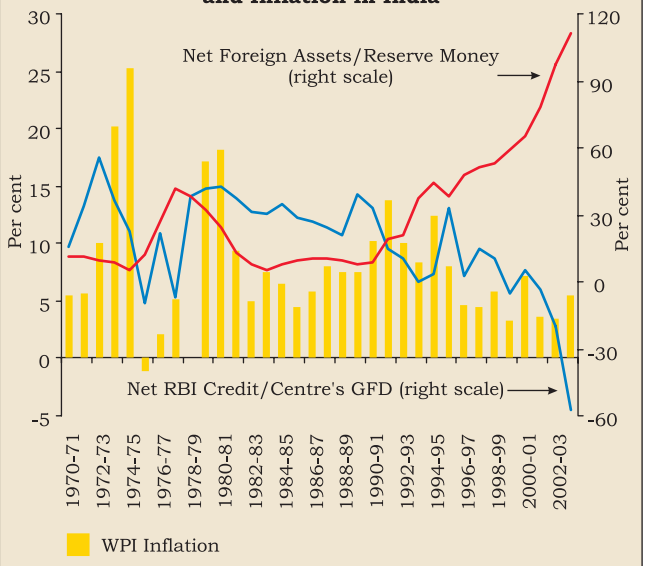
5.51 The phased opening up of the Indian economy also added to inflationary pressures. This emanated from large capital inflows during 1993-94 and 1994-95 and, despite a number of steps to sterilise them, monetary expansion remained well-above the desired trajectory. As a result of the combined effect of these factors, the first half of the 1990s saw a sharp increase in inflation which averaged 11.0 per cent, higher than the average of 8.0 per cent during the 1980s. The focus of monetary policy in the subsequent period, therefore, shifted towards containment of inflationary pressures in the economy.

5.52 Despite substantial capital inflows and high fiscal deficits in the period since 1996-97, inflation could be controlled. Inflation averaged around five per cent in the period 1996-97 to 2003-04, less than one-half of that during the first half of the 1990s and the average of 8-9 per cent during the 1970s and the 1980s. In fact, even in a year such as 2002-03 when the country faced its worst drought of the past two decades, inflation remained moderate. Not only that, the year 2002-03 was marked by the simultaneous impact of several other adverse developments such as border tensions and high international crude oil prices. As the Reserve Bank's Annual Report, 2002-03 observed that, "in the past, the occurrence of any one of the shocks experienced in 2002-03 in isolation had produced a sharp loss of

growth, higher inflation, balance of payments difficulties, and even financial instability in the economy. Seen in this context, the performance of the economy during 2002-03 demonstrates the developing resilience of the Indian economy. This suggests that perseverance with structural reforms, despite the drag of slower growth in the second half of the 1990s, has helped to relatively shock-proof the economy and sustain a stable macro-economic environment".

5.53 A number of factors explain the lowering of inflation and inflation expectations since mid-1990s. First, the Reserve Bank could largely contain money supply to levels consistent with its indicative inflation projections. This was despite a large order of capital inflows from abroad and the consequent build-up of reserves. As elaborated in Chapter IV, the expansionary effect of large forex purchases was sterilised effectively by resorting to a number of steps, especially open market sales of Government securities and a judicious use of Liquidity Adjustment Facility (LAF). Moreover, the increased flexibility due to the improved monetary-fiscal interface and reforms in the Government securities market enabled a lower degree of monetisation of fiscal deficits. In particular, market-determined yields on Government securities encouraged banks to willingly hold Government securities and this reduced the pressure on the Reserve Bank to finance the Government. Net

Chart V.8 : Monetary Management and Inflation in India



Reserve Bank credit to the Centre, in fact, recorded a negative growth in contrast to double-digit growth over the previous two and half decades (Chart V.8). There was a perceptible deceleration in the M_3 growth rate from around 18 per cent during 1990-95 to around 16 per cent during 1995-2004 even as real GDP growth accelerated from 5.0 per cent to 6.1 per cent over the same period (Table 5.12).

Table 5.12: Inflation in India and Key Determinants

(Annual Averages in Per cent)

Item	1970-75	1975-80	1980-85	1985-90	1990-95	1995-2004
1	2	3	4	5	6	7
WPI Inflation	13.3	4.7	9.3	6.7	11.0	5.1
Real GDP Growth	2.3	3.6	5.6	6.0	5.0	6.1
Broad Money (M_3) Growth	15.5	19.3	16.8	17.6	18.0	16.0
Reserve Money (M_0) Growth	12.2	17.2	16.5	17.2	17.0	11.2
Fiscal Deficit/GDP Ratio	3.3	4.4	5.9	7.7	6.3	5.6
Growth in Net RBI Credit to Centre	16.2	13.2	22.2	17.8	6.8	-5.4
Fiscal Deficit Financed by Net RBI Credit	37.2	16.9	35.3	27.9	12.6	-2.2
Fuel Inflation	18.5	8.4	12.5	6.0	12.8	10.1
Food Articles Inflation	15.0	1.9	10.7	6.4	12.4	5.5
Increase in Procurement Prices						
- Paddy		6.6*	7.6	6.3	13.0	5.5
- Wheat		2.7*	6.1	6.6	11.2	7.3
Import Price Inflation	28.2	6.7	8.0	8.0	7.6	6.8 @
Depreciation in Exchange Rate (Rupees per US dollar)	1.1	0.3	7.2	6.4	11.3	4.1
Food Stocks (Million tonnes)	3.2#	14.9	13.6	13.3	17.4	28.4
Import Cover of Forex Reserves (in months)	4.5	7.6	4.1	3.4	5.9	9.6

* Average for 1976-80. # Average for 1972-75. @ Average for 1995-2003.

5.54 Second, supply pressures from food prices eased as food articles inflation halved from around 12.0 per cent to around 6.0 per cent, led by a deceleration in procurement price increases. This decline, in turn, could have been enabled, *inter alia*, by a reduction in the headline inflation. Third, containment of global inflation reduced external pressure on domestic prices. Increase in import prices (as measured by unit value index of imports in rupees) was somewhat lower than that in the first half of the 1990s. Fourth, the exchange rate showed a significantly lower order of depreciation than in the first half of the 1990s: around four per cent per annum compared to 11 per cent. Moreover, as the results of an empirical exercise (discussed later) in this Chapter show, there is some evidence of a decline in exchange rate pass-through to domestic prices. A lower order of depreciation coupled with a decline in pass-through could have also helped in containing domestic inflation. Fifth, large buffer stocks of foodgrains have provided cushion against undue pressures on food prices through timely release of stocks. Sixth, the high level of foreign exchange reserves adds to comfort in supply management through imports of essential commodities. Adequate food stocks and foreign exchange reserves enabled not only the reduction in inflation *per se* but also contributed to lowering inflation expectations on a sustainable basis. Inflation expectations are quite critical. The effectiveness of monetary policy depends as much on the public's expectations about future policy as upon actual actions. Successful monetary policy is not so much a matter of effective control of overnight interest rates as it is of shaping market expectations of the way in which interest rates, inflation and income are likely to evolve over the coming year and later (Woodford, 2003).

5.55 Although inflation is not targeted *per se*, monetary policy in India has been formulated with indicative projections about inflation consistent with growth for curbing inflationary expectations. The projected inflation rate was gradually scaled down to around five per cent in recent years from around 7-9 per cent during the early part of the 1990s which helped in anchoring inflationary expectations and improving policy credibility. Inflation rate of around five per cent appears to be consistent with various research findings on the threshold inflation rate for India (Box V.5). However, even a moderate inflation rate poses

Box V. 5

Threshold Inflation

With price stability as the dominant objective of monetary policy, the choice of an appropriate rate of inflation consistent with maximising growth attains importance. Friedman (1969) argued that anticipated inflation should, on average, be negative. Steady deflation - at a rate equal to the real rate of interest - is optimal because only at a nominal zero rate of interest is the marginal opportunity cost of holding cash equal to its marginal production cost (close to zero in practice). If shocks are only nominal and rigidities are symmetrical (of equal size both downward and upward) then near zero inflation may be optimal. However, the real world is marked by existence of nominal rigidities and zero inflation is not an optimal target (Akerlof *et al.,* 1996). Zero inflation is also not favoured because of the upward bias in measured inflation. Moreover, a target of zero inflation rate increases the level of sustainable unemployment and hence, reduces output. In other words, a long-run output-inflation trade-off may exist at very low levels of inflation. The output effects of this trade-off may be large; for instance, the median increase in the equilibrium unemployment rate associated with zero rather than 3 per cent inflation is more than 2 percentage points. For Europe, even higher increases in unemployment are indicated (Holden 2002). For all these reasons, a low but positive rate of inflation is favoured as a target for 'greasing the wheels' of the economy (Krugman, 1998).

A number of studies have attempted to estimate threshold inflation rates for a range of countries. Identification of the threshold has, however, generally been a matter of debate because of lack of consensus on the specification of the appropriate model for estimating the inflation-growth relationship. This is probably because the relationship itself changes under shifting inflation regimes. Estimates of threshold inflation are sensitive to the choice of methodology, the sample period, and plausible growth determining factors or 'conditioning' variables in the model specification. International evidence shows a wide range for estimates of threshold inflation. While for industrial countries' threshold is placed between 1 to 3 per cent, for developing countries, it ranges from eight per cent to 40 per cent (Bruno and Easterly, 1995; Khan and Senhadji, 2002; Sarel, 1996). The results suggest that threshold is not fixed over time across countries - it is time varying and country specific in nature.

For India, since the second half of the 1990s, a number of studies have attempted to estimate threshold inflation. The Chakravarty Committee (RBI, 1985) referred to an inflation rate of four per cent as an acceptable rise in prices. This can be regarded as the first influential fix on the threshold rate of inflation in India. More recent studies have made estimates of threshold inflation using Sarel methodology and these estimates place threshold inflation for India in the range of 4-7 per cent (Kannan and Joshi, 2002; Rangarajan, 1997; RBI, 2003a; Samantaraya and Prasad, 2001; Vasudevan, Bhoi and Dhal, 1998). The estimate of threshold inflation has, however, a shifting perspective (RBI, 2003b). With structural changes in the economy, prolonged price stability at the global level as well as in India and the credible anchoring of inflationary expectations at a lower level, the threshold inflation could also move downwards.

a dilemma in an open economy. If the domestic inflation rate of an economy, however low it may be, is higher than the average inflation rate of its trading partners, it puts pressure on the exchange rate. In this context, the question of simultaneous balance of the internal and external sectors becomes a major issue.

Alternative Indicators of Inflation

5.56 The above analysis of inflation trends is based on movement in wholesale price index (WPI). In addition to WPI, two other key measures of inflation in India are consumer price inflation (industrial workers) and GDP deflator. Inflation measured by these alternative indicators over long-periods of time is broadly the same as that measured by WPI. Illustratively, over the period 1970-2004, WPI inflation averaged 8.0 per cent as compared with 8.2 per cent based on CPI inflation and 7.8 per cent based on GDP deflator and, moreover, the indicators show a fairly high correlation (Table 5.13 and Chart V.9). At the same time, year-to-year movements in alternative indicators often diverge from each other - decadal correlations are lower than the full sample period and do not display any consistent pattern. In particular, during the 1990s, correlation between WPI and CPI inflation has been the lowest amongst the three pairs of correlations.

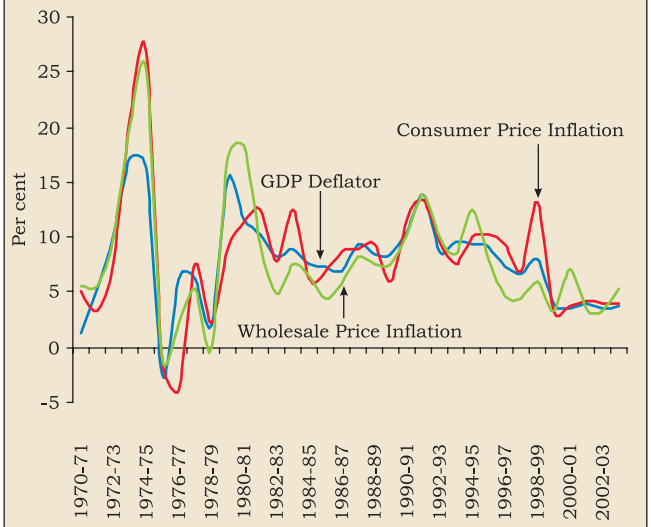
Table 5.13: Alternative Indicators of Inflation in India

(Per cent)

Period	WPI	CPI	GDPD
1	2	3	4
Average Inflation Rate			
1970-2004	8.0	8.2	7.8
Sub-periods			
1970-1980	9.0	7.7	7.7
1980-1990	8.0	9.0	8.7
1990-2000	8.1	9.5	8.7
Standard Deviation			
1970-2004	5.6	5.6	4.2
Sub-periods			
1970-1980	9.0	9.5	6.8
1980-1990	3.9	2.4	1.4
1990-2000	3.6	3.0	2.6
Correlation between			
	WPI and CPI	WPI and GDP	CPI and GDP
1970-2004	0.83	0.88	0.81
Sub-periods			
1970-1980	0.93	0.93	0.81
1980-1990	0.59	0.84	0.64
1990-2000	0.63	0.88	0.78

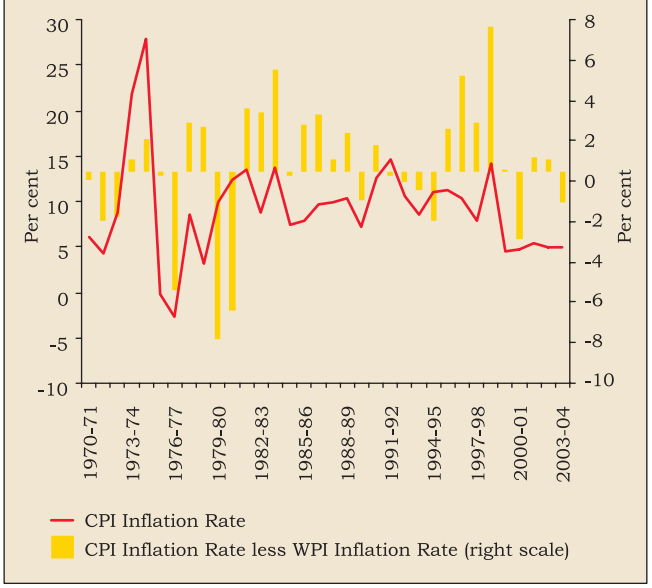
WPI : Wholesale Price Inflation. CPI : Consumer Price Inflation.
GDPD : GDP Deflator Inflation.

Chart V.9 : Alternative Indicators of Inflation in India



5.57 In recent months, gap between inflation rates based on alternative indicators has persisted. While point-to-point WPI inflation increased from 5.1 per cent at end-October 2003 to 7.1 per cent by October 2004, CPI inflation increased from 3.3 per cent to 4.6 per cent over the same period. The CPI inflation has thus been lower than WPI inflation by more than two percentage points. On earlier occasions, there has also been a divergence between the two measures: at times, CPI inflation has been higher than WPI inflation and *vice versa* (Chart V.10). While over the period 1970-2004, CPI inflation has exceeded WPI inflation, decadal pattern is not consistent. WPI inflation exceeded CPI inflation during the 1970s and *vice versa* during the 1980s and 1990s. In the first four years of the current decade, the pattern has again reversed with CPI inflation trailing WPI inflation. Two key factors - coverage and weights - explain the difference between these alternative indicators. Food group has a larger weight in the CPI while services are excluded from the WPI. In regard to trends during 2003-04, the sub-group "iron and steel" which contributed more than a fifth of overall WPI inflation has almost a negligible weight in the CPI. At the same time, inflation in India in recent months also reflects supply shocks emanating from international markets. The international factors relate primarily to oil but also, to some extent, other commodities and financial markets, including interest rates and exchange rates

Chart V.10 : CPI Inflation and Divergence from WPI



(Reddy, 2004). Globally, services inflation has consistently exceeded goods inflation in the past four decades (Box V.6).

5.58 As noted earlier, over long-periods of time, the inflation rates based on alternative measures tend to converge. This suggests that deviations between the various indicators of inflation appear to be self-correcting and the various inflation measures co-move in the long-run (Samanta, 1999). In other words, inflation indicators are co-integrated. This Section attempts to examine the time series properties of the two main indicators - WPI and CPI - using monthly data from April 1980 to March 2004 in a cointegration framework. Formal econometric evidence confirms that WPI and CPI in India are co-integrated and the results of short-run dynamics indicate that the error correction term is statistically significant in the equation for consumer prices. Thus, these results indicate that shocks that cause short-run divergence between the two indices are corrected through movements in the CPI[2]. The estimated coefficient of the error correction term at 0.034 suggests that more than three per cent of the divergence from the long-run relationship is corrected every month, *i.e.*, almost one-half of the divergence is corrected within one year.

Box V. 6

Goods and Services Inflation

A stylised fact of the global inflation trends is that services inflation has consistently exceeded that in goods inflation. During the most recent decade, the gap between the two was as high as two percentage points in some of the advanced economies such as the US and the UK (Table 5.14). In fact, during the last couple of years, when the world faced a threat of deflation, goods inflation was actually negative and declining even further in a number of the advanced economies. It was the services inflation which held up the headline inflation in countries like the US and the UK and, consequently, the gap between the two series was even higher in 2003.

A number of factors explain the gap. First, services are largely non-tradable and exhibit low productivity. Therefore, the higher services inflation can be attributed to faster productivity growth in manufacturing. Productivity in goods sectors is increasing at a rate of around two per cent per annum - more or less the same rate as the inflation target in most of the advanced economies. If the headline target of two per cent is to be achieved, inflation in goods will have to be close to zero or even declining. Second, as populations age, demand for services gets stronger than that that of goods. With the increasing elderly population in advanced economies, the demand of services has been strong in these economies and this puts pressures on the prices of services. Third, the increased divergence in recent years in the US can also be attributed to sharp exchange rate movements. Although there is evidence that exchange rate pass-through has declined, it appears to have been offset by the large order of appreciation of the US dollar in the 1990s. This appreciation moderated goods inflation while leaving services inflation unaffected (Clark, 2004). If this hypothesis is correct, the recent depreciation of the US dollar is expected to reduce the gap in the coming years. Difficulties in measurements of prices of services can also contribute to the divergence. For instance, the quality bias in measurement of services exceeds that of goods.

[2] Co-integration analysis in the Johansen-Juselius framework is undertaken for the period using monthly data from April 1980 to March 2004. The VAR is estimated with 13 lags. Results indicate that there exists one cointegrating vector between WPI and CPI which is:
LWPI = -0.6 + 0.91 LCPI
The error-correction equations are as below:
DLWPI = -0.004 ECM(t-1) + lags $\bar{R}^2$ = 0.28 DW = 1.96
(0.3)
DLCPI = 0.034 ECM(t-1) + lags $\bar{R}^2$ = 0.44 DW = 1.97
(3.2)*
LWPI and LCPI are logs of wholesale price and consumer price indices, respectively. Prefix D indicates first difference. ECM is the error correction term. Figures in parentheses are t-statistics. * denotes significant at 1% level.

Table 5.14: Goods and Services Inflation in Major Economies

(Excess of Services over Goods Inflation)

Period	Canada	US	Euro Area	UK	Japan
1	2	3	4	5	6
1962-70	1.7	1.7			
1970-90	0.4	2.2		2.3	1.5
1990-2002	0.8	1.7	1.3	2.2	1.2

Source : Gagnon, Sabourin and Lavoie (2004).

5.59 Divergence between various indicators of headline inflation complicates the conduct of monetary policy as it becomes difficult to make a correct assessment of the potential inflationary pressures based on the available data for the current period. While there are uncertainties, it is perhaps useful to look at the recent inflation history for an assessment of inflationary expectations. Measures of underlying inflation - core inflation - can also be useful (Box V.7). From the viewpoint of formulation of monetary policy, it is the underlying inflation or core inflation that is important and analytical work on defining appropriate "core inflation" for India may be worth exploring (Reddy, 1999).

Box V.7

Core Inflation

Headline inflation reflects not only the effect of demand pressures but also supply shocks which impart transitory noise and bias to the headline. Thus, a supply shock arising from crop failures will have the effect of raising the headline inflation. On the other hand, a positive supply shock - say, from a good harvest - may reduce the headline inflation for some time even if underlying inflationary pressures are building up. In the event of such supply disturbances, policy actions to counter the impact on the aggregate price level will tend to accentuate the output effects of the disturbances, generating a short-run conflict between the central bank's inflation and output objectives. According to Woodford (2003), it is the stickiness in prices that leads to deviation of actual output from its natural (potential) level of output. As all goods prices are not sticky, central banks should target a measure of core inflation that places greater weight on those prices which are stickier.

The term core inflation was propounded by Eckstein (1982) who defined it as 'the trend increase of the cost of factors of production' that 'originates in the long-term expectations of inflation in the minds of households and businesses, in the contractual arrangements which sustain the wage-price momentum, and in the tax system'. A number of approaches are used to compute core inflation. The most common approach is the 'exclusion' approach which excludes specific components of the headline inflation that are regarded as subject to extreme price variations due to temporary factors. A key feature of this method is its simplicity. A major criticism of this approach is that temporary disturbances are not necessarily limited to specific sub-components. Moreover, completely removing the volatile items has the potential risk of a permanent loss of significant information. These weaknesses are overcome to some extent by the limited influence estimator approach of Bryan and Cecchetti (1993). The basic premise of this approach is that in the face of relative price shocks, the empirical distribution of disaggregated price change is not normal and hence the sample mean looses its robustness. Under these circumstances, a robust measure of core inflation can be devised through statistical measures of trimmed mean or weighted median. Under the trimmed mean approach, the sample points are rearranged from the lowest to the highest values, and a fixed percentage of the lowest and highest sample points is ignored in computing the mean value. However, by excluding components experiencing a very large relative price change, the trimmed mean method may miss price changes that provide useful information on trend inflation. If prices of some goods adjust faster than others, trimming the large price changes will exclude such quick-to-rise components that signal a shift in aggregate demand and underlying inflation trend (Clark, 2003).

A third approach estimates core inflation through a structural Vector Auto Regression (VAR) method (Quah and Vahey, 1995). The authors define core inflation as that component of measured inflation that has no long-run impact on real output - a notion consistent with the vertical long-run Phillips Curve interpretation of movement in inflation and output. This definition excludes the impact of supply shocks that may have a permanent impact on the price level, but no lasting impact on the rate of inflation. The underlying proposition of this approach that inflation is neutral in its effects on the real economy is debatable; and, if it is assumed that the proposition is correct, then it raises the issue as to why should a central bank be concerned about price stability (Wynne, 1999). Morana (2004) has recently attempted to compute core inflation, based on recent theoretical developments in the estimation of fractionally co-integrated process. Howsoever, they are measured, for core measures to be useful for monetary policy formulation, they should be computable in real time and have some predictive power for future inflation (Wynne, 1999).

Two alternatives, exclusion-based and limited influence estimators (trimmed mean), have been examined for India (Samanta, 1999; Mohanty, Rath and Ramaiah, 2000). However, the loss of information content in the construction of core inflation and the relatively greater public acceptability of the headline inflation make the core measures useful only as indicators of the underlying inflationary process rather than as policy targets. Furthermore, in developing countries, a measure of core inflation excluding food items - which can account for more than half of the weight in the index - may not be very meaningful (Jalan, 2002).

5.60 A related issue is the relevance of inflation targeting for a country like India. As discussed in Section I, during the 1990s, both IT and non-IT countries have succeeded in reducing inflation and there is no clear evidence that IT countries perform better than non-IT countries. As the empirical evidence showed, the record of EMEs that have adopted IT is relatively weaker than that of advanced economies for a variety of reasons discussed earlier. In addition, there are several constraints such as recurrent supply shocks, persistence of fiscal dominance and absence of fully integrated financial markets in pursuing an IT framework in India (RBI, 2000a; Jalan 2002) (see Chapter III).

Modelling Inflation in India

5.61 Monetary policy affects output and prices with lags. Accordingly, for a forward-looking monetary policy, a key input is estimates of the future path of inflation and demand conditions. A number of approaches are available for modelling inflation and deriving inflation expectations such as model-based forecasts or breakeven inflation rates (Box V.8). A common approach to modelling inflation is provided by estimating a short-run aggregate supply curve, *i.e.*, Phillips curve which relates inflation to demand pressures in the economy. The Phillips Curve appears to be one of the few ways to forecast inflation that have been reliable (Stock and Watson, 2001)[3]. Actual inflation movements are

Box V.8

Inflation Indexed Bonds and Inflation Expectations

Apart from model-based forecasts and periodic surveys of inflation expectations, inflation-indexed bonds provide central banks an estimate of the likely outturn of inflation. Indexed-bonds are particularly attractive, with the advantage of being available for a wide range of maturities, entirely forward looking, timely and updated every working day.

Assuming that the real yield promised by an inflation indexed bond equals the expected real yield on a conventional bond of a similar maturity, the 'breakeven inflation rate' - difference between the conventional bond's nominal yield and the indexed bond's real yield - roughly equals the expected inflation *plus* risk premium. With an unchanged inflation risk premium, if conventional bond yields rise and indexed bond yields are unchanged, one can infer that there has been a rise in inflation expectations. If yields on conventional and indexed bonds rise by the same amount, one can infer that real interest rates have risen with no change in expected inflation. Looking at conventional and indexed Treasury bonds with various maturities, one can obtain information about real interest rates and market expectations of inflation over various horizons.

Although useful and quite simple, inflation expectations derived from indexed bonds have some limitations (Bernanke, 2004). First, since the breakeven inflation rate includes an (unknown) inflation risk premium, it does not give an estimate of the level of expected inflation *per se*. Thus, breakeven inflation rates provide an overestimate of the expected inflation. Second, inflation risk premium itself could change over time which further complicates the analysis. Third, the stock of indexed-bonds is typically quite small compared to conventional bonds and hence indexed bonds might also include some liquidity premium. Illustratively, due to a rise in demand for indexed-bonds by various investors such as insurance companies, breakeven inflation rates derived from French government bonds increased in early 2004 without any increase in inflation expectations (Noyer, 2004). Fourth, yields on indexed-bonds are linked to headline inflation whereas monetary policy-makers are more interested in core inflation. This link with headline inflation makes inflation expectations derived from indexed-bonds much more volatile than true expectations. In view of the above factors, the various biases, although small, may add together in a potentially non-systematic way and breakeven inflation rates may, therefore, not be a reliable guide about the expected inflation rate (Dudley *et al.,* 1996; Bernanke, 2004).

Capital Indexed Bonds in India

In India, one variant of capital indexed bonds (CIBs) (*viz*., 6 per cent Capital Indexed Bond 2002) was issued for the first time on December 29, 1997. Subsequently, there was no further issuance of CIB mainly due to lack of an enthusiastic response of market participants for the instrument. Taking into account past experience as well as the internationally popular structure of CIBs, a modified structure of CIBs is proposed to be introduced. The proposed CIB would offer inflation-linked returns on both the coupons and principal repayments at maturity. The coupon rate for the bonds would be specified in real terms. Such real coupon rate would be applied to the inflation-adjusted principal to calculate the periodic semi-annual coupon payments. The principal repayment at maturity would be the inflation-adjusted principal amount or its original par value, whichever is greater. There is thus an in-built insurance that at the time of redemption the principal value would not fall below par. The proposed CIB would facilitate measuring the inflation expectations of the market participants and provide a useful input in assessing the inflation conditions in the conduct of monetary policy.

[3] Atkeson and Ohanian (2001) argue that this approach is not reliable. This finding is believed to be special to the sample period of their study period (Fisher, Lin and Zhou, 2002).

influenced not only by demand side pressures but also by supply shocks. A stylised fact in regard to inflation movements is that it exhibits an inertia indicating that expectations are largely adaptive (Fuhrer and Moore, 1995; Mankiw, 2001). Lagged inflation, therefore, remains an important determinant of inflation and the lags could reflect the structure of the economy. An augmented Phillips Curve extended to include supply shocks and incorporate adaptive expectations - termed as the 'triangle model of inflation' - provides more robust estimates of inflation (Gordon, 1997). The phrase triangle stresses that inflation depends on a tripartite set of basic determinants: inertia (in inflation), demand and supply shocks as follows.

$p_t = a(L)p_{t-1} + b(L)D_t + c(L)z_t$.

where, p_t, D_t and Z_t denote inflation, a measure of excess demand (unemployment gap or output gap) and supply shocks (foodgrains prices or imported inflation or exchange rate movements), respectively. The above framework is especially relevant for emerging markets where supply side shocks can heavily dominate year-to-year inflation. A recent survey of inflation determinants in EMEs shows that conventional determinants of inflation such as output gaps, excess money supply and wages have a significant influence on inflation. At the same time, supply shocks emanating from food prices are the most common inflation determinant in almost all EMEs followed by exchange rate movements (Mohanty and Klau, 2001). This section, therefore, models inflation for India by estimating a Phillips Curve which includes both demand and supply side factors.

5.62 Although in the medium-term, alternative indicators of inflation may show a similar order of variation, year-to-year movements, as noted earlier, in the various measures could differ due to differences in the coverage and weighing scheme. An attempt is, therefore, made to model the behaviour of the three major measures of inflation in India: wholesale price inflation, consumer price inflation and inflation based on GDP deflator. Excess demand in the economy is proxied by output gap defined as actual output less potential output (as percent of potential output)[4]. Foodgrains inflation is included in the equation to incorporate supply shocks that could be on account of weather conditions as well as the administered pricing mechanism (procurement prices).

5.63 With gradual opening up of the Indian economy, international prices have started to play a key role in domestic inflation. Import prices in local currency terms include not only the effect of international prices but also exchange rate movements. There are periods when the exchange rate has appreciated while import prices have increased and *vice versa* (Chart V.11). Movements in import prices in rupee terms could, therefore, be on account of movements in the import prices in foreign currency or in exchange rate or a combination of both. Segregating the influences of import prices in foreign currency on domestic inflation from that of the exchange rate movements could provide additional analytical insights in understanding the inflation process (Mihaljek and Klau, 2001). Accordingly, the equation includes import price inflation (in US dollar terms) and exchange rate separately.

5.64 In brief, the explanatory variables include: lagged inflation, output gap, foodgrains inflation, import price inflation in US dollar terms and variation in exchange rate of the Indian rupee (*vis-a-vis* the US dollar). The equations are estimated over the period 1970-2004 using annual data[5]. The explanatory power of the equation is satisfactory, ranging from 60-92 per cent[6]. The various diagnostic tests such as

[4] Potential output is measured by applying HP filter to real GDP.

[5] Unit root tests based on ADF tests indicate that all the variables are stationary. The order selection was based on AIC as well as BIC criteria.

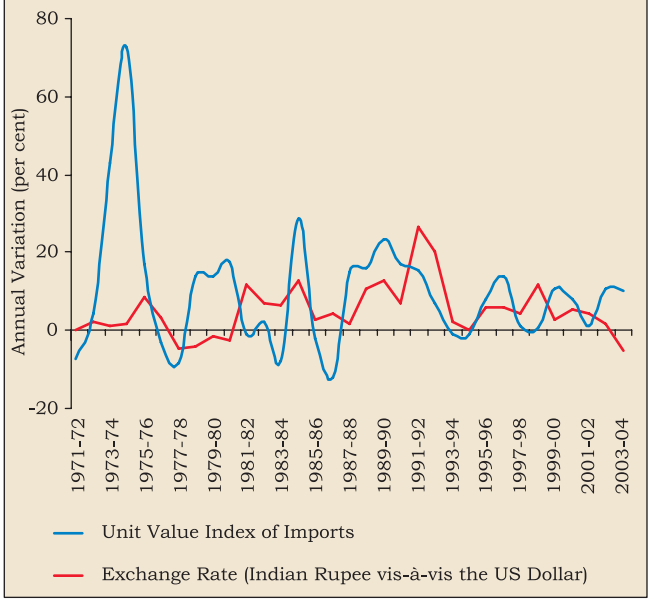
[6]
INFWPI = 0.15 INFWPI(-1) + 0.41 YGAP(-1) + 0.59 INFFOOD + 0.11 UVMGD + 0.14 DEXC(-1) + 9.0 DUM8081 – 4.6 DUM97
(2.7) (2.0) (12.7) (6.2) (2.6) (18.3) (13.3)
Durbin's h = 0.1; $\bar{R}^2 = 0.86$

INFCPI = 0.18 INFCPI(-1) + 0.31 YGAP(-1) + 0.78 INFFOOD + 0.05 UVMGD + 0.08 DEXC(-2) – 5.3 DUM92 – 3.0 DUM00
(3.8) (2.4) (21.2) (3.0) (2.0) (5.4) (5.5)
Durbin's h = -0.7; $\bar{R}^2 = 0.92$

INFGDP = 0.26 INFGDP(-1) + 0.56 YGAP(-1) + 0.53 INFFOOD + 0.08 UVMGD + 0.17 DEXC(-1) + 7.2 DUM80 – 7.3 DUM75 - 3.4 DUM00
(2.3) (2.4) (7.2) (3.4) (1.7) (5.0) (4.0) (3.6)
Durbin's h = -1.2; $\bar{R}^2 = 0.59$

INFWPI, INFCPI and INFGDP denote annual averages of WPI inflation rate, CPI inflation rate (for industrial workers) and GDP deflator, respectively. Amongst explanatory variables, YGAP, INFFOOD, UVMGD and DEXC are output gap (HP filtered), foodgrains inflation rate, import price inflation (variation in DGCI&S import unit values deflated by Rupee-US dollar exchange rate) and variation in exchange rate (Rupees per US dollar), respectively. DUM75, DUM80, DUM8081, DUM92, DUM97 and DUM00 are dummies for 1974-75, 1979-80, 1979-81, 1991-92, 1996-97 and 1999-00, respectively. The equations have been estimated over the period 1970-2004, although the actual estimation period starts from 1972 or 1973 in view of lags. t-ratios are in parentheses.

Chart V.11 : Import Prices and Exchange Rate in India



serial correlation and ARCH errors suggest that estimates are robust.

5.65 Key results emerging from these estimates are as follows. First, lagged inflation is significant although the size of the coefficient is not very large. This suggests that inflation may be persistent, *i.e.,* a shock that raises inflation in one year will impart an upward push to inflation expectations in the year ahead and *vice versa*. Amongst the three measures of inflation, the persistence appears to be maximum for GDP deflator measure and the lowest for wholesale price inflation. Second, excess domestic demand conditions have the expected positive effect on inflation. An increase of one percentage point in output gap (*i.e.*, if actual output exceeds its trend level by one per cent) raises inflation rate by 31-56 basis points with a lag of one year, depending upon the inflation measure. The effect is maximum in case of GDP deflator and the least in the case of consumer price inflation.

5.66 Third, the supply shocks emanating from foodgrains prices play an important role in the inflation process in India. Fourth, import price inflation has the expected positive effect on domestic inflation. Estimates suggest that an increase of 10 per cent in import price inflation raises domestic inflation by up to 1.1 percentage points. The effect is the minimum for CPI inflation (0.5 percentage points) followed by GDP deflator (0.8 percentage points) and wholesale inflation (1.1 percentage points). These estimates appear to be consistent with the openness of the Indian economy over the sample period - an average of around nine per cent, increasing from four per cent to 13 per cent. Finally, exchange rate depreciation has also the expected effect of raising domestic prices and the coefficient of exchange rate pass-through to domestic inflation ranges between 8-17 basis points, *i.e.*, a 10 per cent depreciation of the Indian rupee (*vis-a-vis* the US dollar) would, other things remaining unchanged, increase consumer inflation by less than one percentage point and the GDP deflator by 1.7 percentage points. The empirical results throw some differences between the pass-through from import price inflation and exchange rate movements. While import prices impact on domestic inflation in the same year, the exchange rate movements seem to affect inflation with a lag of one year (two years in case of consumer inflation). Another difference is that the pass-through from exchange rates to inflation is somewhat larger than that of pass-through from import prices. This result is consistent with available empirical evidence for the EMEs. Mihaljek and Klau (2001) who undertake separate estimates of the two pass-through effects for a sample of 13 EMEs find that the exchange rate pass-through coefficient to consumer price inflation is larger than that of import price inflation in seven countries; the coefficient is the same in four countries and lower in the remaining two countries. In contrast, for a sample of nine industrial economies, McCarthy (2000) finds that the effect of import prices on inflation is stronger than that of exchange rate.

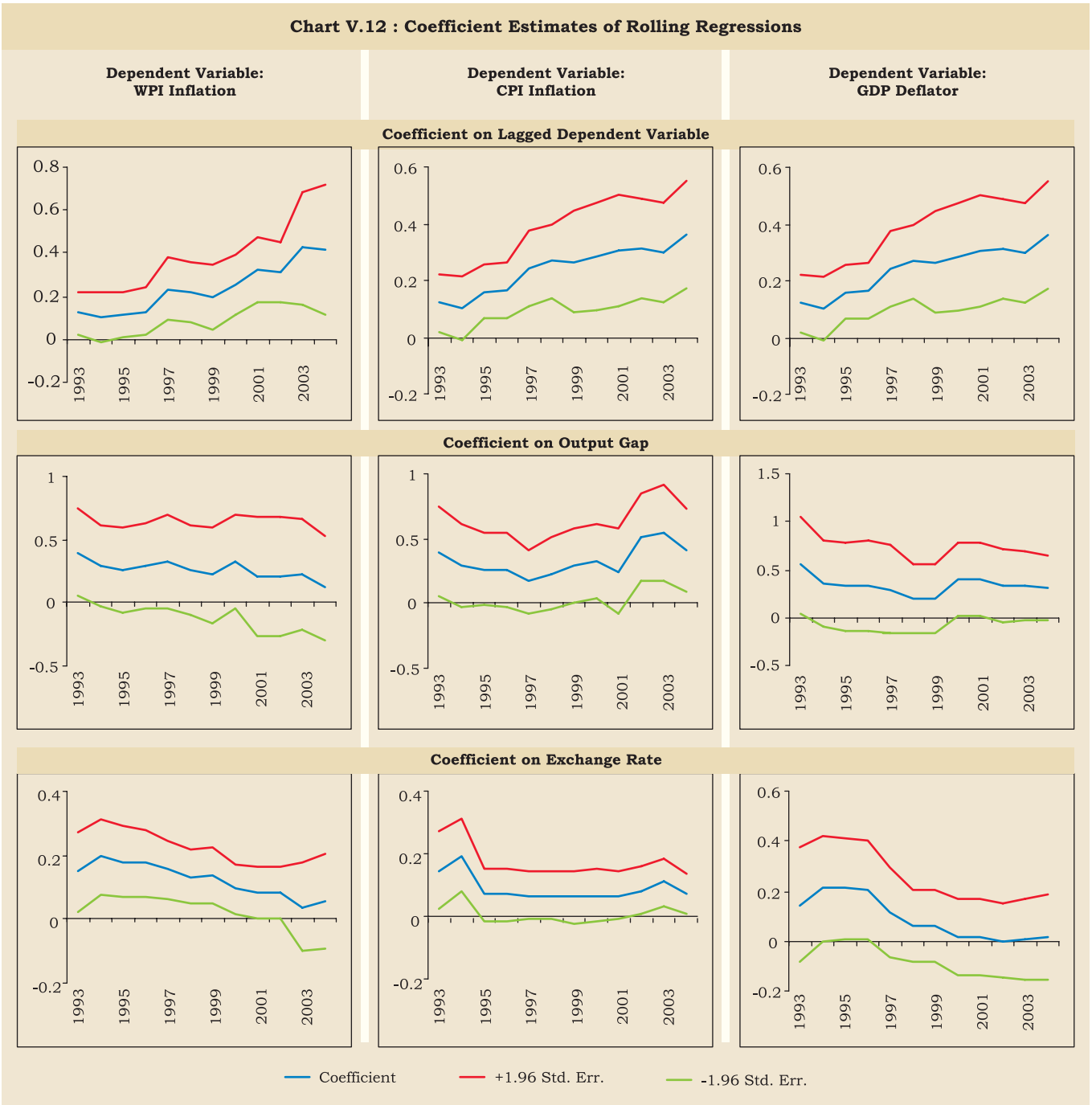
5.67 Compared to many other EMEs, pass-through coefficients in India are fairly small (Table 5.15). This could be attributed to two key factors: the relatively low degree of openness of the Indian economy as well as low inflation rates. Most studies document that pass-through is high in a high-inflation environment.

Table 5.15: Estimates of Pass-through to Domestic Inflation

Study	Country	Pass-through to Domestic Inflation from	
		Exchange Rates	Import Prices
1	2	3	4
Mihaljek and Klau (2001)	Mexico	0.94	0.22
	Brazil	0.84	0.17
	Turkey	0.56	0.52
	Hungary	0.54	0.43
	Poland	0.45	0.32
	Thailand	0.28	0.03
	Philippines	0.17	0.11
	South Africa	0.14	0.16
	Korea	0.13	0.07
	Peru	0.11	0.22
	Malaysia	0.07	0.05
	Chile	0.07	0.04
	Czech Republic	0.06	0.49
This Chapter	**India**	**0.08-0.17**	**0.05-0.11**

5.68 The Indian economy has witnessed significant structural changes since the reforms process began in early 1990s. These could have impacted upon the coefficient estimates. Formal stability tests such as Andrews and Andrews-Ploberger tests suggest that parameter estimates have been stable over the sample. Rolling regressions provide an alternative approach of assessing if parameters are stable over the period. For this purpose, rolling regressions (based on a moving sample of 20 years) are undertaken. The results from this analysis can be summarised as follows (Chart V.12). First, there is some increase in the coefficient on lagged inflation, *i.e.*, inflation persistence appears to have increased. Second, the coefficient on output gap remains almost unchanged in the equations for consumer price inflation and GDP deflator. For WPI equation, the coefficient shows some decline, but is imprecisely

Chart V.12 : Coefficient Estimates of Rolling Regressions

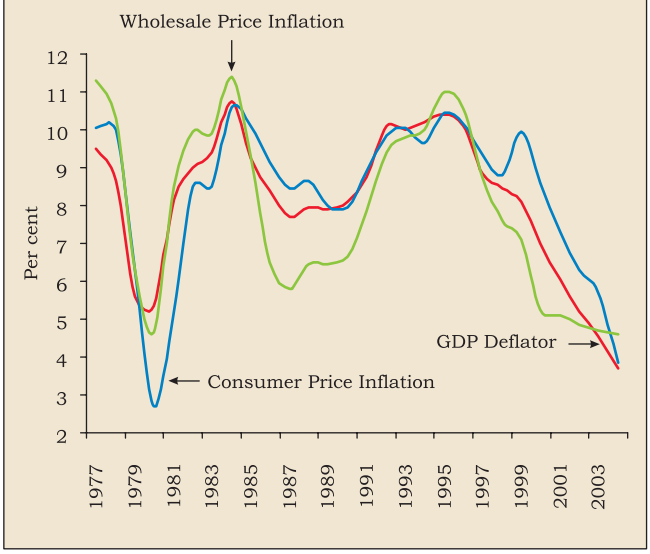


estimated. The decline in output gap terms in WPI could be reflecting the increased role of movements in international commodity prices. These prices are determined in world markets and reflect global demand-supply gaps. Taken together, excess demand conditions are an important determinant of inflation and macroeconomic policies have an important role to play.

5.69 Third, the coefficient on the exchange rate exhibits a declining trend although the estimates turn out to be somewhat imprecise. This suggests a possible decline in exchange rate pass-through to domestic inflation - these results appear to be consistent with the empirical exercise undertaken in Chapter VII which shows a lower pass-through in the recent decade. The decline in pass-through during the 1990s is consistent with the cross-country empirical evidence discussed earlier. In India, as noted earlier, inflation rates have declined significantly since the second half of the 1990s and this could be one explanation for the lower pass-through (Chart V.13). Another key factor that could have lowered the pass-through is the phased decline in tariffs as well as non-tariff barriers such as quotas. Average import duties are now less than one-third of what they were a decade ago. This steep reduction in tariffs could have easily allowed domestic producers to absorb some part of the exchange rate depreciation without any effect on their profitability.

5.70 The regression results are subject to the caveat that these are average estimates over the sample period and are based on the assumption that other factors are unchanged. The modelling approach followed in this Chapter would need to be validated with other approaches. Alternative indicators to capture demand pressures in the economy need to be explored. As Brave and Fisher (2004) observe, particular forecasting models which do well in some periods may perform poorly at other times and, therefore, a useful approach is to be "eclectic with respect to both the data used to formulate a forecast and the models used to incorporate the data into a forecast. Relying on a small number of inflation indicators and one forecasting model is not a good idea". A multiple indicator approach to monetary policy formulation being followed by the Reserve Bank of India since 1998 is thus an appropriate approach.

Chart V.13 : Inflation Rates in India: 5-Year Moving Averages



5.71 In brief, while supply shocks - both oil and food - have an important role in year-to-year inflation, expansionary fiscal policy during the 1980s and its monetisation was indeed a major cause of the increase in inflation. Structural reforms, improved monetary-fiscal interface, reforms in the Government securities markets and effective sterilisation of capital inflows enabled better monetary management from the second half of the 1990s onwards. Large food stocks and foreign exchange reserves have played an important role in supply management efforts by keeping actual inflation low and inflation expectations under control. This was amply exhibited during 2002-03 when the country faced its worst drought in nearly two decades but adequate food stocks and large reserves kept inflation as well as expectations low. This has led to a sustained reduction in inflation, notwithstanding increases in some years due to large supply shocks. Empirical exercise undertaken in this Section confirms that both demand and supply shocks have an impact on inflation. Excess demand conditions increase inflation. There is some preliminary evidence that exchange rate pass-through to domestic inflation has declined since mid-1990s.

5.72 The success with achieving and maintaining low inflation since mid-1990s has led to a number of positive developments (Reddy, 2004). First, there is virtually a national consensus that high inflation is not good and that it should be brought down. Second, inflation expectations have come down and, consequently, inflation tolerance has also come down. "The society, the economic agents and the market participants are now reacting to a lower headline inflation, which is a good thing because if we want a sustained strong growth, it is necessary to rein in inflationary expectations" (Reddy, 2004).

In this context, despite a significant improvement in the monetary-fiscal interface during the 1990s, fiscal dominance continues to persist with growing volume of gross market borrowings (RBI, 2003). Inflation expectations, *inter alia*, depend upon fiscal prudence. It is, therefore, essential to pursue fiscal consolidation, promptly and with resolve, from a medium-term perspective. In this context, the Fiscal Responsibility and Budget Management (FRBM) Act enacted by the Central Government is expected to provide the Reserve Bank necessary flexibility to maintain low and stable inflation. Adherence to these fiscal rules thus become important to stabilise inflation expectations.

III. CONCLUDING OBSERVATIONS

5.73 This Chapter has undertaken an assessment of the inflation record of the past half-century. Consensus has emerged that monetary policy can contribute to growth and employment by ensuring price stability - defined as low and stable inflation. In the short-run, supply shocks can lead to large changes in the headline inflation. However, persistent high inflation is ultimately the outcome of lax monetary policies - as witnessed during the 1970s. With inflation in double digits, central banks in advanced economies adopted deliberate disinflation strategies beginning in the late 1970s. Monetary policies were tightened and industrial economies could reduce inflation significantly by the second half of the 1980s, *albeit* at costs of large output and employment losses. Developing countries have also been able to reduce inflation during the 1990s as fiscal consolidation and structural reforms provided flexibility to monetary policy in meeting its price stability objective. The experience with inflation targeting frameworks is evolving - both IT and non-IT countries have been successful in reducing inflation during the 1990s. Many EMEs have also adopted IT. Their performance is quite impressive when judged in terms of the reduction in inflation although they have not been always able to meet their inflation targets. However, compared with many advanced economies, their performance is relatively weaker, reflecting additional constraints on these economies. Moreover, the stylised fact of the 1990s has been that not only IT countries but even non-IT countries have been able to reduce inflation. The jury is still out on the extent to which inflation targeting policies have actually contributed to the reduction in inflation that has occurred (Mohan, 2004a). Exchange rate pass-through to domestic prices has declined during the 1990s for advanced as well as developing economies, *inter alia*, due to success of monetary policy in maintaining a low and stable inflation environment.

5.74 Overall, improvements in the institutional setup of monetary policy - independent central banks, better communication strategies, increased transparency, improved techniques - have been a key factor contributing to low and stable inflation although the relative role of monetary policy *per se* in containing inflation continues to be matter of debate. Prudent fiscal policies, structural reforms, productivity growth, deregulation, globalisation and competition have also contributed in achieving the low inflation environment. A reversal in the trend of any of these above factors can, in turn, be a threat to this low inflation environment (Rogoff, 2003). As discussed in Chapter IV, current global macroeconomic imbalances and concomitant adjustment dynamics present one such threat to price stability (Mohan, 2004a). Evolving demographics - rising elderly populations in advanced economies - pose a new challenge to fiscal authorities (Mohan, 2004b). The concomitant rising public debt can be a threat to the present low inflation environment. A prudent fiscal policy remains the single largest pre-requisite for monetary stability. Monetary arrangements *per se* have only limited power to fix real problems arising from a fiscal regime inconsistent with the goal of price stability (IMF, 2002). Efforts towards fiscal consolidation have, therefore, been strengthened with clear-cut fiscal rules. Successful monetary policy involves shaping market expectations of the way in which inflation and other critical variables are likely to evolve. The various reforms in the monetary policy arena since 1980s such as central bank independence, accountability through clear-cut targets and transparency have been progressively aimed at enhancing the credibility of the central banks in order to stabilise inflation expectations. Once inflation expectations are stabilised firmly, temporary shocks to current inflation do not have any adverse impact on long-run inflation expectations.

5.75 In India, inflation increased from the 1970s onwards before moderating in mid-1990s. Expansionary fiscal policy during the 1980s and its monetisation were a major cause of the increase in inflation. Structural reforms since the early 1990s coupled with improved monetary-fiscal interface and reforms in Government securities markets enabled better monetary management since the second half of the 1990s. The expansionary effect emanating from massive capital flows to India since 1993-94 has been effectively sterilised through a variety of instruments

including open market sales of Government bonds and repo operations under liquidity adjustment facility. Judicious use of innovative instruments such as the Market Stabilisation Bills/Bonds was resorted to manage liquidity conditions consistent with the objective of price stability. Thus, notwithstanding the unprecedented order of external capital flows, monetary management was effective in ensuring a reduction in inflation and lowering inflation expectations. There is a widespread agreement that the record of the Reserve Bank in monetary management has been, on balance, satisfactory. The degree of credibility that the Reserve Bank has earned over time is in itself likely to be an effective instrument of monetary policy in meeting the challenges of the future (Jadhav, 2003).

5.76 The success with achieving and maintaining low inflation in India since mid-1990s has led to a number of positive developments (Reddy, 2004). First, there is virtually a national consensus that high inflation is not good and that it should be brought down. Second, inflation expectations have come down and, consequently, inflation tolerance has also come down. As the global experience shows, it is very important to keep inflation expectations low. Inflation expectations, *inter alia*, depend upon fiscal prudence. It is, therefore, essential to pursue fiscal consolidation, promptly and with resolve, from a medium-term perspective. Transparent and monitorable fiscal rules assume importance in this context. The recently enacted Fiscal Responsibility and Budget Management Act by the Central Government with its envisaged reduction in key deficit indicators is expected to reduce the fiscal dominance over time and will provide the Reserve Bank necessary flexibility so as to maintain low and stable inflation. It would be necessary to put in place similar fiscal responsibility rules at State levels. Adherence to these fiscal rules will help to stabilise inflation expectations and keep inflation low and stable in the country.

Annex V.1
Implementation and Design of Inflation Targeting

Country	Date Introduced	Target Price Index	Target Width	Target Horizon	Escape Clauses	Accountability of Target Misses	Target set by	Publications and Accountability
1	2	3	4	5	6	7	8	9
Australia	Sept. 1994	Core CPI	2-3%	Over one business cycle	None	None	Jointly by Government and Central Bank	Inflation report. Inflation projections (2-year point estimate)
Brazil	Jun. 1999	Headline CPI	1999:8% (±2%) 2000:6% (±2%) 2001:4% (±2%)	1 year	None	Issuance of open letter to Minister of Finance explaining target breach and measures taken (and the time required) to bring inflation within he target	Government in consultation with Central Bank	Inflation report. Inflation projections (2- year fan chart) Extract of Board meetings. Models used for inflation outlook.
Canada	Feb. 1991	Core CPI (excl. food, energy, and indirect taxes)	1991: 3-5% 1992: 2-4% Jun.94: 1.5-3.5% 1995-2001: 1-3%	1991: 22 months Since 1992: multi-year	Revision of target path under exceptional circumstances (ex. major oil price shock, natural disaster)	Public explanation	Jointly by Government and Central Bank	Monetary policy report. Inflation projections (1-year point estimate)
Chile	Jan. 1991	Headline CPI	1991: 15-20% 1992: 13-16% 1993: 10-12% 1994: 9-11% 1995: +8% 1996: +6.5% 1997: +5.5% 1998: +4.5% 1999: +4.3% 2000: 3.5% 2001 onwards: 2-4%	1991-2000: 1 year 2001 onwards: indefinite	None	None	Central Bank in consultation with Government	Inflation report (2000). Minutes of monetary policy meetings. Inflation projections (2-year fan chart)
Colombia	Sep. 1999	Headline CPI	1999: 15% 2000: 10% 2001: 8% 2002: 6%	1 year	None	None	Jointly by Government and Central Bank	Inflation report
Czech Republic	Jan. 1998	Core CPI (excl. regulated prices and indirect taxes)	1998: 5.5-6.5% 1999: 4-5% 2000:3.5-5.5% 2001: 2-4%	1 year	Natural disasters, global raw material price shocks, exchange rate shocks unrelated to domestic economic fundamentals and monetary policy, and agricultural production shocks	None	Central Bank	Inflation report (1998) Minutes of monetary policy meetings. Inflation projections (1-year range)

Annex V.1
Implementation and Design of Inflation Targeting *(Contd...)*

Country	Date Introduced	Target Price Index	Target Width	Target Horizon	Escape Clauses	Accountability of Target Misses	Target set by	Publications and Accountability
1	2	3	4	5	6	7	8	9
Finland	Feb. 1993 to Jun. 1998	Core CPI (excl. indirect taxex, subsidies, housing prices, and mortgage interest)	Annual average of 2% by 1995	Until 1995: multi-year. Since 1996: indefinite	None	None	Central Bank	None
Israel	Jan. 1992	Headline CPI	1992: 14-15% 1993: 10% 1994: 8% 1995: 8-11% 1996: 8-10% 1997: 7-10% 1998: 7-10% 1999: 4% 2000: 3-4% 2001: 3-4%	1 year	None	Public explanation of deviation of inflation forecast from target in excess of 1%	Government in consultation with Central Bank	Inflation report (1998)
Korea, Rep.	Jan. 1998		1998: 9% (+1%) 1999: 3% (+1%) 2000 : 2.5% (+1%) 2001 onwards: 2.5%	1998-2000: 1 year.2001 onwards : indefinite	None (before 2000: changes caused by major forces)	None	Government in consultation with Central Bank	Inflation report and submission to Parliament. Monthly announcement of monetary policy direction. Minutes of monetary policy meetings.
Mexico	Jan. 1999	Headline CPI	1999: 13% 2000: <10% 2001: 6.5% 2002: 4.5% 2003: similar to trade partners inflation (3%)	1998-2002: 1 year. 2002 onwards : indefinite	None	None	Central Bank	Inflation report
New Zealand	Mar. 1990	Headline CPI (since 1999, headline CPI excludes interest changes; prior to then, targets where defined in terms of the headline CPI less interest charges and other first round effect prices)	1990: 3-5% 1991: 2.5-4.5% 1992: 1.5-3.5% 1993-1996: 0.2% Since 1997 0-3%	1990-1992: 1 year. 1993-1996: multi-year. Since 1997: indefinite	Unusual events provided they do not cause general inflationary pressures	Public explanation of target breach and measures taken (and the time required to bring inflation within the target. Minister of Finance may ask for resignation of RBNZ Governor.	Jointly by Government and Central Bank	Inflation report (1990). Inflation projections.

Annex V.1
Implementation and Design of Inflation Targeting *(Concld.)*

Country	Date Introduced	Target Price Index	Target Width	Target Horizon	Escape Clauses	Accountability of Target Misses	Target set by	Publications and Accountability
1	2	3	4	5	6	7	8	9
Peru	Jan. 1994	Headline CPI	1994: 15-20% 1995: 9-11% 1996: 9.5-10% 1997: 8-10% 1998: 7.5-9% 1999: 5-6% 2000: 3.5-4% 2001: 2.5-3-5% 2002: 1.5-2.5% 2003: 1.5-2.5%	1 year	None	None	Central Bank in consultation with Government	None
Poland	Oct. 1998	Headline CPI	1998: < 9.5% 1999: 6.6-7.8% 2000: 5.4-6.8% 2001: <4%	1998-2000: 1 year.2000-2003: multi-year. 2003 onwards: indefinite	None	None	Central Bank	Inflation report. Inflation guidelines. Report on Monetary Policy Implementation
South Africa	Feb. 2000	Core CPI (excl. Interest costs)	2003: 3-6%	Multi-year	Major unforeseen events outside CB control	None	Central Bank	Inflation report
Spain	Nov. 1994 to Jun. 1998	Headline CPI	Jun. 1996: 3.5-4% 1997: 2.5% 1998: 2%	Until 1996: multi-year	None	None	Central Bank	Governor reports regularly to Parliament. Inflation report (1995)
Sweden	Jan. 1993	Headline CPI	Since 1995: 2% (+ 1%)	Until 1995: multi-year.Since 1995: indefinite	None	None	Central Bank	Inflation report (1997) Minutes of monetary policy meetings. Inflation projections (2-year fan chart)Submission of monetary policy report to Parliament
Switzer-land	Jan. 2000	Headline CPI	<2%	3 years	Unusual events provided they do not cause general inflationary pressures	None	Central Bank	Inflation report Inflation projections (3 years)
Thailand	Apr. 2000	Core CPI (excl. raw food and energy prices)	2000: 0-3.5%	Indefinite	None	Public explanation of target breach and measures taken (and the time required) to bring inflation within the target	Government in consultation with Central Bank	Inflation report (2000) inflation projections (2-year fan chart). Minutes of monetary policy meetings.
United Kingdom	Oct. 1992	RPIX (excl. mortgage interest)	1992-1995: 1-4% Since 1996: 2.5%	Until 1995: multi-year Since 1996: Indefinite	None	Issuance of open letter to the Minister of Finance explaining target breach and measures taken (and the time required) to bring the inflation within the target	Government	Inflation report. Inflation projections (2-year fan chart) Models used for inflation outlook.

Source : Mishkin and Klaus (2001).

VI BANK CREDIT

6.1 Availability of adequate and timely finance is an important pre-requisite for growth. Monetary policy affects economic activity not only through the conventional interest rate channel but also through supply of bank credit. In most developing economies and in some advanced regions such as Europe, banks have traditionally been the main source of finance for various sectors of the economy. In contrast, in many advanced economies such as the US, market-based finance systems predominate. In either case, adequate and timely provision of finance is necessary to fund investment in the economy. Moreover, a well-developed domestic financial system can help to mobilise domestic savings and channel these funds to local borrowers in local currency, and thereby mitigate the potential for externally induced crises that may arise from various sources such as currency mismatches.

6.2 A particular characteristic of developing economies, often justified by the need to conserve scarce resources for socially productive uses, has been the prevalence of a wide range of credit controls and directed credit programmes often at concessional prices. Such programmes, usually accompanied by extension of the financial system, played an important role in the process of financial deepening in the 1950s and 1960s. At the same time, the resultant segmentation of markets blunted the process of price discovery and limited the allocative efficiency of financial systems. In consonance with the increasing market orientation of monetary policy, most central banks in developing countries have been phasing out direct instruments of monetary control. A key challenge for central banks in emerging market economies (EMEs) is their ability to channel credit to the relatively disadvantaged sections of society.

6.3 Apart from financing growth, variations in bank credit are an important channel of monetary policy transmission mechanism even for central banks that rely on interest rates to convey their policy stance. Modulations in policy interest rates by the central bank influence credit market conditions which reinforce the effects of the traditional interest rate channel of monetary transmission. For the interest rate channel to be effective, however, it is critical that monetary policy signals are transmitted by banks onto their lending rates. This, in turn, requires banks to be able to assess various risks adequately and incorporate them in their lending rates. While such risk assessment techniques are in place in advanced economies, they remain underdeveloped in many EMEs. Given the large information and transaction costs, banks are not fully able to take into account the risk profile while pricing their loans to various borrowers. For monetary policy signals to work effectively, efforts to reduce information and transaction costs through promotion of agencies such as credit information bureaus assume importance. Better information does not mean that banks will necessarily reduce credit availability for riskier borrowers. Rather, banks can more knowingly choose their risk profiles and price risk accordingly (Greenspan, 2004). While facilitating an efficient allocation of resources, it also enhances the efficacy of monetary policy signals. In other words, improvements in the credit delivery mechanism are necessary for monetary policy signals to have the expected effect on output and prices.

6.4 In India, a key objective of monetary policy since Independence has been the provision of adequate credit to support investment demand in the economy while keeping a vigil on inflation. Given the existence of large fiscal deficits in the past two decades, banks have been required not only to finance the credit requirements of private sector but also that of the Government. Coupled with the administered interest rate mechanism that was in place till the early 1990s, this necessitated regulation of credit by the Reserve Bank to meet the requirements of both the Government and the private sector and those of the underprivileged segments within the private sector. In consonance with the overall reform process, the arrangements in regard to provision of credit have undergone a significant shift from micro-regulation of the 1970s to macro-management during the 1990s. Interest rates have been deregulated while statutory pre-emptions have been almost halved between 1990 and 2004. However, while making this shift from a planned and administrated interest rate system to a market-oriented financial system, the importance of credit has not been undermined. A key issue is to maintain balance between deregulation that brings

about medium to long-run efficiency gains on the one hand and the required credit flow to various sectors on the other hand (Reddy, 2004a).

6.5 The actual experience indicates that notwithstanding the deregulation of interest rates and the significant reduction in the statutory pre-emptions during the 1990s, banks continued to show a marked preference for investments in Government securities *vis-à-vis* extending credit to the commercial sector. Thus, policies of liberalisation, deregulation and the enabling environment of comfortable liquidity at a reasonable price have not automatically translated into increased credit flows to various sectors. The banking system continues to charge interest rates to various categories of borrowers by their category *per se* - whether agriculture or small scale industry – consistent with the legacy of the old administered interest rate regime rather than actual assessment of risks for each borrower. Moreover, significant divergence in lending rates between formal and informal markets still exists. Consequently, issues relating to information asymmetries that keep lending rates high for a large category of borrowers/sectors have come to the forefront. The Reserve Bank's endeavour has, therefore, been to reduce transaction and information costs so that adequate credit to such sectors is available at reasonable interest rates.

6.6 Against this backdrop, Section I of this Chapter addresses the role of finance in contributing to investment and growth. The section begins with a brief overview of the theoretical literature and empirical studies on the interlinkages between finance and growth. This is followed by a discussion of the role of bank credit in the conduct of monetary policy. Section II dwells upon the Indian experience in regard to bank credit. Key measures taken by the Reserve Bank to improve the credit delivery mechanism in the country in the recent years are highlighted. Trends in the flow of credit to various sectors of the economy in the post-reforms period are critically examined. With the gradual waning of the development finance institutions, the ability of banks to cater to the needs of long-term finance is assessed. Despite reductions in statutory liquidity ratio (SLR), banks' investment in Government securities remains significantly above the statutory requirements and reasons for this are explored. Concluding observations are presented in Section III.

I. ANALYTICAL ISSUES ON THE ROLE OF CREDIT

6.7 Financial development, *i.e.*, the existence of well-functioning financial institutions and markets, is believed to contribute to economic growth through a number of channels: (1) acquisition of information on firms; (2) intensity with which creditors exert corporate control; (3) provision of risk-reducing arrangements; (4) pooling of capital and (5) ease of making transactions (Levine, 2004). Financial institutions are better suited than individuals to identify potentially successful projects because these institutions have better information gathering and processing ability and the requisite personnel skills to monitor the efficiency and productivity of projects. By reducing the costs of acquiring and processing information, financial institutions improve resource allocation and encourage the mobilisation of savings to invest in large projects. They also facilitate the pooling and hedging of risks inherent in individual projects and industries. Well-developed financial markets augment liquidity in the economy. Adequate liquidity enhances savings in the economy by reducing liquidity risk of securities holders' by allowing them to sell their securities easily without affecting firms' access to the funds initially invested. By exerting effective corporate governance, financial systems can help to retain domestic savings at home. Thus, well-developed financial markets and institutions can generate growth by increasing the pool of available funds and by reducing the risk and ensuring productive uses of funds mobilised from savers. The endogenous growth literature, building on 'learning by doing' processes, assigns a special role to finance. Finance is seen as a crucial factor of production like knowledge and the influence of institutional arrangements in regard to finance on growth has often been forcefully emphasised. By facilitating borrowing for accumulation of skills, financial systems can promote the accumulation of human capital (Jacoby, 1994).

6.8 Several studies have attempted to examine the relationship between various alternative indices of development (such as, the ratio of consumer credit to GDP, market capitalisation to GDP and bank credit to GDP) and growth rates. Illustratively, using cross section data for 77 countries for the period 1960-1989, King and Levine (1993) found statistically and economically significant positive relationship between the measures of financial development and growth. The measures of financial development used in this study as well as most subsequent studies are, however, quite different from what the theory suggests. Benhabib and Spiegel (2000) found that financial development affects growth both through capital accumulation and productivity increases engendered by knowledge creation.

6.9 The issue of causality between finance and growth, however, remains unsettled. Financial development may promote growth simply because financial systems develop in anticipation of future economic growth. Furthermore, differences in political systems, legal traditions or institutions may be responsible for driving both financial development and economic growth. Rajan and Zingales (1998) attempt an industry-wise analysis to circumvent the issue of causality between finance and growth and find that industries that are relatively more dependent upon external finance grow relatively faster in countries that have well-developed financial systems. Fisman and Love (2003), however, argue that the external dependence measure of Rajan and Zingales (*op cit.*) may be capturing good global growth opportunities rather than the role of finance.

6.10 According to Favara (2003), the relationship between financial development and economic growth is, at best, weak. Moreover, the relationship is non-linear in the sense that finance matters for growth only at intermediate levels of financial development. The effects of financial development are found to differ considerably across countries and display no obvious pattern. In contrast to Favara's (*op cit.*) findings of non-linear effects, Bossone and Lee (2004) find empirical support in favour of 'systemic scale economies' (SSE) hypothesis, *i.e.*, larger, deeper and more efficient systems enable banks to save on the resources needed to manage the higher risks associated with larger production. Small banks in large systems are more cost efficient than small banks in small systems. Banks in small systems are found to over-utilise financial capital and *vice versa*. Finally, Bassone and Lee (*op cit.*) also find that large banks in large systems operate at an approximately optimal capital level.

6.11 In brief, the empirical evidence suggests that there exists a positive correlation between finance and growth. There is also an emerging consensus that the causation runs from finance to growth. Differences in financial development can alter economic growth over long time horizons and, therefore, well-developed financial sector is crucial for all economies. Healthy and competitive financial markets are an extraordinarily effective tool in spreading opportunity and fighting poverty (Rajan and Zingales, 2003).

6.12 In India, the role of finance in promoting growth was recognised early on after Independence. The First Five-Year Plan (1951) observed that central banking would have to take on a direct and active role in creating the machinery needed for financing developmental activities and ensuring that the finances available flow in the directions intended. With the initiation of the reform process in the early 1990s, although there has been a paradigm shift in the credit allocation process from micro-management to a greater role for market forces in credit allocation, the Reserve Bank continues to pursue with its efforts to improve the credit delivery mechanism in the economy. For India, empirical evidence confirms the positive role of finance on growth (RBI, 2001).

Banks versus Market Based Systems

6.13 Based on the level of sophistication and the type of system, financial systems can be grouped into two categories, *i.e.*, (a) the Anglo-American model of market-based finance where financial markets play an important role and (b) the Continental/Japanese model of bank-based finance, in which savings flow to their productive uses predominantly through financial intermediaries such as banks and other financial institutions. The market-based system is relatively impersonal as the sources of funds are atomistic household savers, directly or indirectly through mutual funds, pension funds or insurance funds. The bank-based systems are more relationship-based, because the lenders are few and large. Generally, bank-based systems often tend to be stronger in countries where governments have taken a direct role in industrial development, such as Germany, in the 19th century, and Japan and India, in the later half of the 20th century. At the same time, a number of EMEs, especially the South Asian tigers, follow a market-based system (Mohan, 2004a).

6.14 The two-way classification of financial systems - market-based *versus* bank-based – is rather restrictive. The composition may not matter since the two systems may be complementary and the key issue is a well-functioning financial system (Huybens and Smith, 1999; Merton and Bodie, 1995). Furthermore, the distinction between the two has blurred in recent years with the institutionalisation of the sources of finance all over the world. The blurring has emanated from the gradual spread of universal banking, spanning the entire range of financial services across commercial banking, insurance and securities (investment as well as underwriting).

6.15 Notwithstanding the debate on market *versus* bank-based systems, banks remain the pre-dominant purveyors of credit in many developing

economies. Even in advanced economies, banks continue to be important, despite the growing importance of market-based systems. Therefore, bank credit is an important source of finance although the role of credit analytics in monetary policy formulation has seen ups and downs over the past five decades. Credit aggregates were a key variable in the conduct of monetary policy during the 1950s and 1960s in a large number of economies, including the advanced economies such as the US. With restrictions on interest rates, a number of industrial economies regulated credit to various sectors of the economy during this period, although the fraction of credit so directed was smaller than that in EMEs (Krueger, 2004). During the 1970s, credit aggregates gave way to monetary aggregates. With the onset of financial innovations, as money demand turned unstable, both money and credit vanished from the scene as targeting variables by the early 1990s (Borio and Lowe, 2004). In the subsequent period, interest in credit behaviour has re-emerged as it is believed that credit conditions play a key role in the monetary transmission mechanism.

6.16 The traditional interest rate channel is based on the assumption of perfect substitution between the different financial assets and neutrality of firms' financial structure. This view – the "money view" - holds that financial intermediaries like banks offer no special services on the asset side and capital structures do not affect any lending/borrowing activity, while on the liability side of their balance sheet the banking system creates money by issuing demand deposits. However, the assumption of perfect substitution between financial assets such as bonds and loans does not hold in the presence of information asymmetries. The 'credit view' or 'lending view', although not necessarily in conflict with the 'money view', stresses imperfect substitution between bank credit and securities and, at least implicitly, between internal and external finance (Bernanke and Blinder, 1988).

6.17 The credit channel of transmission reinforces the effects of the traditional interest rate channel of monetary transmission. According to the credit view, the direct effects of monetary policy on interest rates are amplified by endogenous changes in the external finance premium (EFP). EFP is the difference in cost between funds raised externally (by issuing debt or equity) and funds generated internally (from retained earnings). The size of this EFP reflects imperfections in the credit markets and varies in the same direction as the movement in interest rates. Thus, monetary tightening increases EFP while easing of monetary policy reduces EFP. Consequently, the impact of a given change in short-term policy interest rates on demand and output is magnified, thereby reinforcing the effects of variations in interest rates *per se* (Bernanke and Gertler, 1995). Thus, credit conditions play an important role in the monetary transmission process.

6.18 Within the credit view, two alternative channels are stressed. The "bank lending" channel holds that a contractionary monetary policy decreases bank reserves, which cannot be offset by the banks (say, by issuing certificates of deposit) thereby reducing bank lending, investment demand and output. The credit view also proposes a "balance sheet" channel of monetary transmission. According to the "balance sheet" channel, a tight monetary policy reduces net worth of the borrowers as well as lenders. The reduction in the net worth of the borrowers, for instance, reduces the collateral available with them which, in turn, increases the EFP. This inhibits investment demand in the economy and the affects may get magnified through a financial accelerator mechanism. The effect may also depend upon the size of the firms and their access to credit markets. Small firms that have relatively poor access to credit markets will be forced to curtail their production relatively more compared to large firms with better access to credit markets. The latter may be in a better position to take recourse to alternative avenues of funds such as commercial paper so as to maintain their production. In brief, relatively more credit-constrained firms will see a larger degree of output contraction in response to monetary tightening.

6.19 The origins of the credit view can be traced to Fisher (1933), who argued that the severity of the economic downturn during the Great Depression resulted from the poor performance of financial markets. The credit view is better able to explain the severity of the Great Depression (Bernanke, 1983; Bernanke and Gertler, *op cit.*). Monetary forces alone were 'quantitatively insufficient' to explain the depth of the Depression and its persistence, and that the collapse of the financial system, reflected largely in bank failures and stock market crash worldwide, was an important explanatory factor. The credit channel and the financial accelerator mechanism also explain the severity of the financial crises in the Asian countries (Catao and Rodriguez, 2000). In many instances, credit booms are a precursor to future financial instability (Box VI.1).

Box VI.1

Bank Credit Booms and Financial Instability

The 1990s was a decade of low interest rates and low inflation in many countries. At the same time, the decade witnessed sharp increases in property and securities prices, partly fuelled by accommodative monetary policies. Sharp rises in asset prices are often followed by equally sharp reversals. With increased leverage, sharp reversals in asset prices bring forth a reduction of net worth and the financial accelerator mechanism can reinforce the downswing of economic activity.

The role of credit conditions in the expansion of the 1920s and the slump of the 1930s directs attention to two factors: the structure of domestic financial systems and the interplay of finance and innovation. While financial structure and regulation have featured in the comparative literature on the causes of banking crises in the 1930s (Grossman 1994), the interplay of finance and innovation in stimulating the expansion and setting the stage for the crash has been the subject of less attention. It was precisely the experience of the 1920s and 1930s that provided the backdrop for Schumpeter's characterisation of the cyclical aspect of capitalism as "innovation financed by credit." The experience of the 1990s is reminiscent of the development and effects of credit conditions in the 1920s and the fact that the interaction of credit with innovation may generate business cycles.

Against this backdrop, a view has emerged that central banks should lay more stress on movements in credit. Almost 75 per cent of credit booms in EMEs have been associated with a banking crisis while 85 per cent of the booms were associated with a currency crisis (IMF, 2004). Amongst the various variables considered individually, credit booms – defined as a situation where credit/GDP ratio is four percentage points above its trend - turn out to be the best predictor of future financial imbalances and dominate other possible variables such as money, asset prices and output gaps. Over 3-5 year horizon, credit booms predict 80 per cent of banking crises, much higher than that of 47 per cent in case of asset price misalignments. If a combination of various variables is considered, then asset price misalignments taken in conjunction with sharp movements in credit aggregates turn out to be the best predictors of future instability (Table 6.1). Thus, central banks should pay particular attention to credit developments since a focus on monetary aggregates alone is an inadequate substitute (Borio and Lowe, *op cit.*).

Credit booms have been often preceded by strong capital flows, but are not found to have a major impact on inflation. This is partly on account of high trade openness. Domestic demand imbalances in an open economy get reflected in widening trade and current account deficits and an appreciating exchange rate. Therefore, price stability does not prevent a credit boom/bust. Notwithstanding this, the case for pre-emptive monetary tightening to stop credit booms and asset price bubbles remains a matter of debate (see Chapter VIII).

6.20 Bank credit, in particular, plays an important role in developing economies. As a matter of fact, some European countries are even now reluctant to leave credit entirely to market forces (Krueger, *op cit.*). A distinctive characteristic of developing economies, often justified by the need to conserve scarce

Table 6.1: Credit Aggregates and Future Banking Distress

(Probability that indicator(s) predict a future banking crisis)

	Single Indicators				Combined Indicators			
1	2	3	4	5	6	7	8	9
Forecast Horizon (years)	Credit Gap [4]	Equity Price Gap [60]	Output Gap [2]	Money Gap [3]	Credit Gap [4] and Equity Price Gap [60]	Credit Gap [4] and Output Gap [2]	Credit Gap [4] and Money Gap [2]	Credit Gap [4], Equity Price Gap [40] and Output Gap [1.5]
3	80	47	53	53	47	53	60	27
	(0.22)	(0.24)	(0.46)	(0.51)	(0.06)	(0.13)	(0.21)	(0.05)
3-5	80	73	73	60	73	73	60	60
	(0.19)	(0.12)	(0.30)	(0.42)	(0.02)	(0.06)	(0.19)	(0.01)

Note : 1. Credit and money variables are as ratios to GDP. Equity prices are in real terms.
2. Figures in square brackets [ ] are the size of the threshold at which the specified indicator provides lead information on a possible future crisis. These thresholds are the gaps of the specified variable (measures as percentage points) from their *ex ante* recursively calculated Hodrick-Prescott trends. Illustratively, the threshold of 4 for credit indicates that when credit/GDP ratio is four percentage points above its trend, the probability of a crisis three years hence is 80 per cent.
3. Figures in parentheses are noise/signal ratios.

Source : Borio and Lowe (2004).

resources for socially productive uses, has been the prevalence of credit controls and directed credit programmes often at concessional prices. Five main types of interventions have been used: lending requirements and quotas on banks, refinance schemes, loans at preferential interest rates, credit guarantees and lending by development finance institutions. Such programmes played an important role in the process of financial deepening and growth in the 1950s and 1960s in developing economies. Directed credit, for instance, was one of the ingredients that contributed to Korea's strong export growth. At the same time, the resultant segmentation of markets blunted the process of price discovery and limited the allocative efficiency of financial systems. With the increasing market orientation of monetary policy, direct instruments of monetary control are being progressively phased out in many developing countries. The old paradigm of supply-leading subsidised and targeted lending is being gradually replaced by the new demand-leading programme aimed at improving financial market efficiency (Meyer and Nagarajan,1999) (Table 6.2).

6.21 In brief, empirical evidence shows that finance and growth are positively correlated. Financial development – both bank-based and market-based systems - contributes to growth. Amongst alternative sources of finance, bank credit plays a critical role in economic growth. Although the importance of bank credit in the conduct of monetary policy waned in some advanced economies during the 1970s and 1980s, subsequent developments have led to a renewed focus on the behaviour of credit conditions and credit aggregates. While credit conditions are believed to reinforce the traditional interest rate mechanism of monetary transmission, sharp increases in credit aggregates are viewed as containing lead information on a possible banking crisis in the future. Developing economies are progressively moving away from micromanagement of credit towards permitting interest rates a greater role in credit allocation.

II. BANK CREDIT: THE INDIAN EXPERIENCE

6.22 Adequate availability of credit to support investment demand in the economy has been an important objective of monetary policy in India. At the same time, monetary policy had to contend with widening fiscal deficits. The higher borrowing requirements of the Centre as well as the State Governments in an environment of administered interest rate mechanism were essentially met through a phased increase in statutory pre-emptions of banks' deposits. Not only were the banks' lendable resources to be shared between the private sector and the government, the social concerns of society had also to be taken into account. This took the shape of directed lending in the form of priority sector lending targets. Thus, by the early 1980s, an elaborate and arduous system of credit planning was in place. With food credit for procurement operations as the first charge on credit demand, credit planning involved sectoral limits for credit deployment. The broad objective of the credit policy was to meet genuine credit needs for productive purposes without stoking inflation expectations. The focus on credit aggregates

Table 6.2: Credit Allocation: Towards a Market-Based System

Features	Directed Credit Paradigm	Financial Market Paradigm
1	2	3
Problem definition	Overcome market imperfections	Lower risks and transaction costs
Role of financial markets	Promote new technology Stimulate production Implement State plans Help the Poor	Intermediate resources more efficiently
View of users	Borrowers as beneficiaries selected by targeting	Borrowers and depositors as clients choosing products
Subsidies	Large subsidies through interest rates and loan default Create subsidy dependence	Few subsidies Create independent institutions
Sources of funds	Governments and donors	Mostly voluntary deposits
Associated information systems	Designed for donors	Designed for management
Sustainability	Largely ignored	A major concern
Evaluations	Credit impact on beneficiaries	Performance of financial institutions

Source : Meyer and Nagarajan (1999).

implied a reduced role for the interest rate as the equilibrating mechanism between demand and supply although interest rate was used as an instrument of cross-subsidisation (RBI, 1999). Increasingly, it came to be realised that such a system hindered efficient allocation of resources [Chakravarty Committee (RBI, 1985); Narasimham Committee (RBI, 1991)]. First, a combination of an administered interest rate regime and directed credit controls prevented proper pricing of resources. Second, most financial intermediaries remained confined to markets relating to their area of operations because of balance sheet restrictions, leading to market segmentation. Finally, there was the problem of missing markets, especially at the shorter end, with caps even on the inter-bank rate.

6.23 From the mid-1980s onwards, steps were, therefore, taken to liberalise the credit delivery system but these gathered momentum only in the 1990s. Selective credit controls have been dispensed with and micro-regulation of credit delivery has been discontinued providing greater freedom to both banks and borrowers. Although directed lending in the form of 'priority sector' remains at 40 per cent of total bank lending, banks have been provided greater flexibility in the changed milieu to meet the priority sector requirements. Notably, advances eligible for priority sector lending have been enlarged and interest rates deregulated, thus making the system far more flexible for priority sector lending. Arrangements requiring banks to form consortia for loans beyond specified credit limits were phased out by 1997.

Credit Delivery System

6.24 Consequent upon the deregulation of interest rates and the significant reduction in the statutory pre-emptions, there was an expectation that enhanced credit flow to the needy would be facilitated. In contrast to these expectations, banks continued to show a marked preference for investments in Government securities. Even as the SLR was brought down from 38.5 per cent in 1992 to 25 per cent by 1997, the credit-deposit ratio of scheduled commercial banks did not witness any increase at all. In fact, the ratio at 53.6 per cent at end-March 2000 was lower than that of 54.4 per cent at end-March 1992. As discussed later, a number of factors such as weak demand and risk aversion by banks explain this phenomenon.

6.25 The micro-management of credit through various regulations during the 1970s and 1980s had eroded the risk appraisal techniques of the banks. Notwithstanding the shift in approach from lending based on credit allocation targets and administered interest rates to a risk-based system of lending and market-determined interest rates, banks continue to charge interest rates to borrowers by their category - whether agriculture or small scale industry - rather than actual assessment of risks for each borrower. Thus, the need for the banks to improve their credit risk assessment skills has gained importance.

6.26 Development of appropriate credit risk assessment techniques is critical also for the efficacy of monetary transmission. With the shift to indirect instruments of monetary management, monetary policy signals are increasingly transmitted through modulations in short-term interest rates. The monetary transmission mechanism is, thus, now crucially dependent on the impact of changes in policy interest rates, such as the Bank Rate or the reverse repo rate, on banks' deposit and lending rates. An improvement in banks' credit risk assessment techniques will help not only to increase the flow of credit to the commercial sector but should also enhance the efficacy of the transmission mechanism in the economy.

6.27 It is against this backdrop that various measures by the Reserve Bank aimed at reducing the information and transaction costs of lending in order to improve the credit delivery mechanism (issues related to interest rate deregulation are covered in Chapter VII). This analytical discussion is followed by an analysis of recent movements in credit availability to various sectors of the economy in order to assess the efficacy of the policy measures. Finally, the section addresses reasons for banks' continued preference for Government securities, well above the statutory requirements.

Credit to Agriculture

6.28 As a key sector of the Indian economy, agriculture receives priority in the credit delivery mechanism. The Reserve Bank of India Act is unusual among central banks to have specific provision for attention to agricultural credit. Notwithstanding the impressive geographical spread and functional reach, the rural financial institutions at the start of the 1990s were found in a poor shape and characterised by several weaknesses such as decline in productivity and efficiency, erosion of repayment ethics and profitability (Mohan, 2004d). Accordingly, during the 1990s, steps were undertaken to strengthen the rural financial institutions through recapitalisation of select regional rural banks, introduction of prudential accounting norms and provisioning requirements for all rural credit agencies.

6.29 At the same time, it needs to be noted that lending to the agricultural sector is inherently risky. This is due to several risks that a farmer faces, and of these, future price and monsoon conditions are the most severe and almost entirely beyond the control of the farmer. Efforts have been made to mitigate these risks through various mechanisms such as the Minimum Support Price (MSP) mechanism. While the MSP route has been useful, its coverage is limited to cereals like rice and wheat and, in some areas, cotton. Accordingly, if some elements of insurance are *ab initio* not viable, extending credit becomes more risky and hence constrained (Reddy, 2004b). This high risk is reflected in high interest rates on such loans and high non-performing loans (NPLs) in the agricultural sector. At the same time, it is relevant to note that NPLs to the agricultural sector are not as high as those of loans extended to the small-scale sector and 'other priority sector'. Illustratively, during 2001-03, for the public sector banks, the non-performing assets (NPAs) (as per cent to outstanding advances) averaged 12.0 per cent for the agricultural sector as compared with 20.6 per cent for SSI loans, 12.2 per cent for 'other priority sector' and 9.4 per cent for 'non-priority sector'. If public enterprises are excluded from the 'non-priority sector' group, the proportion of NPAs in the agricultural sector may be comparable to this group. Thus, the difference between NPLs in the agricultural sector and the 'non-priority sector' is probably not large enough to warrant excessive caution in bank lending for agricultural purposes (Mohan, 2004d).

6.30 Against this backdrop, steps were initiated in the late 1990s to increase flow of credit to the rural sector through introduction of schemes such as Kisan Credit Cards (Box VI.2). The current strategy adopted by the Reserve Bank to increase the flow of credit to the agricultural sector may be summarised as follows. First, the coverage of rural credit is extended to include facilities such as storage as well as credit through NBFCs. Second, procedural and transactional bottlenecks are sought to be removed, including elimination of Service Area

Box VI.2

Initiatives to Improve Credit Flow to the Rural Sector

Public sector banks have been advised to formulate Special Agricultural Credit Plans (SACP) to fix self-set yearly targets for achievement. The targets fixed by the banks generally provide for an increase of about 20 to 25 per cent over the disbursement made in the previous year. At present, a sub-target of 18 per cent of net bank credit has been stipulated for lending to the agriculture sector by domestic scheduled commercial banks. This is inclusive of both direct and indirect finance provided by banks. With a view to ensuring that the focus of the banks on the 'direct' category of agricultural advances does not get diluted, it was stipulated in 1993 that agricultural lending under the 'indirect' category should not exceed one-fourth of the sub-target of 18 per cent, *i.e.*, 4.5 per cent of net bank credit. All agricultural advances under direct as well as indirect categories continue to be reckoned in computing performance under the overall priority sector lending target of 40 percent of net bank credit. The scope of priority sector lending has been expanded to include, *inter alia*, financing of agri-clinics and agribusiness centres.

Shortfall of public as well as private sector banks in lending to the priority sector is allocated for contribution to the Rural Infrastructure Development Fund (RIDF) established with the NABARD in 1995-96. The RIDF has contributed to improvement of infrastructure like irrigation, roads and bridges. Funds in the RIDF are increasingly being used for schemes, which more directly benefit the farmers rather than contributing only to rural infrastructure improvement. Areas that need to be given priority for sanction, *e.g.*, irrigation, water and soil conservation are being identified. RIDF assistance has also been linked to agricultural/rural reforms in the States.

Effective 1998-99, banks have been issuing Kisan Credit Cards to farmers on the basis of their land holdings so that the farmers can use them to readily purchase agricultural inputs such as seeds, fertilisers and pesticides. This scheme aims at adequate and timely support to the farmers for their cultivation needs including purchase of inputs in a flexible and cost-effective manner. Over the last couple of years, the Kisan Credit Card Scheme has emerged as an effective tool for catering to the short-term credit requirements of the farmers. A National Impact Assessment Survey, carried out by the National Council of Applied Economic Research (NCAER) for the Reserve Bank, shows that the KCC Scheme has had many benefits. These include: (i) augmentation in flow of credit to the agriculture sector; (ii) about 6 per cent decrease in cost of borrowings for farmers after they were given KCCs; (iii) cost of borrowings for KCC holders from formal sources is about 3 per cent lower than those for non-KCC holders; (iv) significant drop in the number of borrowers depending exclusively on informal sources for their short-term credit needs; (v) reduction in cost of borrowings from informal sources by about 3 per cent; (vi) significant saving in time spent in taking short-term agricultural loans; and (vii) decline in cost of delivering credit due to simplification in procedures.

Approach, reducing margins, redefining overdues to coincide with crop-cycles, new debt restructuring policies, one-time settlement and relief measures for farmers indebted to non-institutional lenders. Third, the Kisan Credit Card Scheme is being improved and widened in its coverage while some banks are popularising General Credit Cards (GCCs) which is in the nature of clean overdraft for multipurpose use, including consumption. Fourth, public and private sector banks are being encouraged to enhance credit-delivery while strengthening disincentives for shortfall in priority sector lending. Fifth, banks are urged to price the credit to farmers based on actual assessment of individual risk rather than on a flat rate depending on category of borrower or end-use while ensuring that interest-rates charged are justifiable as well as reasonable. In brief, the thrust is on enhancing credit-delivery with improved risk assessment systems that lead to a regime of reasonable credit prices. Such a change has to be implemented within the framework of existing legal and institutional constraints: and to this limited extent, there has been a major change in the mindset (Reddy, 2004b). The issues relating to flow of agricultural sector were re-examined by the Vyas Committee and several recommendations of the Committee have been implemented (RBI, 2004).

Credit to SSIs

6.31 Small scale industries (SSIs) play a significant role in terms of balanced and sustainable growth, employment generation, development of entrepreneurial skills and contribution to export earnings. In particular, there is need to develop entrepreneurship in developing countries and, in this context, small-scale units play an important role. It is relevant to note that a unit which is small today could be a big unit tomorrow. At the same time, SSI units are hampered in their growth by imperfections in all the key factor markets - capital, land and labour – but, in particular, capital markets (Mohan, 2002). Capital costs faced by SSI units are typically higher because of market imperfections in the availability of information for investors and lenders. Given the relatively small size of loans, transaction costs are also higher for SSI units. Provision of collateral or other risk-reducing securities is also often difficult for SSIs. On all these grounds, credit flow to small scale units may be less than desirable. This provides a strong rationale for policy intervention to direct credit flow to the SSI units.

6.32 Like many countries, in India too, efforts have, therefore, been made to increase provision of credit to this sector. This has taken the form of requiring banks to allocate a stipulated proportion of their total credit to the SSI sector. Advances to SSI are accordingly a part of the priority sector lending since the 1970s. Before the initiation of financial sector reforms in the early 1990s, these loans were subsidised. In the post-reform period, higher transaction costs and the absence of good credit assessment capabilities with banks engendered by the earlier regime led to a significant jump in interest rates applicable to SSI units. The high interest rates paid by the SSIs may not always be in accordance with their risk profile.

6.33 Efforts have, therefore, been made in the recent years to increase flow of credit to this sector while reducing transactions costs for lending. Initiatives to increase flow of credit to the SSI sector include: opening of specialised SSI branches; fixing of self-target for SSI sector by banks; enhancement in the limit for composite loans; delegation of more powers to branch managers; simplification of loan application forms; launching of a new Credit Guarantee Scheme; and collateral free-loans. In order to further enhance the flow of credit to this sector, a Working Group on Flow of Credit to SSI Sector (Chairman: Dr. A.S. Ganguly) was recently constituted by the Reserve Bank. The Group submitted its Report in April 2004 (Box VI.3). Following the Group's Report, the Reserve Bank's Annual Policy Statement for 2004-05 stated that Credit Information Bureau of India Ltd. (CIBIL) would work out a mechanism, in consultation with the Reserve Bank, SIDBI and IBA for developing a system of proper credit records. As noted above, a key factor that inhibits lending to the SSI sector is limited information that banks have about borrowers. The proposal to develop a set of credit records will enable an easier verification of credit histories and thereby increase flow of credit. Empirical evidence for the US shows that wider availability of credit histories have greatly expanded the availability of credit as potential borrowers are no longer tied to their local lenders. Small firms in the US have been able to borrow from increasingly distant lenders over time (Peterson and Rajan, 2002). Given this evidence, the proposed measures of developing credit record through CIBIL should widen the available resources to SSI units as also reduce their cost. With mechanisms such as credit histories in place, financiers can also move away from lending only against collateral or on the basis of prior contacts.

Box VI.3

Report of the Working Group on Flow of Credit to SSI Sector

In India, small and medium enterprises (SMEs) are major contributors to growth in GDP, export promotion and employment generation and, in this context, there is a need to activate avenues to speed up credit to the SME sector. The Working Group observed that, for banks, SME financing is an attractive business opportunity of lending to the priority sector. However, the present slowdown in lending to the SME sector is mainly attributed to the risk-averse behaviour of banks due to a high proportion of credit extended to SMEs becoming non-performing.

The Group observed that this warranted a complete rethinking on the strategy of lending to this sector and a reassessment suggested the following three principle elements of strategy on lending:

First, provision and flow of credit to units having direct linkages with large corporate undertakings could be tied up with these large undertakings. This would facilitate recovery. For the linkage to be strong enough and to be beneficial for both, technology transfer from large undertakings to the small units could be accompanied by a greater oversight and quality of the products delivered.

The cost of credit assessment of small and medium enterprises can be reduced by a focused recognition of clusters of like small-scale industries that exist around the country. Such clusters help SSIs to reap economies of scale, both in financial assistance and in technology upgradation. Accordingly, the second leg of the Group's strategy is to develop a set of standard products for units belonging to the same cluster of industries.

The third leg is to develop local financial intermediaries specifically aimed at financing units mainly in the tiny but also small sectors. These would be similar to NBFCs but without any permission to accept deposits from the public. They would draw their resources from the banking system, by originating the loans and selling the same to the banks as a portfolio with appropriate arrangements for risk sharing. Such micro credit intermediaries would be able to assess risk and rate credit requirements and also serve as instruments for extending quick credit to SME clusters.

The Group observed that highly successful micro finance models working in southern states should be actively publicised and replicated as best practices in other parts of the country. Finally, since many State Financial Corporations (SFCs) have good infrastructure and trained personnel, revival of some of the more active SFCs as state level NBFCs needs to be explored.

This will thus permit a greater degree of financing without collaterals (Rajan and Zingales, 2003 *op.cit*). Finally, in order to improve the flow to this sector, a mechanism for debt restructuring on the lines of the Corporate Debt Restructuring (CDR) is proposed for the medium scale enterprises.

Micro Finance

6.34 The access to credit for the poor from conventional banking is often constrained by lack of collateral and high transaction costs associated with small borrowal accounts. It has been demonstrated that timely and adequate access to credit can help alleviate poverty, the prime example being the success of the Grameen Bank model of Bangladesh. It is possible for even the organised financial intermediaries to lend to the poor at market determined interest rate with high rates of recovery and low transaction costs. In this context, micro finance has emerged as a viable alternative to reach the underprivileged sections of society for their social and economic empowerment through financial intermediation. Micro finance involves provision of thrift, credit and other financial services and products of very small amounts to the poor for enabling them to raise their income levels and thereby improve living standards.

6.35 In this regard, a number of initiatives have been taken to augment the flow of bank credit to the micro enterprises in rural and semi-urban areas set up by vulnerable sections of society including women. Banks have been advised to provide maximum support to Self Help Groups (SHGs). A SHG is a registered or unregistered group of micro entrepreneurs with a homogenous social and economic background, voluntarily coming together to save small amounts regularly and mutually agreeing to contribute to a common fund to meet their emergency needs on mutual help basis. The group members use collective wisdom and peer pressure to ensure proper end-use and timely repayment of credit. In fact, peer pressure has been recognised as an effective substitute for collaterals. Besides, financing through SHGs reduces transaction costs for both lenders and borrowers. Accordingly, the Reserve Bank has put in place a facilitating environment for banks to promote SHGs. Since 1996, financing of SHGs is a part of priority sector lending. More recently, banks have been advised to provide adequate incentives to their branches for financing SHGs, establishing linkages and adopting simple and easy procedures to suit local conditions. The ambit of microfinance has been extended to include consumption expenditure. Banks have been advised that the group dynamics of SHGs need not be regulated and there is no need to impose or insist upon formal structures.

Housing Finance

6.36 The importance of the housing sector in any economy is derived from its high employment potential and extensive backward and forward linkages. In addition to being an engine of growth for the economy, the housing sector provides a relatively safe destination for bank credit on account of relatively high recovery rates. Consequently, the Reserve Bank has initiated a host of supply side measures to boost flow of bank credit to the housing sector and to ensure the benefit of soft interest rates to borrowers. These include: (a) contribution of Rs.100 crore to the equity capital of NHB; (b) reduction in risk weight on loans from 100 per cent to 50 per cent; (c) investments in Mortgage Backed Securities (MBS) reckoned in the prescribed housing finance allocation of 3.0 per cent; (d) increase in limit on housing loans for repairing damaged houses in rural, semi-urban and urban areas; and (e) direct finance to the housing sector up to Rs.10 lakh in rural and semi-urban areas as part of priority sector lending.

Infrastructure Lending

6.37 Financing of infrastructure projects is characterised by large capital outlays, long gestation period and high leverage ratios. Once an infrastructure project is built, and tariffs are set in a transparent and predictable manner, the cash flows are fairly regular and predictable. They can then be securitised easily. However, the pre-operation risk is extremely high: hence risk mitigation, and credit enhancement is necessary to attract resources at reasonable cost (Mohan, 2003b). Taking into account such special considerations involved in the funding of the infrastructural sector as also the need to facilitate private sector investment in infrastructure, several policy measures have been implemented by the Reserve Bank. In April 1999, the Reserve Bank introduced new guidelines relating to the financing of infrastructure projects, such as, the criteria for financing, the types of financing, the appraisal, the regulatory compliance/concerns, the administrative arrangements and the inter-institutional guarantees. Certain relaxations relating to regulatory and prudential aspects have been allowed to banks since 1999-2000 to boost flow of credit to this sector. These measures, *inter alia*, included: (i) enhancing the scope of definition of infrastructure lending; (ii) relaxing the prudential single borrower exposure limit from 15 per cent to 20 per cent of capital funds in respect of infrastructure companies providing infrastructure facilities; (iii) assigning a concessional risk weight of 50 per cent on investment in securitised paper satisfying certain conditions pertaining to an infrastructure facility; (iv) permitting lending to special purpose vehicles (SPVs) in the private sector registered under Companies Act for directly undertaking viable infrastructure projects subject to certain conditions; (v) lending to promoters, with certain safeguards and where appropriate, for acquiring a controlling stake in existing infrastructure companies; and (vi) expanding the scope of definition of infrastructure lending to include the construction of projects involving agro-processing and supply of inputs to agriculture, preservation and storage of processed agro-products and perishable goods, educational institutions and hospitals.

Credit Delivery: An Assessment

6.38 Against the above backdrop of the various recent policy efforts to improve the credit delivery mechanism, an analysis of the actual outturn in credit pattern extended by banks throws up a number of interesting facets. First, overall bank credit from scheduled commercial banks (SCBs) as a proportion of GDP stagnated during the 1990s although there are signs of a substantial increase from 1999-2000 onwards (Table 6.3 and Chart VI.1). A key factor holding down credit flow to the commercial sector was the banks' investments in Government securities. As discussed later, increasing investments of banks in Government securities were initially on account of statutory requirements, but subsequently banks preferred investments on their own even as statutory requirements were scaled down significantly. At the same time, the conventional measurement of bank credit to commercial sector understates actual credit availed. Reflecting the liberalisation process, banks have been permitted to subscribe to shares, debentures of corporates and commercial paper (RBI, 1999). Investments in such instruments, at present, are around 11 per cent of the conventional credit and nearly three per cent of GDP compared to negligible

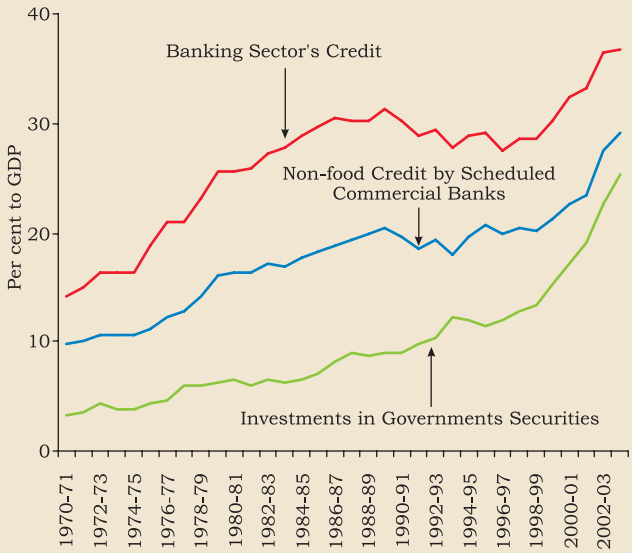
Table 6.3: Credit and Investment by Banks in India

(Per cent to GDP)

Item	1970s	1980s	1990s	2000-04
1	2	3	4	5
Credit to Commercial Sector by Banking Sector	18.8	28.7	28.9	34.7
Of which: Non-food Credit by Scheduled Commercial Banks	11.8	18.1	19.7	25.6
Investments in Government Securities by Banking System	4.6	7.4	11.8	21.0

Source : Reserve Bank of India.

Chart VI.1 : Credit and Investments of Banks in India



levels in the early 1990s (Table 6.4). Once such investments – termed as non-SLR investments – are taken into account, the ratio of bank credit of SCBs to GDP at end-March 2004 turns out to be

Table 6.4: Scheduled Commercial Banks' Non-SLR Investments

(Rs. Crore)

Item	March 1997	March 2004
1	2	3
1 Commercial Paper	**685**	**3,770**
2. Shares issued by	**1,252**	**8,667**
2.1 PSUs	348	1,272
2.2 Private Corporate Sector	904	7,395
3. Bonds/debentures issued by	**16,631**	**76,549**
3.1 PSUs	14,277	48,646
3.2 Private Corporate Sector	2,354	27,903
4. Total Non-SLR (1+2+3)	**18,568**	**88,986**
5. Conventional Bank Credit	**2,78,401**	**8,40,785**
	(20.3)	**(30.3)**
6. Bank Credit including non-SLR	**2,96,969**	**9,29,771**
	(21.7)	**(33.5)**

Note : Figures in brackets are per cent to GDP.

33.5 per cent as compared with 30.3 per cent based on the conventional definition (Table 6.4).

6.39 Second, a cross-country analysis shows that bank credit to the private sector in India (inclusive of credit to public sector units) remains lower than in many developing economies (Table 6.5). The bank

Table 6.5: Bank Credit to the Private Sector: A Cross-Country Survey

(Per cent to GDP)

Country/Region	1970s	1981-85	1986-90	1991-95	1996-00	2001-03
1	2	3	4	5	6	7
Argentina	19.0	27.6	22.8	17.3	23.0	15.6
Australia	25.0	29.0	48.8	66.4	80.6	89.8
Brazil	47.8	44.4	68.5	60.3	34.4	34.6
Chile	18.8	72.9	54.4	50.4	62.1	64.4
China	51.7	60.2	79.6	91.1	111.8	136.6
Germany	70.6	83.2	85.5	97.8	115.7	118.9
India	**18.8**	**27.9**	**30.5**	**28.8**	**29.4**	**35.5**
Indonesia	..	14.6	30.7	49.2	42.4	22.5
Japan	128.8	142.6	179.0	200.1	196.5	180.9
Korea, Rep.	41.4	54.2	58.4	62.4	78.9	99.7
Mexico	26.6	14.9	14.0	29.7	21.5	17.8
Philippines	34.3	41.2	19.5	31.9	52.2	36.9
Poland	..	4.4	7.1	20.8	23.7	28.5
Russian Federation	..	..	..	11.1	12.2	18.3
South Africa	63.5	66.7	76.1	111.1	126.0	120.6
United Kingdom	29.1	40.2	100.5	112.0	122.7	143.1
United States	117.4	121.7	147.6	162.5	220.6	190.6
Memo:						
East Asia and Pacific	45.8	48.6	65.6	82.5	104.3	116.6
World	80.4	88.2	110.0	120.3	139.8	131.5

.. Not Available.

Source : 1. World Development Indicators Online, World Bank (2004).
2. Reserve Bank of India.

credit to GDP ratio in India is one-third of that for the East Asian and Pacific region. Countries like Argentina and Indonesia that suffered from financial crises exhibit a significant decline in their credit-GDP ratios in the recent period. Even in countries like the US, where the financial systems are considered as market-based, the ratio of credit to GDP is significantly higher.

6.40 As noted above, bank credit/GDP ratio in India is lower than that in the East Asian region. This can be attributed in part to higher savings ratio in the East Asian region. High fiscal deficits and their financing by banks in India also explain the low credit-GDP ratio. This becomes clear if the total credit extended by the banking system – private sector as well as the government sector – is examined (Table 6.6).

6.41 Third, turning to sectoral credit trends, bank credit to agriculture, as a proportion of total credit, shows a decline from its levels in the 1980s, although the declining trend has been arrested since March 2002 (Table 6.7 and Chart VI.2). The share of industry in overall bank credit has also witnessed a declining trend since 1990. Amongst other key sectors, transport reveals a secular decline from its 1990 level. The decline in the relative share of the major sectors such as agriculture and industry has been predominantly on account of an increase in the sub-group "personal loans". The share of this sub-group has witnessed a multi-fold increase during the 1980s and 1990s: from around two per cent in 1980 to nine per cent in 1990 which doubled further to almost 20 per cent by 2003. Amongst the personal loans segment, housing loans have emerged as a significant category. At present, housing loans constitute nearly seven per cent of outstanding bank credit as compared with only 2.4 per cent in 1990. Apart from various policy efforts of the Reserve Bank to improve credit flows to the housing sector (noted above), the sharp growth in housing loans also reflects a softening of interest rates in the recent years and fiscal incentives.

6.42 Fourth, as a proportion of overall GDP, the declining trend in outstanding credit to agriculture has been reversed since 2001 and the ratio has exhibited a substantial increase since then. Both the components

Table 6.6: Domestic Credit Provided by the Banking Sector

(Per cent to GDP)

Country/Region	1970s	1981-85	1986-90	1991-95	1996-00	2001-03
1	2	3	4	5	6	7
Argentina	27.5	43.0	47.1	25.1	32.2	50.1
Australia	40.1	40.8	58.5	75.3	87.1	93.9
Brazil	49.5	50.7	101.1	98.6	50.1	61.1
Chile	45.4	89.7	88.1	62.2	69.4	73.6
China	45.1	60.2	81.2	94.2	117.9	161.3
Germany	76.9	98.0	99.8	116.8	143.2	144.9
India	**32.5**	**47.2**	**54.2**	**51.8**	**51.9**	**62.2**
Indonesia	..	13.2	29.9	49.0	61.0	59.3
Japan	166.9	208.8	247.9	271.7	303.4	314.3
Korea, Rep.	45.2	59.9	60.5	63.1	80.8	101.4
Mexico	45.1	52.6	46.4	41.4	35.6	36.6
Philippines	43.3	56.4	26.0	44.4	74.0	60.8
Poland	..	6.0	8.6	36.4	33.4	36.2
Russian Federation	..	..	..	27.7	32.0	26.6
South Africa	86.9	88.6	95.0	131.5	146.5	133.4
United Kingdom	46.2	48.5	98.8	117.1	126.6	145.2
United States	139.5	145.6	174.5	193.9	245.9	209.8
Memo:						
East Asia and Pacific	41.1	53.3	70.5	85.2	112.3	140.0
World	98.3	112.3	137.5	150.8	172.2	158.9

.. Not Available.

Source : 1. World Development Indicators Online, World Bank (2004).
2. Reserve Bank of India.

Table 6.7 : Distribution of Outstanding Credit of Scheduled Commercial Banks According to Occupation

(Per cent to Total)

Item	Jun-80	Jun-85	Mar-90	Mar-95	Mar-00	Mar-01	Mar-02	Mar-03
1	2	3	4	5	6	7	8	9
I. Agriculture	**14.8**	**17.6**	**15.9**	**11.8**	**9.9**	**9.6**	**9.8**	**10.0**
1. Direct Finance	11.3	14.7	13.8	10.2	8.4	8.1	7.2	7.8
2. Indirect Finance	3.4	3.0	2.1	1.7	1.5	1.5	2.5	2.2
II. Industry	**48.0**	**41.3**	**48.7**	**45.6**	**46.5**	**43.9**	**41.4**	**41.0**
1. Mining and Quarrying	0.8	0.6	0.8	0.7	1.1	1.2	1.8	1.8
2. Food, Manufacturing and Other Processing Industries	4.3	3.8	4.1	3.7	3.8	3.6	3.2	3.1
3. Bevarage and Tobacco Industries	0.9	0.7	0.7	0.7	0.5	0.5	0.5	0.5
4. Manufacture of Textiles	8.4	6.9	7.2	7.7	6.6	5.9	5.2	4.9
5. Paper , Paper Products and Printing	1.7	1.7	1.6	1.3	1.1	1.0	1.1	1.1
6. Leather and Leather Products	0.8	0.6	1.0	0.9	0.6	0.5	0.4	0.4
7. Rubber and Rubber Products	1.0	0.8	0.9	0.8	0.6	0.5	1.1	1.0
8. Manufacturer of Chemicals and Chemical Products	6.1	4.8	6.1	6.1	5.8	5.5	4.6	4.6
9. Manufacture of Basic Minerals/Petroleum, coal product and Nuclear Fuels	1.8	0.5	0.4	0.7	3.2	2.4	1.9	1.5
10. Manufacture of Cement	0.5	0.6	0.8	0.6	0.9	0.9	0.9	0.9
11. Basic Metals and Metal Products	5.2	4.6	5.2	5.1	5.4	5.1	5.1	4.9
12. Engineering	9.9	7.3	8.6	7.8	5.5	5.4	4.9	4.5
13. Vehicles, Vehicle Parts and Transport Equipments	2.5	2.3	2.2	1.4	1.8	1.7	1.7	1.5
14. All Other Industries	3.1	4.9	7.1	5.9	6.7	6.3	4.0	4.2
15. Electricity Generation,Transmission and Distribution	0.5	0.6	0.8	0.8	1.9	2.2	2.9	3.3
16. Construction	0.8	0.8	1.4	1.4	1.2	1.2	2.3	2.7
III. Transport	**4.3**	**4.8**	**3.2**	**1.9**	**1.8**	**1.6**	**1.4**	**1.2**
IV. Personal Loans and Professional Services	**2.2**	**6.4**	**9.4**	**11.3**	**14.4**	**15.8**	**16.8**	**19.6**
1. Loans for Purchase of Consumer Durables	..	0.2	0.4	0.3	0.6	0.6	0.5	0.4
2. Loans for Housing	..	1.6	2.4	2.8	4.0	4.7	5.0	6.5
V. Trade	**22.2**	**23.4**	**13.9**	**17.1**	**15.6**	**16.6**	**15.4**	**13.8**
VI. Financial Institutions	**0.8**	**1.2**	**2.1**	**3.8**	**4.8**	**4.9**	**5.7**	**6.7**
VII. Miscellaneous / All Others	**7.6**	**5.3**	**6.8**	**8.5**	**7.1**	**7.5**	**9.5**	**7.7**
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memo:								
Services	24.2	26.3	30.5	31.9	31.9	32.8	35.6	36.8

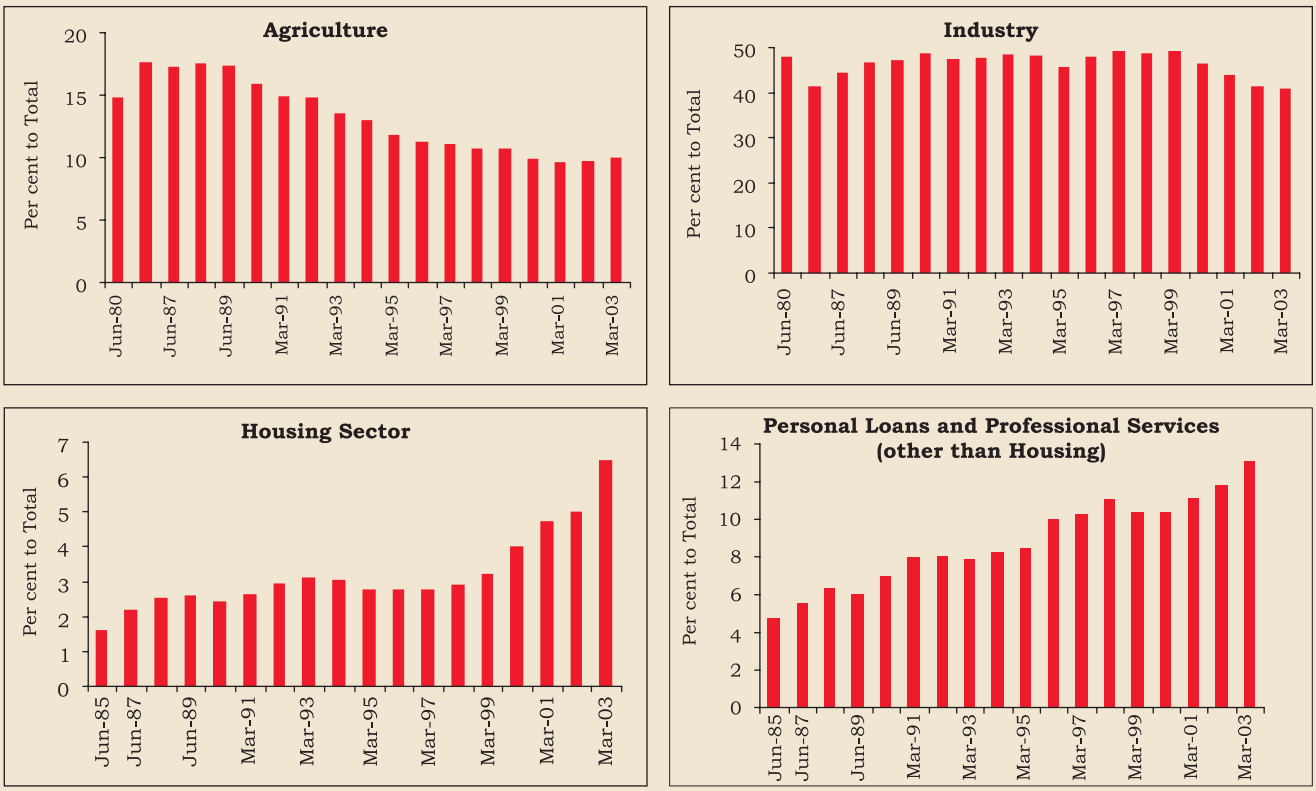
.. Not Available

Note : Services are defined to include construction, transport, professional and other services, housing, trade (excluding food procurement), finance and other services.

Source : Basic Statistical Returns of Scheduled Commercial Banks (various issues), Reserve Bank of India.

of agricultural credit – direct as well as indirect credit – have contributed to this increase. Thus, notwithstanding the falling share of agriculture in overall economic activity, credit to agriculture (as a proportion of overall GDP) at end-March 2003 was quite close to that at end-March 1990. In view of the declining role of agriculture in overall activity, it would be more appropriate to examine movements in credit to the agricultural sector in relation to its own sectoral GDP. An analysis based on this approach shows a general upward movement in credit to agricultural sector, barring a downward trend in the first half of the 1990s. Illustratively, the ratio of credit to the agricultural sector to its own GDP at around 15 per cent at end-March 2003 was higher than that of 12 per cent at end-March 1990 (Table 6.8). The analysis thus indicates that the efforts of the Reserve Bank during the

Chart VI.2 : Sectoral Deployment of Bank Credit



Note : Data are based on outstanding credit of scheduled commercial banks.

last 3-4 years to improve the flow of credit to agricultural sector have been successful. The existing agricultural credit system is geared to the needs of foodgrains production. Despite the fall in the share of the foodgrains production, it is all the more creditable that the ratio of agricultural credit to agricultural GDP has not fallen. Long-term credit as a share of private investment has also been rising in the late 1990s (Mohan, 2004d).

Table 6.8: Credit to Various Sectors of the Economy from Scheduled Commercial Banks

(per cent to GDP)

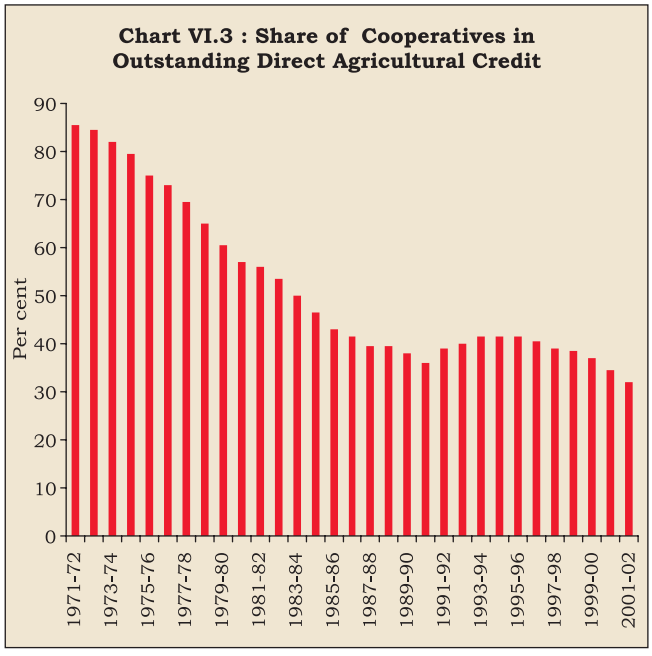
Item	June 1980	June 1985	March 1990	March 1995	March 2000	March 2001	March 2002	March 2003
1	2	3	4	5	6	7	8	9
				Per cent to Overall GDP				
Agricultural Credit	2.6	3.6	3.4	2.5	2.4	2.5	2.8	3.1
Direct	2.0	3.0	3.0	2.1	2.0	2.1	2.1	2.4
	(5.3)	(5.6)	(5.7)	(4.0)	(3.2)	(3.3)	(3.4)	..
Indirect	0.6	0.6	0.5	0.3	0.4	0.4	0.7	0.7
Industry	8.5	8.4	10.5	9.5	11.0	11.3	11.9	12.5
				Per cent to Respective Sectoral GDP				
Agricultural Credit	7.8	11.3	12.1	8.9	9.9	11.0	12.3	14.9
Direct	6.0	9.4	10.5	7.7	8.3	9.3	9.1	11.6
	(15.9)	(17.5)	(20.2)	(14.6)	(13.6)	(14.9)	(15.1)	..
Indirect	1.8	1.9	1.6	1.3	1.5	1.8	3.2	3.3
Industry	45.2	43.6	52.4	47.7	61.0	60.6	65.8	67.3

.. Not Available.

Note : Data in brackets are total direct credit to agricultural sector from the banking system inclusive of cooperatives.

6.43 The preceding analysis is based on credit extended by scheduled commercial banks (SCBs). Apart from SCBs, cooperative institutions have also been a key source of credit to this sector. Total outstanding direct credit to the agriculture sector (as a proportion to its sectoral GDP) at end-March 2002 was lower than that of the early 1990s, although the declining trend was reversed in 2001. The share of cooperatives in total outstanding direct credit to the agricultural sector was around a third in 2002 (Chart VI.3).

6.44 Fifth, credit to industry – both in terms of overall GDP as well as its sectoral GDP – has generally maintained an upward trend. This is in contrast to the earlier noted fall in the share of industrial credit to overall credit. Furthermore, credit to SSI sector also exhibits an increasing trend, contrary to popular perception. Thus, notwithstanding the pressure on banks on prudential and NPA grounds, the small-scale sector does not seem to be credit-starved although there might be pockets of SMEs that face constraints of longer-term finance (Mohan, 2004a). With credit to agriculture as well as industrial sector – as proportion to GDP - exhibiting an increase, the flow of credit to the services sector has concomitantly tended to fall as a proportion of GDP. Although the proportion of bank credit going to the services sector has increased since the 1980s (from about 24 per cent in 1980 to about 31 per cent by 1990 and further to about 37 per cent by March 2003) (Table 6.7), it has not kept pace with the increase in the share of the services in economic activity. This is largely a legacy of nurturing the growth of basic and heavy industries as also directing credit to the priority sector (including agriculture). Lending to services has not been favoured by traditional banking practices followed in India such as collateral-based financing, emphasis on securitised instruments, limited appetite for risks inherent in financing services and lack of standardisation and customisation of financial products (Mohan, 2004b). The issue of credit flow to the services sector assumes even greater importance with the growing role of the information technology sector in the economy. In the absence of collateral, a key issue is whether banks are in an advantageous position compared to other financiers with respect to access to information. The ability to assess such information crucially depends on the origin of information asymmetries and uncertainties. While banks may have superior information regarding conditions in local markets, they may lack the necessary technical expertise to evaluate such projects. This, therefore, necessitates development of specialisation skills by banks to finance such evolving sectors but, in view of their risky nature, supported by recourse to subordinated debt and appropriate credit transfer risk tools (BIS, 2002).



6.45 Sixth, the industrial sector depends upon its credit needs not only on banks but also on alternative sources such as Development Finance Institutions (DFIs) and capital markets. While banks provide short-term needs of corporates, long-term needs have been met largely by the DFIs. In the context of the dwindling role of DFIs, an analysis of the combined flow of credit from these major sources is crucial. During the latter half of the 1990s, funds available from DFIs almost halved and there was an even sharper decline in funds from capital markets (Table 6.9). A number of factors on both the demand and supply side explain this (Mohan, 2004a):

- The decline in funds from DFIs reflected in part the drying-up of their sources of low cost finance. The Indian experience with DFIs has not been unique.

Table 6.9: Major Sources of Industrial Finance

(Per cent to GDP)

Period	Bank Credit	Non-SLR Investments	DFIs	Capital Market	Total
1	2	3	4	5	6
1970s	1.8		0.3	0.1	2.2
1980s	2.7		0.7	0.6	4.0
1990s	2.6		1.0	1.2	4.8
1992-93 to 1996-97	2.9		1.0	1.9	5.8
1997-98 to 2001-02	2.7	0.7	0.6	0.2	4.2

Source : Mohan (2004a).

Most DFIs in other countries are also beset with the problems of high and growing NPAs reflecting poor cost-benefit evaluations of projects and wide spread mismatches between their assets and liabilities, especially as raising long-term resources becomes difficult with the withdrawal of state support. Many economies have now begun to restructure their DFIs. In many cases, DFIs are now expanding their areas of operations in banking, para- banking and investments. In consonance with the international experience, efforts are underway to restructure FIs in India.

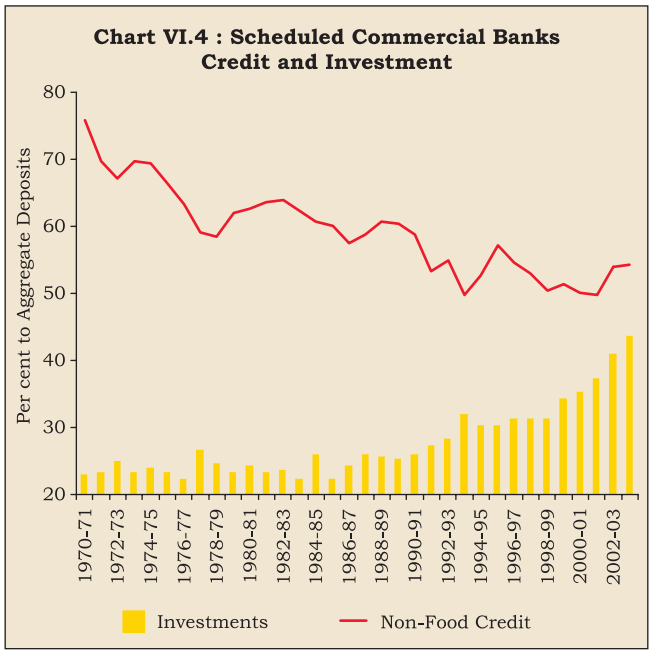
- As regards capital markets, the decline of funds can be attributed to the exuberant investment activity in the mid-1990s, which led to the creation of overcapacity including some uncompetitive overcapacity. The concomitant erosion of profits explains the poor performance of the stock market in the late 1990s and earlier part of the current decade.
- Another reason for lower recourse to funds from DFIs could be the increase in the internal sources of funds. Internal sources increased from 34 per cent during the first half of the 1980s to 43 per cent in the recent period. The question, however, remains as to whether this reflects the effect of substitution of internal sources for external sources or the scale effect of an external constraint. The decline in debt-equity ratio, as a result of corporate restructuring, could also have led to a lower recourse to DFIs.

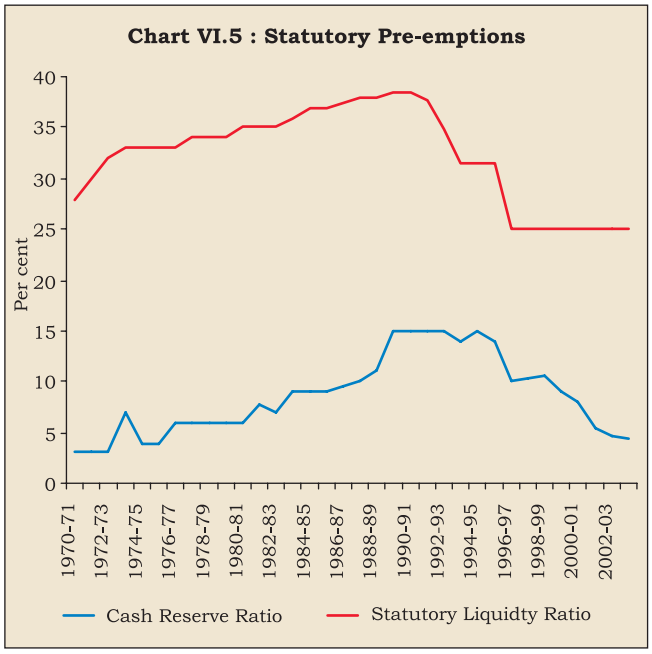
6.46 In the context of the waning of the DFIs, a key issue is: whether banks can fund long-term needs of corporates. Two factors curtail the flexibility of the banks to meet the long-term fund requirements. First, deposit liabilities of banks are of relatively shorter maturity. About four-fifths of bank deposits are of a tenor of less than five years. In view of this, long-term lending could induce the problem of asset-liability mismatches. Second, banks already hold large volumes of government paper, usually of long tenors. This further reduces the scope available to banks to fund long-term financing needs. The envisaged reduction in fiscal deficit under the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 is expected to provide banks greater flexibility to lend to the corporate sector. Banks may also need to raise long-term matching liabilities through issues of bonds to fund the infrastructural projects. At the same time, there is a need to develop the corporate bond market in the country. The lack of good quality issuers, institutional investors and supporting infrastructure continue to constrain the development of corporate bond markets. Although several pre-conditions for the evolution of a successful corporate debt market such as well-functioning government securities and money markets to price paper, regulatory and legal framework, an efficient clearing and settlement system and a credible credit rating system - are now in place, there is a need to enhance public disclosure and put in place effective bankruptcy laws. Finally, the possibility of equity markets emerging as a substantial source of project finance hinges upon the expansion of the mutual fund industry and channelling of a part of contractual savings to equity markets.

Bank Credit to Government

6.47 The banking system is a source for funds for not only the private sector but also for the government sector. In India, with progressive widening of fiscal deficits from 1960s onwards, the burden of financing has been borne by the Reserve Bank and the banking system. As the Reserve Bank financing beyond a limit is inflationary, the increase in the Reserve Bank support to the Central Government was accompanied by an increase in cash reserve requirements (CRR). As regards the support of the banking system to the Government's borrowing programme, it took the form of a progressive increase in the SLR. Although interest rates on Government securities - initially kept artificially low to contain the interest cost of public debt - were steadily raised to enhance their attractiveness to the market, it got increasingly difficult to get voluntary subscriptions even at higher rates of return. The SLR, therefore, was raised to 38.5 per cent by the early 1990s and coupled with the increase in the CRR, statutory pre-emptions exceeded 60 per cent of total resources. This curtailed banks' lendable resources significantly and, as noted above, credit to the commercial sector (as a proportion to GDP) showed a near stagnation during the 1980s and 1990s. As a proportion to their deposits, bank credit to the commercial sector exhibited a sharp decline during the 1970s. The declining trend continued during the 1980s, *albeit* at a moderate pace (Chart VI.4). Non-food credit by scheduled commercial banks was as high as 76 per cent of their deposits in March 1971; the ratio fell to 60 per cent by March 1990.

6.48 As a part of the reform process, the statutory pre-emptions were cut and, at present, these are just half of their early 1990s level (Chart VI.5). The SLR, in particular, was reduced from 38.5 per cent to 25 per cent by 1997. This reduction in SLR was expected to reduce banks' holdings of the Government paper and correspondingly lead to a higher flow of credit to the private sector. Notwithstanding the flexibility provided by the new regime, the holdings of the banks in the Government securities remain significantly higher than





the requirements and, in fact, tended to increase over time. By early October 2004, scheduled commercial banks' holdings of SLR securities amounted to around 40 per cent of their net demand and time liabilities (NDTL) as compared with the required 25 per cent.

6.49 A cross-country analysis shows that lending by banks in India to the Government (as per cent to GDP) is comparable to many developing economies but higher than some of the East Asian economies (Table 6.10). Illustratively, during 2001-03, bank

Table 6.10: Domestic Credit to the Government by the Banking Sector

(Per cent to GDP)

Country/Region	1970s	1981-85	1986-90	1991-95	1996-00	2001-03
1	2	3	4	5	6	7
Argentina	8.5	15.4	24.3	7.8	9.2	34.5
Australia	15.1	11.8	9.7	8.9	6.5	4.2
Brazil	1.6	6.2	60.2 @	38.3	15.7	26.5
Chile	26.6	16.9	33.7	11.8	7.3	9.2
China	-6.6	0.0	1.6	3.1	6.1	24.7
Germany	6.4	14.8	14.3	19.1	27.5	26.0
India	**13.7**	**19.4**	**23.7**	**23.0**	**22.5**	**26.7**
Indonesia	..	-1.4	-0.8	-0.3	18.6	36.8
Japan	38.1	66.3	68.9	71.5	106.9	133.4
Korea, Rep.	3.9	5.8	2.1	0.7	1.9	1.7
Mexico	18.5	37.7	32.4	11.7	14.1	18.9
Philippines	9.0	15.2	6.5	12.5	21.8	24.0
Poland	..	1.5	1.5	15.6	9.7	7.7
Russian Federation	..	..	..	16.6	19.8	8.3
South Africa	23.4	21.9	19.0	20.4	20.4	12.9
United Kingdom	17.1	8.3	-1.7	5.1	3.9	2.1
United States	22.0	23.9	26.9	31.4	25.3	19.2
Memo:						
East Asia and Pacific	-4.7	4.8	4.8	2.8	7.9	23.4
World	17.8	24.1	27.5	30.5	32.4	27.4

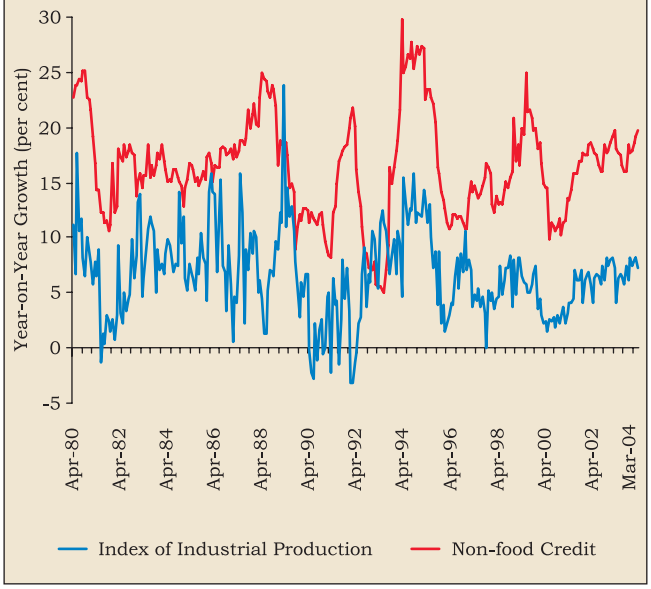
.. Not Available
@ Data pertain to 1988-90.
Note : Domestic Credit to the government sector in this Table is computed as total domestic credit less credit to the private sector.
Source : 1. World Development Indicators Online, World Bank (2004).
2. Reserve Bank of India.

credit to Government in India was almost 27 per cent of GDP, significantly higher than that of two per cent in Korea. This is in sharp contrast to the earlier noted trend in regard to credit extended to the private sector where the ratios for these economies vastly exceed that of India.

6.50 A number of factors explain the banks' preference for holding excess Government securities. First, demand for private credit moderated following the slowdown of the Indian economy from 1997-98 onwards. Available empirical evidence suggests that there is a co-movement between output and credit demand (Chart VI.6). Downward rigidity in the lending rates of the banks could also have reduced demand for bank credit. Econometric analysis suggests that real non-food credit is positively related to output and negatively related to interest rates. Estimated elasticity of real non-food credit of 1.6 suggests that demand for real non-food credit increases more than the increase in output (Box VI.4).

6.51 Second, capital flows from abroad have been quite strong since 1993-94 (see Chapter IV). This increased the availability of funds with the banks and, in view of weak credit demand, banks preferred to invest these surplus funds in Government securities. Third, a key factor appears to be the fiscal deficit of the Government which has continued to remain high. Market borrowing requirements of the Government sector have, therefore, been increasing. Weak credit demand coupled with increased funds due to capital inflows enabled banks to invest in the Government paper. Otherwise, the pressure to finance the fisc could have reverted to the Reserve Bank or alternatively, it could have led to pressures on interest rates.

Chart VI.6 : Output and Credit



6.52 Fourth, the preference of the banks for investment in Government securities was also influenced by the phased tightening of prudential norms on capital adequacy, asset classification and income recognition to international standards. These prudential guidelines could have increased risk aversion on the part of the banks to private sector lending, since the credit risk-free Government paper requires zero provisioning. Thus, capital adequacy requirements of banks increases substantially while extending credit to the private sector but no such addition is required while investing in Government paper. Fifth, in an environment of softening interest rates, which prevailed for an extended period of time – from around 1998 onwards till early-2004 – investment in Government securities also turned out to be relatively attractive. In fact, the treasury operations of banks have been a significant source of their profitability in the past few years. These profits strengthened banks' balance sheets and enabled them to provide resources for NPA provisioning. Finally, another reason of risk aversion to lending to the private sector could be that the loan officers worry about the possibility of being falsely accused of corruption. Banerjee, Cole and Dufflo (2003) find some empirical support in favour of this proposition.

6.53 The banks' preference for gilts had a few benefits. First, as noted above, in the past couple of years, it boosted banks' profitability and balance sheets. Second, excessive lending in times of poor growth could have generated problems of adverse selection. At the same time, large investments in gilts raise a number of concerns. First, it reflects dissipation of banking knowledge capital with regard to credit appraisals and runs a danger of the link between liquidity, credit, money and economic activity being severed in the long-run (Mohan, 2003a). Second, in view of the excess investments, the burden of funding the borrowings could revert to the Reserve Bank which makes monetary management difficult. Finally, investment in Government securities are subject to market risks arising from fluctuations in market rates of interest. With the upturn of the interest rate cycle, there could be an adverse impact on banks' profitability. In this context, it is relevant to observe that the Reserve Bank had advised banks to build-up Investment Fluctuation Reserves (IFR) to meet such eventualities.

Box VI.4

Determinants of Bank Credit

Bank credit is an important source of working capital for corporates and timely availability of credit contributes to economic activity. Supply of bank credit depends, *inter alia*, upon availability of funds with the banks, the rate at which they lend and returns on alternative instruments of investment (such as Government securities, commercial paper and equity markets). Although supply of credit is important, actual utilisation of credit would depend upon its demand. With growing financial liberalisation, the available pool of resources has expanded to include not only bank credit but also external resources such as external commercial borrowings, foreign currency convertible bonds and equity funds through depository receipts. Thus, due to a variety of reasons there can be a switch from a regime of credit rationing to a situation of demand constraint in the loan market (Rakshit, 1994).

For India, evidence suggests that there exists a bi-directional causality between output and credit, *i.e.*, changes in credit lead to changes in output and *vice versa* (RBI, 2003). In contrast to these aggregate data, Misra (2003) undertook a state-wise analysis of relationship between credit and output. For most of the states, he found evidence in favour of a uni-directional causation from output to credit. His results suggest that credit flow to various states is guided by the absorptive capacity of the states. Lack of credit off-take, in this view, should not be seen as a problem in itself but should be seen in conjunction with growth prospects of the concerned states. According to estimates contained in RBI (2003), demand for credit is positively influenced by lagged as well as contemporaneous output while interest rates depress credit demand. Supply of credit was found to have a positive relationship with lending rates, banks' free reserves and equity prices. Rath and Bose (2004) estimate demand and supply for credit in a vector error correction framework and find that output is a key determinant of credit demand while availability of funds with banks determines the supply of loans by banks. Industry-wise estimates of credit elasticities show that these vary across industries. Credit elasticity is relatively low for industries such as food products and cotton textiles and high for industries like engineering (RBI, 2002). With the changing composition of industrial output over time, overall credit demand elasticity may undergo change.

This Box attempts to re-examine the behaviour of credit and its determinants in India. First, hypothesis of a bi-directional causality between output and credit cannot be rejected[1]. Second, in order to understand the determinants of demand for credit, the relationship between credit, output and interest rates is examined in an autoregressive distributed lag (ARDL) model of order (1,0,0) [2]. Results indicate that credit demand increases by 1.6 per cent for every one per cent increase in real GDP. Third, the negative influence of lending rates on credit demand is statistically significant, although the effect is small. Estimates suggest that a reduction of 10 percentage points in the lending rate would increase credit demand by around one per cent.

Although long-run relationship between these three variables is confirmed, it is also interesting to examine the short-run dynamics as there have been periods such as 1997-98 when credit continued to expand even as activity was sluggish. This could occur if, in the face of weak demand conditions, inventory builds-up and this increases firms demand for short-term credit. As firms adjust over time to reduced demand, they curtail production and run down the inventories and, in turn, this will reduce credit demand (Mukhopadhyaya, 1998). The dynamics of this adjustment process can be examined through estimation of an error correction model[3]. The results show that the error correction term is statistically significant. The coefficient estimate of 0.21 of the error correction term indicates that the adjustment process is relatively fast and one-fifth of the deviation from the equilibrium is corrected every year. Thus, periods when credit and output do not show a co-movement are short-lived and, over time, the positive co-movement is restored.

Estimates of credit elasticities attempted here have covered the period 1975-2003 – a period involving a regime shift from a credit-regulated economy where interest rates did not play an equilibrating role between demand and supply to a regime where credit supply and demand both depend upon market forces. Against this backdrop, the empirical evidence and the estimated elasticities should be treated as indicative.

[1] Granger causality tests indicate a bi-directional causality between output (proxied by index of industrial production) (IIP) and real non-food credit (RNFC). Real non-food credit is nominal non-food credit of scheduled commercial banks deflated by wholesale price index. In a bivariate VAR of IIP and RNFC (with both variables in first-difference of logs) over the period April 1994 to March 2004, the null hypothesis of Granger non-causality of IIP can be rejected at p-value of 0.00 (with chi-square of 67.8). Similarly, the null hypothesis of Granger non-causality of RNFC can be rejected at p-value of 0.01 (with chi-square of 26.9). The VAR was estimated with 13 lags, with lag selection based on Schwarz Bayesian Information Criterion (SBIC).

[2] Using annual data from 1975-76 to 2002-03, the estimated long-run relationship is as follows:

LRNFC = -12.4 + 1.60 LGDPR – 0.11 AVGRATE,
(10.0) (14.7) (2.0)

where, LRNFC, LGDPR and AVGRATE denote (log of) real non-food credit, (log of) real GDP and weighted average lending rate of scheduled commercial banks, respectively.

[3] DLRNFC = -2.6 + 0.33 DLGDPR – 0.02 DAVGRATE - 0.21 ECM_{t-1}
(3.2) (3.1) (2.8) (3.0)

$\bar{R}^2$ = 0.42 DW = 2.2

Prefix D indicates variables are in first-difference form while ECM stands for error correction term.

6.54 On the positive side, the pick-up in investment activity in the economy from the second half of 2003 onwards has led to a strong credit demand from the private sector. Correspondingly, investments of the banking system in Government securities have recorded a significant deceleration (see Chapter II). The enactment of the Fiscal Responsibility and Budget Management Act, 2003 with its envisaged reduction in fiscal deficits will help to reduce banks' investment in gilts and, correspondingly, this is expected to enhance the credit flow to the private sector.

III. CONCLUDING OBSERVATIONS

6.55 This Chapter addressed issues related to the role of finance in growth. Empirical evidence confirms a positive relationship between finance and growth, notwithstanding the debate on the causality. In developing economies like India, with bank-based financial system, bank credit plays a critical role in the growth process. At the same time, the banking system has the responsibility of not only financing the credit requirements of the private sector, it is also often required to finance the fiscal authority.

6.56 In recent decades, there has been a renewed interest in the role of bank credit in economy activity. This is essentially for two reasons. First, it is believed that monetary policy impulses affect economic activity not only through the interest rate channel but also through the credit channel. The credit channel, especially in view of balance sheet effects, through the financial accelerator mechanism augments the conventional interest rate channel of monetary transmission. The second reason for interest in credit aggregates emerges from the view that excessive increases in credit are a precursor to a probable future financial instability. Monitoring of credit behaviour may thus be a reliable leading indicator for monetary and financial stability.

6.57 In India, the banking system has been financing both the Government and the private sector. With the initiation of structural reforms in the early 1990s, the focus has shifted from micro-regulation of credit to macro-management. Interest rates on loans have been deregulated, except for small loans (loans up to Rs. 2 lakh). Banks have been provided the flexibility to lend to various sectors of the economy, based on their risk-return assessment. While the requirement of priority sector lending has been retained at 40 per cent of bank credit, the categories of advances eligible for priority sector have been expanded to provide banks increased opportunities to lend to these sectors. In the recent years, the efforts of the Reserve Bank have mainly concentrated on improving the credit delivery mechanism. The policy endeavour has been to reduce various information and transaction costs associated with lending so that increased flow of credit takes place at reasonable rate of interest.

6.58 Analysis presented in this Chapter indicates that these efforts to improve credit delivery have had a positive effect. There is evidence that credit flow to the agricultural sector has recovered significantly in the last 3-4 years. The declining trend in the share of agricultural credit to total bank credit as well as its share to overall GDP has been reversed since 2000. Credit to agriculture in relation to its sectoral GDP - a more relevant metric – maintained its upward trend. This is remarkable since the share of foodgrains in total agricultural output has been declining. It is critical that the flow of credit to agriculture is maintained. In order to sustain the flow of credit to the agricultural sector, there is a need for legal and institutional changes relating to governance, regulation and functioning of rural cooperative structure and Regional Rural Banks(RRBs). The changes warranted in cooperatives as well as RRBs involve deep commitment of state-governments and have significant bearing on political economy. Second, in view of overhang problems of non-performing loans and erosion of deposits in both cooperatives and the RRBs, restructuring and recapitalisation by the Government becomes important. The current acceleration in credit-delivery can be sustained in the medium term, if such fiscal support from States and Centre is firmly put in place soon to revive or reorganise rural cooperative structure and the RRBs. Third, there is a need to foster an appropriate credit culture to make enhanced rural credit a lasting phenomenon. Fourth, a comprehensive public policy on risk-management in agriculture is required as not only a means of relief for distressed farmers but as an ingredient for more efficient commercialised agriculture (Reddy, 2004b). Furthermore, banks in India - so far geared to financing of traditional crops like cereals - will have to be prepared to meet the changing requirements of commercialising agriculture.

6.59 Credit flow to industrial sector by banks has also been maintained. However, in the context of the waning of the DFIs, the issue of meeting long-term funding needs of corporates has attracted attention. The ability of commercial banks to meet the long-term fund requirements is hampered by the relatively shorter maturity of their deposits. The limited flexibility

available to banks is further compounded by the fact that banks are already holding large volumes of Government paper, usually of long tenors. This stresses the need to develop an active corporate bond market in the country. Although several pre-conditions for the evolution of a successful corporate debt market are now in place, other requirements such as enhanced public disclosure and effective bankruptcy laws are still awaited. Funding from equity markets hinges upon the expansion of the mutual fund industry and channelling of a part of contractual savings to equity markets.

6.60 The increase in disbursement of housing finance is heartening as housing construction has strong backward and forward linkages. This large increase in housing loans to potential home-seekers in India is fundamentally different from the speculative activity in real estate in other countries. Although the housing sector provides a relatively safe destination for bank credit on account of relatively low default rates, banks need to be on alert against an unbridled growth of housing finance and should take due precaution in the matter of interest rates, margin, reset period and documentation.

6.61 Given the growth and employment potential of small-scale units, there is a need to increase credit availability to this sector at reasonable costs. Banking institutions must improve their credit assessment capabilities with regard to small-scale enterprises so that they can distinguish adequately between good and bad credit. Small-scale must not be equated with high risk. If the interest rates charged to SSIs are much higher than normal good credit risk to large-sized industries, there is an implicit adverse selection in the credit appraisal process. Thus, there is a need for realignment of interest rates among various segments of the financial market. As the financial market develops, ideally the interest rates on all types of debt instruments, both in the Government and private sectors, and in the credit market should align in a relatively narrow band, reflecting realistic risk premia (Mohan, 2002b).

6.62 The flow of credit to the various sectors of the economy could be increased further if banks can contain their operating costs and improve the loan recovery. Operating costs of banks in India remain higher than major economies (Reddy, 2004a). Recovery management is a key to the stability of the banking sector. Indian banks have done a remarkable job in containment of non-performing loans considering the overhang issues and overall difficult environment. These efforts need to be pursued further. This will help banks to reduce their lending rates which will provide a further impetus to investment demand in the economy.

6.63 The structural reforms during the 1990s, *inter alia,* attempted to enhance the credit flow to the private sector through reductions in statutory pre-emptions. However, despite this reduction, banks continue to prefer to invest in government securities for a variety of reasons like weak demand, excess capital flows and risk aversion. The banks' preference for gilts runs a danger of the link between liquidity, credit, money and economic activity being severed in the long-run. Furthermore, with the upturn of the interest rate cycle, there could be an adverse impact on banks' profitability. Fiscal consolidation as envisaged in the Fiscal Responsibility and Budget Management Act is expected to reduce the Government's draft on the banking system. A reduction in banks' holding of long-term Government securities will permit greater flexibility in providing long-term loans for infrastructure projects and this will, therefore, help to bridge the gap created by the DFIs. Overall, lower Government borrowings are expected to increase the flow of credit to the commercial sector with beneficial effects on investment demand, output and employment in the economy.

VII MONETARY TRANSMISSION MECHANISM

7.1 Monetary policy affects its final goals – prices and output – with long lags. Policies responding only to the current state of the economy may be destabilising and monetary authorities are, therefore, required to be forward-looking in their approach. A forward-looking approach would, however, be contingent upon a broad understanding of the monetary transmission mechanism - the process through which changes in monetary policy instruments affect output and inflation. Moreover, the transmission lags are not only long but often also found to be variable. The variability of the lags has been accentuated by the ongoing financial deregulation, liberalisation and innovations in a large number of economies.

7.2 Reflecting the process of financial liberalisation, there have been changes in operating procedures of monetary policy. Notably, monetary aggregates have been de-emphasised as an intermediate target of monetary policy and, for an increasingly large number of economies, short-term interest rates have emerged as the operating target of monetary policy. In this context, the speed and size of pass-through from policy rates to market rates become critical. Concomitantly, concepts such as neutral real rate have been an issue of debate.

7.3 Like other Emerging Market Economies (EMEs), monetary policy in India has witnessed significant changes in its operating procedures and instruments. A multiple indicator approach has been put in place *in lieu of* the earlier monetary targeting approach. With gradual deregulation of financial markets and a move towards indirect instruments of monetary management, short-term interest rates have emerged as instruments of conveying the monetary policy stance. At the same time, rigidities in the market rates of interest have blunted the effectiveness of monetary policy actions. With the phased opening up of the Indian economy to external flows and increasing trade openness, the role of the exchange rate in the transmission mechanism has assumed importance.

7.4 Against this backdrop, this Chapter undertakes a discussion of issues related to monetary transmission. Section I provides an overview of various channels through which monetary policy affects output and prices. Cross-country empirical evidence on monetary policy lags and pass-through from policy rates to market rates is examined. The relevance of a neutral rate of interest as a guide for monetary policy formulation is also critically evaluated. Section II focuses on monetary transmission mechanism process in India. It dwells upon various policy efforts to impart flexibility to the interest rate structure in India. Estimates of interest rate pass-through in India are attempted. Finally, the Section undertakes an empirical exercise to understand the dynamics of output and prices in response to monetary policy shocks. Concluding observations are contained in Section III.

I. ISSUES IN MONETARY TRANSMISSION

7.5 The monetary transmission mechanism refers to the process through which changes in monetary policy instruments (such as monetary aggregates or short-term policy interest rates) affect the rest of the economy and, in particular, output and inflation. Monetary policy impulses transmit through various channels, affecting different variables and different markets, and at various speeds and intensities (Loayza and Schmidt-Hebbel, 2002). For monetary policy to be effective, it is, therefore, essential to have a broad understanding of these channels and the associated lags. Monetary policy affects output and prices through its influence on key financial variables such as interest rates, exchange rates, asset prices, credit and monetary aggregates (Box VII.1). At the same time, changes in the structure of the economy tend to alter the effects of a given monetary policy measure. This requires central banks to continuously reinterpret monetary transmission channels (Kamin *et al.*, 1998).

7.6 The recent literature has also focused on the role of transparency in the transmission mechanism. A part of the impetus to greater transparency can be attributed to the framework of inflation targeting followed by a number of economies. As discussed in Chapter V, a key feature of inflation targeting *vis-à-vis* the previous regimes is the focus on transparency. However, even central banks that do not follow an inflation targeting regime have increasingly realised that transparency adds to the credibility of their policy actions. Transparency buttresses the credibility of a

Box VII.1

Monetary Transmission Channels

Monetary policy actions are transmitted to the rest of the economy through changes in financial prices (*e.g.*, interest rates, exchange rates, yields, asset prices, equity prices) and financial quantities (money supply, credit aggregates, supply of government bonds, foreign denominated assets). In recent years, financial price channels have attracted greater attention, partly reflecting concerns about stability of money demand functions. With the short-term interest rates emerging as the predominant instrument of monetary signals worldwide, the interest rate channel is the key channel of transmission. An increase in nominal short-term interest rate, given nominal rigidities (sticky nominal wages and prices in the short-run), translates into higher real interest rates. Higher real interest rates affect spending and investment behaviour of individuals as well as firms. By reducing disposable income, higher real interest rates depress current consumption. At the same time, higher real interest rates encourage current savings. In a similar vein, an increase in interest rates reduces profits of the firms. This makes fresh investments less attractive. Overall, consumption and investment declines which contracts output. This, in turn, pulls prices downwards. As wages/goods prices adjust over time, real GDP returns to the potential level and the real interest rate and the real exchange rate also return to their fundamental levels (Loayza and Schmidt-Hebbel, 2002; Kuttner and Moser, 2002).

The transmission of monetary policy through interest rates is augmented by changes in the exchange rates and balance sheets of the firms as well as banks. Higher interest rates make domestic financial assets attractive and this induces an appreciation of the domestic currency. This has both a direct and indirect effect on prices. Depending upon the extent of the pass-through of exchange rate to prices, appreciation of the exchange rate lowers domestic prices of imports (the direct effect). At the same time, appreciation of the domestic currency adversely affects the external competitiveness of the economy. This leads to a reduction in net exports and, hence, in aggregate demand and output leading to a decline in prices (the indirect effect). Both the direct and indirect effects work in the same direction, *i.e.,* reduce prices. Movements in interest rates also affect asset prices such as equity and property prices. An increase in interest rates depresses asset prices and the consequent reduction in wealth of households pulls down their consumption.

The effects of the conventional interest rate channel can get magnified due to market imperfections such as asymmetric information in financial markets. Recent literature has, therefore, stressed the importance of the credit channel of transmission. The credit channel is, however, not a distinct, free-standing alternative but rather a set of factors that amplify and propagate conventional interest rate effects (Bernanke and Gertler, 1995; Walsh, 2003). The credit channel makes a distinction between banks and non-banks as sources of funds on the one hand and between internal and external finance on the other hand. Within this view, two sub-channels are identified: the bank-lending channel and the balance-sheet channel. According to the bank-lending channel, banks play a special role since they are well-suited to deal with certain types of borrowers, especially small firms, where the problems of asymmetric information can be especially pronounced. Thus, a contractionary monetary policy that decreases bank reserves also curtails banks' lending capacity. This reduces loans to small borrowers and hence aggregate spending in the economy. Large firms, in contrast, can directly access capital markets (bonds/equities). The bank-lending channel is particularly relevant for developing and emerging markets with underdeveloped financial markets where interest rates may not move to clear the market. Banks may instead prefer to ration credit to obviate adverse selection problems. In such cases, aggregate demand is often influenced by the quantity of its credit rather than its price (Kamin *et al.*, 1998). Even in liberalised, developed financial markets, changes in credit conditions can influence economic activity and this forms the basis of the balance-sheet channel. According to the balance-sheet channel (also called net worth channel), higher interest rates reduce asset prices as well as cash flows of the firms. Taken together, these erode the net worth/collateral of borrowers restricting their ability to borrow. Due to asymmetric information, the reduction in collateral will increase the cost of external funds to firms, *i.e.*, the firms have to pay a risk premium on external loans. This raises the external finance premium (EFP), which is the difference in the cost between funds raised externally (by issuing equity or debt) and funds generated internally. This has an adverse effect on investment and demand. These effects on demand and prices can get further reinforced through a 'financial accelerator' mechanism – the initial decline in demand further reduces the cash flows of firms and through its impact on collateral/EFP, output and price fall further.

The conventional views of monetary transmission discussed above focus on the demand side effects – a monetary tightening initially reduces output and then prices. In contrast, the "cost-channel" of monetary transmission stresses that supply-side or cost effects might dominate the usual demand-side effects and therefore, monetary tightening could be followed by an increase in prices. In this view, a rise in interest rates increases the cost of funds for bank-dependent firms. This raises the cost of holding inventories. Accordingly, the cost shock pushes up prices (Barth and Ramsey, 2001).

central bank and this raises the effectiveness of central bank policy actions. Given the forward-looking nature of financial markets and the critical role played by them in the monetary transmission process, it is of paramount importance that monetary policy actions are seen as credible. Otherwise, changes in monetary instruments may have less than the desired effect on the array of other financial prices such as long-term interest rates, which would then weaken the transmission process. Since long-term rates depend, *inter alia*, on expectations of future policy actions, greater clarity about the objectives of monetary policy could speed up the response of market interest rates (Sellon, 2002). The effectiveness of monetary policy depends as much as on the public's expectations about future policy as upon actual actions. Successful monetary policy is not so much a matter of effective control of overnight interest rates as it is of shaping market expectations of the way in which interest rates, inflation and income are likely to evolve over the coming year and later (Woodford, 2003). Accordingly, successful central banking involves management of expectations and monetary authorities are today much more transparent in their policy objectives and the decision making process.

Empirical Evidence

7.7 Recent research on monetary transmission confirms that monetary policy actions affect output in the short-run. While output is quicker to respond to monetary policy, prices display inertial behaviour and remain largely unaffected for almost one year or even more. Movements in real output are not only substantial but also long-lived (though not permanent) with the effects remaining up to three years (Friedman and Schwartz, 1963; Romer and Romer, 1989). The recent vector autoregression (VAR) literature confirms these results. Output, consumption and investment display a hump-shaped response, and for the US economy, the peak effect is found to occur about 1.5 years after a monetary policy shock. Inflation also displays a hump-shaped response, with the peak response after about two years. Interest rate returns to its pre-shock level within one year (Christiano *et al.*, 1999). According to estimates for the US economy made by Romer and Romer (2003), a shock of 100 basis points to the interest rate starts to reduce industrial production after five months and the peak decline of 4.8 per cent occurs after 22 months. The impact then weakens gradually, reaching (-) 1.2 per cent after 48 months. As regards prices, there is little effect for the first 18 months and the prices start falling in the subsequent period. The prices decline by around 2 per cent after 30 months and by 6 per cent after 48 months.

7.8 For the United Kingdom, a temporary increase (increased for one year and then reversed) of interest rates by 100 basis points lowers output by around 0.2-0.35 per cent after about a year and reduces inflation by around 20-40 basis points a year or so after (Bank of England, 1999). The results for the Euro area broadly conform to this pattern. The peak effect of output occurs after one year while inflation hardly moves during the first year. The delayed response of prices relative to that of output suggests that studying the transmission of policy to spending and output is a logical step, even if the aim of monetary policy is defined primarily or exclusively in prices (Angeloni *et al.*, 2003). Although the persistence of inflation has declined *per se* in the US and the UK, the lags in the impact of systematic monetary policy actions on inflation still persist despite numerous changes in monetary policy arrangements and advances in information processing as well as financial market sophistication (Batini and Nelson, 2002).

7.9 Notwithstanding the broad similarities in the transmission process across countries, there are a few differences as well. In the Euro area and Japan, real output changes are brought about largely by the response of investment whereas in the US, output variations are mainly brought about by consumption. The differential response of investment and consumption - the "output composition puzzle" – suggests that it is important to understand not only the dynamics of the overall output but also to have a reasonable grasp of the various constituents of GDP. Accordingly, the key monitoring indicators may differ for each central bank. Thus, given the above results, consumer behaviour needs to be watched more carefully in the US and accordingly, changes in the mortgage markets may be more important than studying changes in the tax treatment of depreciation. In contrast, it appears that, in the Euro area, disposable income is relatively less responsive to monetary changes which might reflect wider social safety nets in the Euro area (Angeloni *et al.*, 2003). Thus, the particular institutional structure in each economy affects the transmission process differently.

7.10 A comparative analysis of the alternative channels for the Euro area, as a whole, suggests that the exchange rate channel is the dominant channel of transmission in the first two years, both in terms of its impact on output and on prices; from the third year onwards, the user cost of capital channel is dominant in terms of impact on output. The 'credit channel' is

found to operate significantly in Germany and Italy but is irrelevant in some other Euro area countries. Thus, the role of the banks is found to be smaller than expected. On the other hand, evidence for Japan indicates a strong role for the 'credit channel' since borrowers have been unable to substitute bank borrowing with alternative sources and consequently, business investment is especially sensitive to monetary shocks (Morsink and Bayoumi, 2001). In contrast to the above studies with their focus on aggregate output, Dedola and Lippi (2000) undertook an industry-wise analysis of monetary policy effects and found that the impact of monetary policy is stronger in industries that (i) produce durable goods (ii) have greater requirements for working capital and (iii) a smaller borrowing capacity. These results can be viewed as supportive of the credit channel. Cost-channel is found to be operative only for the period till the 1970s (pre-Vocker period). The weak evidence in the subsequent period can be attributed to financial innovations and deregulation (Barth and Ramsey, 2001; Rabanal, 2003).

7.11 On the relative roles of money and interest rates, the Japanese evidence shows that a money shock is found to have a large impact on economic activity even when the interest rate is included in the VAR. This suggests that the interest rate channel does not fully account for the transmission mechanism in Japan.

7.12 Recent research has also focused on the role of alternative forms of wealth – housing wealth and equity wealth - in transmission. For Canada, consumer spending is found to respond very little to changes in equity wealth but is more sensitive to housing wealth. The average marginal propensity to consume from wealth (5.7 cents per dollar) is found to be more than 10 times that from equity wealth (less than 0.5 cents per dollar). The weaker response to equity wealth arises from the fact that changes in equity prices tend to be more temporary coupled with the fact that only a small segment of households holds equities in their portfolios (Pichette, 2004). Similar results are found by Case, Quigley and Shiller (2001) for a panel of 14 countries and a panel of US States. This suggests that property prices play a greater role in the transmission process *vis-à-vis* equity prices. In this context, the recent household borrowing behaviour has raised concerns to policymakers. Household borrowing has grown considerably in many countries over the past two decades, reflecting easing of liquidity constraints as well as lower borrowing rates. The large build-up of household wealth in housing suggests that the household sector consumption, and hence overall domestic demand, will be more sensitive to shocks to interest rates and household incomes in the future (Debelle, 2004).

7.13 There is some evidence of temporal changes in the transmission process: between 1970-85 and 1985-95, in the case of the US, the interest rate elasticity of investment indicates a decline while the consumption elasticity shows an increase. No general pattern of change in these interest rate elasticities is, however, observed for the G-7 group of countries as a whole (Taylor, 1995). Moreover, the response of output to monetary policy signals might be asymmetric, with a tight monetary policy being more effective than an easy monetary policy. For the US, the short-run response of output to increases in the Fed Funds rate is estimated to be more than twice the response to decreases in the Fed Funds rate (Piger, 2003).

7.14 As regards the transmission mechanism in emerging market economies, available empirical evidence suggests a broadly similar pattern as prevailing in key advanced economies. For instance, evidence for Chile indicates that, on average, it takes three to five quarters for a change in monetary policy to reach its main impact on demand and production and an additional four to six quarters are necessary for these changes in activity to have the maximum impact on inflation (Central Bank of Chile, 2000). For South Africa, a change in the repo rate takes around five quarters to have its maximum impact on output and around 6-8 quarters for maximum impact on inflation (Smal and Jager, 2001). At the same time, some subtle differences have also been brought out by empirical evidence. In view of the relatively underdeveloped financial markets as well as the prevalence of liquidity constraints, lags of monetary policy transmission may be shorter. For the Czech Republic, the peak effect on inflation occurs within 18 months of variation in policy interest rate which is shorter than that in major advanced economies (Mahadeva and Smidkova, 2000). Quicker exchange rate pass-through coupled with a more centralised system of wage bargaining can explain the relatively fast response of prices. For a sample of East Asian economies, Fung (2002) finds that prices decline immediately in response to interest rate hikes. The relatively quick response of prices is attributed to lesser rigidity in the labour markets in these East Asian countries which imparts a greater flexibility to prices.

7.15 In brief, the above cross-country evidence suggests that monetary policy actions affect output with a lag of almost one year while it takes nearly two

years for monetary policy to have significant impact on inflation. The latter finding explains as to why inflation targeting central banks typically operate with a two-year framework for monetary policy. It must, however, be stressed that these lags are average lags and are surrounded by a great deal of uncertainty. In view of the ongoing structural changes in the real sector as well as financial innovations, the precise lags may differ in each business cycle.

The Transmission Mechanism: Evolving Challenges

7.16 Apart from the ongoing structural changes, monetary policy transmission in the future would have to contend with the evolving pattern of demographics. Over the next few decades, as the proportion of elderly population to the total increases, the pattern of global savings will change and this may reduce the natural rate of interest. Typically, the elderly population is richer in financial and real capital while the young are richer in human capital. With the growing share of elderly population, the role of the wealth channel in monetary transmission might assume greater importance (Bean, 2004). A central bank, therefore, needs to constantly monitor the transmission lags for monetary policy effectiveness.

7.17 Monetary authorities will have to take into account the implications of the ongoing financial innovations such as e-banking and e-money[1] on the transmission mechanism. In one view, e-banking is expected to reduce transactions costs for depositors. Lower transaction costs, following the Baumol-Tobin framework, suggest a reduction in demand for money[2]. At the same time, e-banking increases depositors' access to a wide range of financial assets in addition to bank deposits. This increases the opportunity cost of money and hence demand for money may turn out to be more interest elastic. In terms of the IS-LM framework, this will flatten the LM curve. Thus, increased recourse to e-banking might have two implications: reduction in money demand and a flattening of the LM curve. Reduction in money demand will reduce interest rates and increase growth as formerly idle transaction balances are reallocated to savings and investment. On the other hand, a flattening of the LM curve (with an unchanged IS curve) could weaken monetary policy effectiveness (Fullenkamp and Nsouli, 2004). Thus, desired changes in output and prices will require a comparatively large monetary policy stimulus.

7.18 Moreover, e-finance development could enlarge the pool of potential lenders. Thus, in the event of a monetary tightening, previously credit-constrained firms may more easily find alternative avenues of credit which would weaken the effectiveness of monetary policy. Furthermore, if hedging against exchange and interest rate fluctuations becomes easier and cheaper, this could also reduce the responsiveness of output and prices to changes in interest rates. On the other hand, increased use of internet technology in the real economy is likely to accelerate the impact of monetary policy. Use of information technology for inventory management will mean that changes in sales will reflect more quickly in changes in output and prices (Hawkins, 2001).

7.19 As regards e-money, its implications will critically depend upon the extent to which private e-money replaces central bank currency. According to Freedman (2000), the special role of central banks in providing for final settlement is unlikely to be ever replaced owing to the unimpeachable solvency of these institutions. To establish its credibility, a private e-money provider will have to promise to redeem its e-money liabilities in government money and will thus be required to maintain deposit accounts with the central banks. Overall, monetary policy is likely to remain a key instrument of macroeconomic stabilisation *albeit* its effectiveness could be weakened to some extent.

Interest Rate Pass-through

7.20 A key aspect of the transmission mechanism is the speed with which the changes in policy rates feed on to banks' deposit and lending rates (Box VII.2). Available empirical evidence on the interest-rate pass-through from policy rates/money market rates indicates that interest rates of banks - deposit as well as lending rates - are sluggish in responding to monetary policy actions with lags ranging from several weeks to several months. A cross-country survey of recent studies on pass-through estimates is presented in Table 7.1. A number of interesting features emerge from these studies. First, the pass-through estimates lie in a wide range and vary a lot from country to country.

[1] E-banking may be defined as the use of electronic methods to deliver traditional banking services using any kind of payment media. On the other hand, e-money is any electronic payment media – any material, device or system that conducts payment *via* the transfer of electro-magnetically stored information (Fullenkamp and Nsouli, 2004).

[2] Money held for transaction purposes has an opportunity cost in terms of interest foregone on other assets. Economic agents would, therefore, like to economise on their use of transaction balances by making frequent transactions to sell interest-bearing non-money assets. However, as this process involves transaction costs, economic agents hold more transaction balances than if there were no transaction costs. If these transaction costs were to decline, demand for transactions balances will also fall.

Box VII.2

Determinants of Interest Rate Pass-through

For interest rate channel to work effectively and efficiently, changes in the short-term policy rate should feed into the bank and other market rates in the economy. The critical issue is the 'pass-through', *i.e.,* the degree and the speed with which the variations in monetary policy stance is passed on to the interest rate spectrum of the economy. A high pass-through would suggest that a given change in the policy rate will have a larger effect on prime and other lending rates or equivalently, a smaller change in the policy rate will achieve the desired change in the prime rates. Similarly, a speedier pass-through implies that financial markets have become forward looking and this would lead to decline in transmission lags. The pass-through would depend upon a number of factors such as: the structure of the financial system (like the extent of the regulation of the financial system, ceilings on interest rates and geographical and product-line restrictions); the degree of competition between intermediaries; the usage of variable-rate products (both deposits and loans) by the banking system; the response of portfolio substitution to the policy rate; and, the transparency of the monetary policy operations (Sellons, 2002).

Accordingly, if the financial system is well-diversified in terms of institutions and products, policy signals will transmit quickly and more fully onto market rates. On the other hand, a higher degree of volatility in the money market rates makes it difficult for market participants to disentangle noise from policy signals and this may reduce the pass-through. The response would also depend upon the extent to which the policy change was anticipated and how the change affects expectations of future interest rates. If the change in the policy rate is believed to persist for an extended period of time, the long-term interest rates would be more responsive. The short-run interest rate stickiness could also reflect the maturity structure of bank balance sheets. A prudent bank would prefer to set its retail lending rates in consonance with movements in long-term market rates rather than with short-term market rates to limit its interest rate risk exposure. In this view, short-run stickiness is a rational response on the part of banks (Bondt, 2002; Bondt *et al.,* 2003).

Second, the pass-through increases over time and, in the long-run, the pass through is typically more or less complete. In the euro area, for instance, only one-third (with a maximum of 50 per cent) of the change in money market rates gets reflected in bank deposit and lending rates in the first month. In the long-run, the pass-through is almost 100 per cent for bank lending rates or even higher and it typically takes 3-10 months for the full pass-through. The overshooting exhibited by the long-run pass-through in case of lending rates could be on account of asymmetric information. In case banks increase lending rate one-for-one, they will attract more risky class of borrowers and, hence banks compensate themselves for the higher risk by increasing the lending rate premium (Bondt, 2002).

7.21 Third, there is no uniform pattern in the pass-through between deposits and loans. In some countries, deposit rates are stickier than lending rates and *vice versa*. For instance, in the Euro area, overnight deposit rates and 'deposits redeemable at notice of three months' are the stickiest, with even long-run pass-through of, at most, 40 per cent. The low pass-through in this case can be attributed partly to administered nature of these deposits in some Euro area countries and partly the fact that demand for such deposits is relatively inelastic. In contrast to the euro area evidence, Mizen and Hofmann (2002) find that, for the UK, pass-through in case of deposit rates is larger than that for lending rates. Fourth, the size and the speed of the pass-through are found to decline as the maturity of the bank instruments increases. Thus, the higher the maturity, the lower the pass-through. Fifth, between various type of loans, pass-through in case of consumer lending is found to be the weakest, reflecting a variety of factors - weak competition, inelastic demand, asymmetric information and credit rationing (Bondt, 2002; Bondt *et al.,* 2003). In the US, credit card rates even today remain the stickiest with pass-through of only 0.3 during the 1990s, *albeit* higher than that of almost negligible level during the 1970s (Sellon, *op cit*). Sixth, evidence is inconclusive as to whether the response is symmetric to monetary policy signals. A few studies find an asymmetric response: the pass-through is quicker when monetary policy is tightened and sluggish when monetary policy is easing (Sellon, *op cit.*). This has an important implication for the transmission mechanism with monetary tightening being more effective than monetary easing of the same magnitude. Other studies, however, do not find any evidence in favour of this proposition. Finally, the pass-through estimates for emerging economies are generally comparable to that of advanced economies.

7.22 Amongst the other key findings of the literature, competition increases pass-through, but mainly in deposit markets (Sander and Kleimeier, 2004). Market concentration (say, mergers) *per se* does not reduce the pass-through as long as the markets are contestable (Cottarelli and Kourelis, 1994). A well-developed market for negotiable short-term instruments (such as certificates of deposit) increases the pass-through; on

Table 7.1: Estimates of Interest Rate Pass-through

Study	Sample Countries	Pass-through	
		Short-run	Long-run
1	2	3	4
Cottarelli and Kourelis (1994)	31 countries (developing and developed)	0.04-0.83 (lending rates); average: 0.32	0.30-1.48 (lending rates); average: 0.97
Mizen and Hofmann (2002)	United Kingdom	0.23 (lending rates) 0.65 (deposit rates)	0.54-0.92 (lending rates)
Bondt *et al.* (2003)	8 Euro area countries as well as the entire Euro area	0.14-0.76 (short-term loans) 0.06-0.54 (long-term loans) 0.10-0.53 (consumer credit) 0.02-0.45 (mortgages) 0.08-0.82 (deposit rates)	0.86 (lending rates) Around 1 (deposit rates) 0.36-1.24 (short-term loans) 0.42-1.23 (long-term loans) 0.33-1.08 (consumer credit) 0.30-1.07 (mortgages) 0.37-0.89 (deposit rates)
Sander and Kleimeier (2004)	Euro area countries	0.20-0.22 (lending rates) 0.17-0.20 (deposit rates)	062-0.68 (lending rates) 0.40-0.47 (deposit rates)
Crespo-Cuaresma *et al.* (2004)	Czech Republic		0.64-0.76 (lending rates) 0.75-0.85 (deposit rates)
	Hungary		1.01-1.02 (lending rates) 0.49-0.92 (deposit rates)
	Poland		0.98-1.02 (lending rates) 0.77-0.98 (deposit rates)
Espinosa-Vega and Rebucci (2003)	Chile	0.63 (short-term loans) 0.58 (medium-term loans) 0.18 (long-term loans) 0.68 (short-term deposits) 0.39 (medium-term deposits) 0.20 (long-term deposits)	0.56 (short-term loans) 0.88 (medium-term loans) 0.55 (long-term loans) 0.54 (short-term deposits) 0.39 (medium-term deposits) 0.68 (long-term deposits)
	Canada	0.83 (short-term loans) 0.63 (medium-term loans) 0.46 (long-term loans) 1.13 (short-term deposits) 1.05 (medium-term deposits)	1.01 (short-term loans) 0.51 (medium-term loans) 0.24 (long-term loans) 0.98 (short-term deposits) 0.93 (medium-term deposits)
	United States	0.86 (short-term loans) 1.00 (short-term deposits) 0.84 (medium-term deposits) 0.87 (long-term deposits)	1.00 (short-term loans) 1.00 (short-term deposits) 0.93 (medium-term deposits) 0.64 (long-term deposits)
	Australia	0.46 (loans) 0.40 (short-term deposits) 0.69 (medium-term deposits) 0.87 (long-term deposits)	1.09 (loans) 0.67 (short-term deposits) 0.87 (medium-term deposits) 0.81 (long-term deposits)
	New Zealand	0.21 (loans) 0.34 (short-term deposits) 0.42 (medium-term deposits)	0.77 (loans) 0.74 (short-term deposits) 0.71 (medium-term deposits)

the other hand, a well-developed market for commercial papers does not appear to increase the pass-through. Excessive volatility in money markets reduces the information content of monetary policy signals and hence weakens the pass-through.

7.23 As regards the effects of a monetary union, evidence is inconclusive with some studies finding an improvement in the pass-through (Angeloni and Ehrmann, 2003) but others find no such evidence (Bondt *et al.*, 2003). For the US economy, there is evidence of an increase in pass-through during the recent years. For instance, the pass-through from the Fed Funds rate to the prime rate has increased significantly during the 1990s, being almost immediate (Sellon, *op cit.*). In the case of housing mortgage, the pass-through increased from around 0.2 in the early 1970s to almost unity by

1999-2000. For other loans (car loans, credit cards and personal loans), the size increased by 3-4 times during the 1990s but was still lower than unity. Evidence from Chile indicates significant differences in banks' responses: the smaller the bank, the lower the portion of past-due loans and the larger the share of the household consumers, the faster is the pass-through of lending rates to money market rates (Berstein and Fuentes, 2004).

7.24 In brief, the above survey shows that pass-through is rather sluggish in the short-run. The pass-through increases over time, but not necessarily complete even in the long-run. There is no uniform pattern on pass-through between deposit and loans. Within loans, consumer loans typically display the weakest pass-through.

Real Interest Rates

7.25 With interest rates emerging as a key instrument of monetary policy, issues relating to appropriate real rate of interest have attracted debate. Central banks change short-term nominal interest rates to achieve their desired policy objectives. However, what matters for investment and consumption decisions is not the nominal rate but the *ex ante* real interest rate. *Ex ante* real interest rate at a given point of time may be defined as nominal rate of interest less expected inflation. There are a number of approaches to measure expected inflation such as periodic surveys or inflation-indexed bonds. However, since reliable data on inflation expectations may not be available in all economies, a common approach is to compute real rates based on actual inflation rates. If the real interest rate, howsoever measured, is lower than the economy's equilibrium real rate, this will stimulate demand in the economy and push output above its potential. Over time, this would put upward pressure on prices. On the other hand, if the actual real rate is above the equilibrium rate, it would lead to deflationary pressures in the economy. Estimates of equilibrium real rate of interest for the economy, therefore, assume importance. A yardstick for such an equilibrium rate is provided by natural (or neutral) rate of interest. As in the case of actual real rate, the natural rate is also unobserved. Accordingly, practical difficulties in its measurement severely limit the use of the natural rate in day-to-day monetary policy formulation (Box VII.3). There are further problems with the measurement of the neutral rate on a real time basis as real time data are subject to sharp revisions. Thus, at best, the neutral rate concept can be useful in historical analysis of monetary policy rather than as a guide for the current and the future conduct of monetary policy. On a real time basis, averages of past real interest rates provide a more accurate estimate of the neutral rate (Clark and Kozicki, 2004).

Box VII.3
Natural Rate of Interest

Natural rate of interest is defined as the real short-term interest rate consistent with output at its potential and a stable rate of inflation (ECB, 2004). It may also be defined as the equilibrium real rate of return in the case of fully flexible prices (Woodford, 2003). Natural rate is determined by savings and investment in the economy and, therefore, depends upon factors such as time preference of consumers (between current and future consumption), productivity growth, demographics and fiscal policy. If households increase their preference for current consumption *vis-à-vis* future consumption, this would depress current savings and, thereby raise equilibrium rate of interest. A pick-up in productivity growth and an increase in working-age population will increase investment demand in the economy and this will have the effect of raising the equilibrium rate of interest. Greater uncertainty in the economy – for instance, volatile inflation and exchange rates – will require investors to be compensated for the increased risk premia and this will push up the equilibrium rate. A well-diversified and efficient financial system can enlarge the pool of domestic savings which will reduce the equilibrium rate of interest. In brief, it is apparent that natural rate of interest need not be constant and can increase as well as decrease depending upon movements in the underlying factors. In particular, increase in the trend growth rate of the economy can lead to a commensurate increase in the natural rate of interest.

Difficulties in measuring the fundamental determinants of the natural rate, in turn, make it difficult to identify the appropriate level of natural rate at any point of time. Researchers have accordingly employed a number of statistical techniques such as averaging/filtering of the actual real interest rates as a proxy for the natural rate. These techniques, however, implicitly assume that over long-period of time, on average, the actual real interest rate is close to the natural rate. Another difficulty emanates from the fact that real-time data on key macroeconomic variables necessary for estimating the neutral rate are available with a lot of uncertainty and undergo periodic revisions. This further adds to uncertainty of neutral rate estimates and reduces their utility on a real-time basis (Clark and Kozicki, 2004). In view of these uncertainties, natural rate of interest is not used by central banks in their day-to-day conduct of monetary policy. In brief, natural rate is a useful aid in thinking about monetary policy providing an important benchmark for monetary policy and a potential indicator of monetary policy stance. Its practical relevance is, however, severely limited by the fact of it being unobservable and measurement problems (ECB, *op cit*; Ferguson, 2004).

7.26 Empirical evidence for the US, the UK, France and Germany suggests that the real interest rates increased during 1980s and 1990s over the levels prevailing during the 1950s and 1960s (Chadha and Dimsdale, 1999). The low real interest rates during the 1950s and 1960s reflected the greater policy weight assigned to output expansion. Low real interest rates during these periods were also on account of financial repression due to widespread use of statutory pre-emptions. Exchange controls during this period restricted international arbitrage of financial flows and this also enabled low, and even negative, real rates during the 1970s (Kahn and Farrell, 2002). The surge in real rates from 1980s onwards reflected tighter monetary policy to contain inflation. Higher real interest rates since the 1980s also reflected a lax fiscal policy stance (Ford and Laxton, 1999) and an overall tendency towards deregulation of financial markets.

7.27 More recent estimates for the euro area suggest that the natural rate has reversed its rising trend since mid-1990s. The decline in the natural rate in the euro area could be attributed to a number of factors: deceleration in productivity as well as population growth; fiscal consolidation; and, lowering of risk premia. Elimination of exchange rate risk in intra-Euro area following the introduction of euro as well as low and stable inflation contributed to lowering of the risk premia (ECB, 2004). Basdevant *et al*. (2004) also find evidence that low and stable inflation has led to a reduction in the natural rate in New Zealand since 1992. For the US, estimates suggest that natural rate has shown significant variation over the past four decades and variation in trend growth of output is an important determinant (Laubach and Williams, 2003).

7.28 A cross-country analysis of interest rates reveals a number of interesting facets. First, real deposit and lending rates have generally moderated since the early 1990s. Second, real interest rates in a number of EMEs are now more stable and generally positive compared to the 1980s. Third, interest rate spreads have also tended to moderate across a number of economies. Fourth, compared to other EMEs, real rates in India are more stable. Both real deposit and lending rates in India are generally higher than those prevailing in the Asian economies but lower than those in Latin American economies. A similar pattern holds for interest rate spreads, although spreads in India are lower than that prevailing in some of the advanced economies (Tables 7.2, 7.3 and 7.4).

Table 7.2: Real Deposit Rates

(Per cent per annum)

Country	1981-85	1986-90	1991-95	1996-00	2001-03
1	2	3	4	5	6
Argentina	-64.1	2687.6	-21.0	7.8	9.1
Australia	2.4	5.8	4.3	2.9	-0.2
Brazil	45.3	2245.2	1108.1	16.8	9.7
Chile	14.2	5.9	3.6	6.5	1.3
China	--	--	-3.5	2.5	1.8
Germany	--	--	--	1.6	1.3#
Hong Kong, China	--	--	-3.9	3.9	3.3
India	**-1.7**	**1.2**	**0.3**	**2.1**	**2.7**
Indonesia	0.7	9.7	8.4	3.5	4.1
Israel	--	-8.1	-0.5	5.3	4.2
Japan	1.0	0.9	1.1	-0.1	0.7
Korea, Rep.	2.9	4.6	3.0	5.5	1.5
Malaysia	4.5	2.9	2.6	3.0	1.8
Mexico	-14.7	-17.3	3.1	-3.8	-1.0
Paraguay	--	-15.3 *	3.5	7.5	7.7
Peru	--	--	-50.8	8.0	4.5
Philippines	-3.2	5.0	2.3	2.6	2.2
Poland	--	514 @	-7.0	3.8	4.5
Russian Federation	--	--	-96 $	-17.5	-12.2
Singapore	4.0	2.2	0.7	2.1	0.6
South Africa	0.0	-1.3	2.1	7.0	3.4
Turkey	5.1	-9.0	-7.3	-0.9	12.7
United Kingdom	3.4	4.3	2.5	--	--

* Pertains to 1990; @Pertains to 1989-90;
$ Pertains to 1995; # Pertains to 2001-02.

Notes : 1. Real deposit rate is defined as nominal deposit rate less consumer price inflation.
2. For India, interest rates are those on deposits of 1-3 years maturity.

Sources : World Development Indicators Online, World Bank and Reserve Bank of India.

II. MONETARY TRANSMISSION: THE INDIAN EXPERIENCE

7.29 With the initiation of financial sector reforms, monetary management in India has been increasingly relying on the use of indirect instruments like open market operations and fine-tuning of liquidity conditions through the Liquidity Adjustment Facility. As discussed in Chapter III, modulations in policy interest rates have emerged as a principal instrument of signalling monetary policy stance. This Section analyses movements in nominal and real interest rates. Policy efforts to impart greater flexibility to the interest rate structure are discussed and an attempt is made to estimate pass-through from policy rates to market rates. Finally, the dynamics of output and prices to monetary policy signals and the interaction between exchange rate and interest rate are empirically examined in an attempt to explore channels of monetary transmission in India.

Table 7.3: Real Lending Rates

(Per cent per annum)

Country	1981-85	1986-90	1991-95	1996-00	2001-03
1	2	3	4	5	6
Argentina	--	--	10.9 $	11.1	19.5
Australia	5.9	10.9	9.6	7.0	5.2
Brazil	--	--	--	--	52.3
Chile	28.3	12.7	10.0	11.3	4.1
China	3.3	1.9	-2.2	6.7	4.5
Germany	8.2	7.0	8.9	8.7	--
Hong Kong, China	--	0.6 *	0.4	9.1	8.4
India	**7.3**	**8.4**	**6.8**	**7.0**	**7.4**
Indonesia	--	12.4	13.2	-0.2	10.0
Israel	155.2	19.1	6.8	10.0	7.9
Japan	4.5	4.4	4.2	3.1	3.8
Korea, Rep.	3.6	3.3	1.0	7.5	4.0
Malaysia	--	--	5.9	5.6	5.3
Mexico	--	--	--	6.9	2.9
Paraguay	--	-5.3 *	14.1	21.4	28.1
Peru	--	-750.9	113.6	22.8	14.9
Philippines	0.8	9.6	7.6	6.4	5.4
Poland	--	--	1.1	10.1	11.5
Russian Federation	--	--	176.3 @	19.1	0.0
Singapore	7.4	3.6	3.3	6.7	5.8
South Africa	4.3	0.8	5.1	11.5	6.9
United Kingdom	4.5	5.9	4.4	3.5	1.4
United States	8.0	6.1	4.8	6.7	3.4

* Pertains to 1990; @ Pertains to 1995; $ Pertains to 1994-95.

Notes : 1. Real lending rate is defined as nominal lending rate less GDP deflator inflation.
2. For India, SBI advance rate is used as the lending rate.

Sources : World Development Indicators Online, World Bank and Reserve Bank of India.

Table 7.4: Interest Rate Spreads

(Per cent per annum)

Country	1981-85	1986-90	1991-95	1996-00	2001-03
1	2	3	4	5	6
Argentina	--	--	4.0 @	2.8	11.0
Australia	3.2	3.8	4.4	4.1	5.0
Brazil	--	--	--	51.6	42.9
Chile	11.9	7.5	5.5	4.5	4.4
China	0.9	0.5	0.6	3.1	3.4
Germany	5.3	4.8	6.2	6.5	6.7#
Hong Kong, China	--	3.3 *	3.8	3.7	4.1
India	**8.1**	**7.3**	**6.5**	**3.4**	**4.4**
Indonesia	--	4.3	4.0	0.9	4.3
Israel	254.2	28.1	7.7	5.3	3.9
Japan	3.3	3.4	2.7	2.1	1.8
Korea, Rep.	1.6	0.3	0.0	1.3	1.9
Malaysia	--	5.2	2.8	3.6	3.4
Mexico	--	--	8.3	9.5	4.9
Paraguay	--	8.1 *	10.8	13.1	20.7
Peru	--	909.2	158.2	14.2	10.5
Philippines	5.7	5.1	5.1	4.4	4.1
Poland	--	213.2	1.9	5.9	5.3
Russian Federation	--	--	218.4 $	35.1	10.8
Singapore	2.9	3.0	3.0	3.4	4.5
South Africa	4.7	2.6	4.3	5.1	4.9
United Kingdom	0.7	1.7	1.9	2.9	--

* Pertains to 1990; @ Pertains to 1994-95;
$ Pertains to 1995; # Pertains to 2001-02.

Note : Interest rate spread is defined as nominal lending rate less nominal deposit rate.

Sources : World Development Indicators Online, World Bank and Reserve Bank of India.

7.30 Key monetary policy rates – the Bank Rate and the repo rate – have been reduced substantially since 1998 reflecting the countercyclical monetary policy stance. The Bank Rate was reduced from 11.0 per cent in January 1998 to 6.0 per cent by April 2003. The repo rate also witnessed a cut from 6.0 per cent in January 1999 to 4.5 per cent in August 2003 (before being raised to 4.75 percent in October 2004), notwithstanding an increase in the second half of 2000 (touching a peak of 15.0 per cent in August 2000 before falling to 8.0 per cent by December 2001). The reduction in key policy rates has been supplemented with cuts in cash reserve ratio from 10.5 per cent in January 1998 to 4.5 per cent by June 2003 (although subsequently increased to 5.0 per cent in September-October 2004). While the changes in policy rates were quickly mirrored in the money market rates as well as in Government bond yields, lending and deposits rates of banks, however, exhibited a degree of sluggishness.

7.31 The relative downward inflexibility in the commercial interest rate structure can be attributed to a number of factors:

- Average cost of deposits for major banks continues to be relatively high.
- A substantial portion of deposits is in the form of long-term deposits at fixed interest rates which reduced the flexibility available to banks to reduce interest rates in the short-run, without adversely affecting their return on assets.
- Relatively high interest rates on competing instruments of savings, *viz.*¸ administered small saving instruments.
- Relatively high overhang of non-performing assets (NPAs), although these have been declining quite substantially in the last three years.

- In view of legal constraints and procedural bottlenecks in recovery of dues by banks, the risk-premium tends to be higher resulting in wider spread between deposit rates and lending rates.
- Large borrowing programme of the Government, over and above the SLR requirements, provides significant prospects for deployment of funds by banks in sovereign paper (RBI, 2003).

7.32 In order to overcome these rigidities and to provide more flexibility in the interest rate structure, the Reserve Bank has initiated a number of measures in the past 3-4 years. These include, *inter alia*, advising banks: to introduce flexible interest rate option for new deposits; to review their maximum spreads over PLR and reduce them wherever they are unreasonably high; to announce the maximum spread over PLR to the public along with the announcement of their PLR; and, to switch over to "all cost" concept for borrowers by explicitly declaring the various charges such as processing and service charges. To have a greater degree of transparency in regard to actual interest rates for depositors as well as borrowers, the Reserve Bank has put out information on its website on (a) deposit rates for various maturities and effective annualised return to the depositors and (b) maximum and minimum interest rates charged to their borrowers.

7.33 To further enhance the transparency and to reduce the complexity involved in pricing of loans as also to ensure that the PLR truly reflects the actual costs, the Reserve Bank in its Annual Monetary Policy Statement (April 2003) advised banks to announce a benchmark PLR (BPLR) taking into account the following factors: (i) actual cost of funds, (ii) operating expenses and (iii) a minimum margin to cover regulatory requirement of provisioning/capital charge and profit margin. These initiatives were helpful and the public sector banks reduced their interest rates by 25 to 100 basis points in January 2004 while announcing their BPLR.

7.34 More generally, the various policy initiatives of the Reserve Bank over the last 3-4 years have been able to impart a greater degree of flexibility to the interest rate structure, leading to a softening of interest rates on both deposits and loans. Illustratively, more than one-half of outstanding time deposits of scheduled commercial banks at end-March 2003 were contracted at interest rates of upto eight per cent per annum. In contrast, this proportion was as low as 11 per cent at end-March 1996. Correspondingly, the proportion of time deposits in the high interest bracket (11 per cent per annum and above) has seen a significant decline from 67 per cent at end-March 1996 to less than eight per cent at end-March 2003 (Table 7.5). Based on these data, weighted average interest rate on time deposits of scheduled commercial banks is estimated to have declined from around 11.6 per cent at end-March 1996 to around eight per cent at end-March 2003.

7.35 A similar softening in lending rates is visible from an analysis of the outstanding loans. At present, more than one-half of the outstanding loans has been lent at interest rates of 14 per cent per annum or below. In contrast, this proportion was as low as 17 per cent at end-March 1995 and 36 per cent at end-March 2000 (Table 7.6 and Chart VII.1). Correspondingly, the proportion of outstanding loans at interest rates of more than 16 per cent has declined from almost two-thirds of total outstanding loans at end-March 1997 to less than 15 per cent by end-March 2003. Based on these data, the weighted average lending rate is estimated to have declined from its recent peak of 17.1 per cent in March 1997 to 13.6 per cent in March 2003 and is, in fact, at its lowest level in the last two decades.

Table 7.5: Outstanding Term Deposits of Scheduled Commercial Banks by Interest Rate

(per cent to total deposits)

Interest Rate Slab	Mar-96	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03
1	2	3	4	5	6	7	8	9
Less than 8 per cent	10.8	11.2	11.5	13.3	16.8	16.9	25.0	53.7
8 - 9 per cent	2.4	5.2	4.8	6.1	6.5	10.5	22.6	16.4
9 - 10 per cent	4.5	7.1	6.4	9.0	14.3	16.1	19.8	12.0
10 - 11 per cent	15.2	14.1	13.7	17.7	20.9	23.9	17.3	10.5
11 - 12 per cent	13.9	14.3	16.3	20.2	19.2	17.9	9.1	4.5
12 - 13 per cent	23.4	20.9	22.3	19.2	13.9	9.1	4.3	2.3
13 per cent and above	29.8	27.2	25.0	14.5	8.4	5.6	1.9	0.8

Source : Basic Statistical Returns of Scheduled Commercial Banks in India (Various Issues), Reserve Bank of India.

Table 7.6: Outstanding Loans of Scheduled Commercial Banks by Interest Rate

(Per cent to total loans)

Interest Rate Slab	Mar-90	Mar-95	Mar-97	Mar-98	Mar-99	Mar-00	Mar-01	Mar-02	Mar-03
1	2	3	4	5	6	7	8	9	10
<6%	2.7	2.3	1.1	1.0	0.3	0.2	0.2	0.1	0.1
6-10%	6.8	2.1	0.5	0.4	3.7	1.0	0.6	3.2	5.3
10-12%	4.8	2.3	1.4	2.3	3.3	7.9	17.0	24.5	22.9
12-14%	21.4	10.6	10.7	13.2	20.3	26.8	28.6	22.5	25.1
14-15%	4.4	6.7	10.9	14.9	9.7	11.5	12.6	14.1	19.4
15-16%	11.7	20.3	9.6	11.7	14.0	17.9	15.7	15.5	12.5
16-17%	32.2	17.3	8.3	13.7	20.2	17.1	14.1	12.5	8.6
17-18%	10.8	15.6	17.2	14.3	13.1	8.6	5.2	3.0	1.8
18-20%	4.5	14.5	26.8	20.2	10.5	6.2	4.0	3.2	3.0
>20%	0.6	8.3	13.5	8.3	4.9	2.8	2.0	1.4	1.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source : Basic Statistical Returns of Scheduled Commercial Banks in India (Various Issues), Reserve Bank of India.

7.36 Between June 2002 and June 2004, the lending rates of the banks (the rates at which at least 60 per cent of lending takes place) have declined further (Table 7.7). The sharpest decline is witnessed in the case of private sector banks. Similarly, interest rates on deposits have seen a further softening since March 2001 (Chart VII.2). In particular, deposits above one-year maturity have exhibited a significant reduction which suggests an enhanced flexibility to the banks in pricing their loans in the future. Empirical evidence confirms that pass-through in India is less than unity although there are signs of an increase in pass-through over time (Box VII.4).

Administered Interest Rates

7.37 As noted above, one of the factors imparting upward rigidity to the interest rate structure in India is the administered nature of interest rates on small savings instruments. In order to provide flexibility to the interest rates on small savings and other administered instruments, the Report of the Expert Committee to Review the System of Administered Interest Rates and Other Related Issues (Chairman: Dr. Y.V. Reddy) (RBI, 2001) recommended that the interest rates on these instruments could be benchmarked to the secondary

Chart VII.1 : Outstanding Loans According to Interest Rate Range

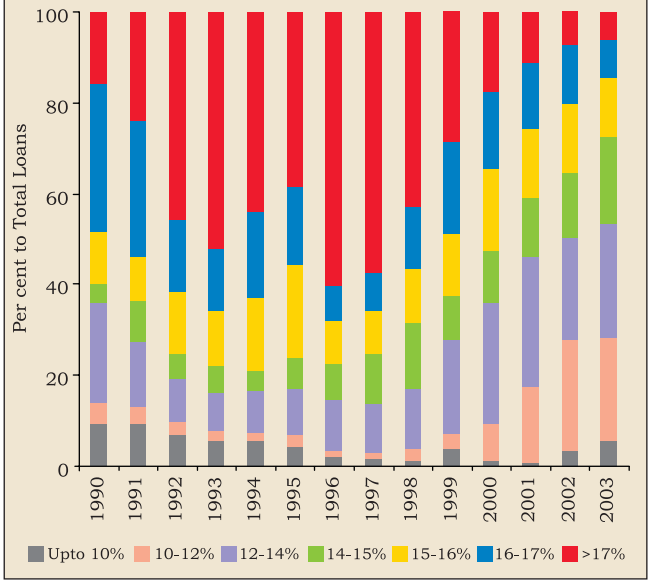
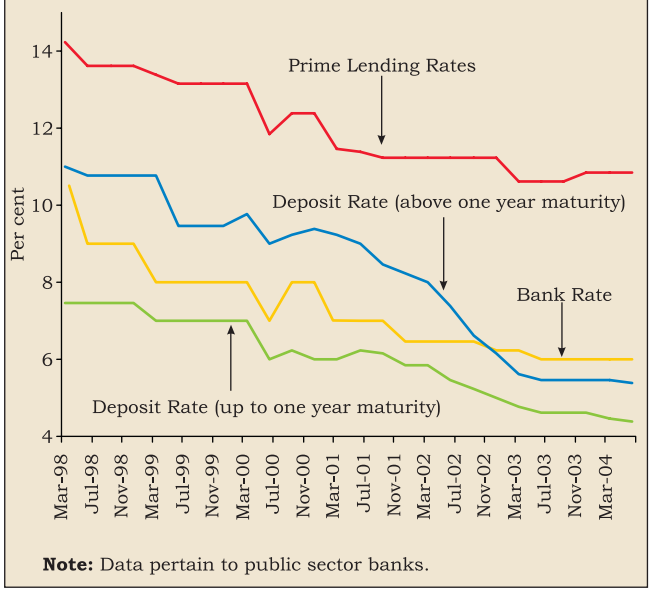


Chart VII.2 : Key Interest Rates



Note: Data pertain to public sector banks.

Table 7.7: Lending Rates of Scheduled Commercial Banks in India

(Per cent per annum)

	Public Sector Banks		Foreign Banks		Private Banks	
	Demand Loans	Term Loans	Demand Loans	Term Loans	Demand Loans	Term Loans
	2	3	4	5	6	7
Jun-02	12.75-14.00	12.75-14.00	13.00-14.75	13.00-15.50	13.75-16.00	14.00-16.00
Sep-02	12.00-14.00	12.25-14.00	13.00-14.75	12.75-14.50	14.00-16.00	13.50-15.00
Dec-02	11.85-14.00	12.25-14.00	12.00-14.75	11.70-13.63	13.50-15.75	13.50-15.00
Mar-03	11.50-14.00	12.00-14.00	10.50-12.75	10.25-13.50	13.50-15.50	13.00-15.00
Jun-03	11.50-14.00	11.50-14.00	10.00-14.00	9.73-13.00	13.00-15.00	12.50-14.75
Sep-03	11.50-13.50	11.00-13.50	9.50-12.75	9.25-13.50	13.00-14.50	12.00-14.50
Dec-03	11.50-13.00	11.00-13.25	7.75-13.65	9.00-13.00	12.50-14.50	11.50-14.50
Mar-04	11.00-12.75	11.00-12.75	7.50-11.00	8.00-11.60	12.00-14.00	11.25-14.00
Jun-04	10.50-12.50	10.75-12.75	6.50-11.50	7.25-10.95	11.50-13.75	11.00-14.00

Note : Lending rates in this table are the range at which at least 60 per cent business is contracted.
Source : Reserve Bank of India.

market yields of various Government securities of corresponding maturities prevailing in the previous year. The Committee recommended a spread of up to 50 basis points over the yields on Government securities as a compensation for lower liquidity of small savings. Furthermore, provident funds could be offered only on a floating rate basis, while for all other small savings, an option of fixed *versus* floating rates may be provided

Box VII.4

Interest Rate Pass-through in India

Following the discussion in Section I, the response of market rates of interest to policy rates can be quantified by estimating interest rate pass-through. As the interest rate channel in India was re-activated in 1997, the estimates of pass-through are made for the period since 1998 for both deposit and lending rates to the policy rate (the Bank Rate). For the empirical exercise, the deposit and lending rates of public sector banks (PSBs) are used and these are proxied by the interest rates on deposits of one-year maturity and prime lending rate (PLR), respectively. Estimates suggest that, over the sample period (September 1998-March 2004), the interest rate pass-through was 0.61 and 0.42 for lending and deposit rates, respectively, *i.e.*, a reduction of 100 basis points (bps) in the Bank Rate led to a reduction of almost 40 bps in the banks' deposit rates and 60 bps in their prime lending rate[3]. Thus, the pass-through is less than complete, consistent with cross-country survey discussed earlier. Empirical estimates of pass-through undertaken here are subject to a number of limitations. In view of the relatively small sample size, the estimates must be treated as only indicative of the size of the pass-through. Moreover, the sample period has been one of a secular decline in policy rates. Accordingly, the size and the speed of the pass-through could differ in case of a policy tightening cycle since pass-through, as the review of cross-country studies shows, could be asymmetric.

The less than complete pass-through notwithstanding, another key issue is: whether the pass-through has changed over time. To assess possible changes in the pass-through over time, rolling regressions (with a moving sample of 16 quarters) are estimated. Rolling coefficients support the hypothesis of some improvement in pass-through to lending rates in the last 2-3 years (Charts VII.3, VII.4 and VII.5). As regards deposit rates, the evidence is mixed: while pass-through to deposits of one-year maturity appears to be unchanged, that to deposits above one-year maturity exhibits a sharp rise. In case of deposits of more than one-year maturity, estimates suggest that pass-through has almost doubled from 0.2 in the initial part of the sample period to 0.4 in the latter part of the sample period and, moreover, the estimates turn out to be statistically significant in the latter part of the sample. Taken together, the empirical evidence indicates that although pass-through is less than complete, there are signs of an increase in pass-through over time reflecting policy efforts to impart greater flexibility to the interest rate structure in the economy.

[3] As all the interest rates turned out to be non-stationary (based on ADF test), the variables were used in first-difference form to estimate the pass-through. The estimated equations are:

DPLR = - 0.04 + 0.61 DBRATE DW = 2.5; R^2 = 0.43.
(0.9) (3.1)*

DDR1 = - 0.08 + 0.42 DBRATE DW = 1.6; R^2 = 0.38.
(2.4)* (2.9)*

DPLR, DDR1 and DBRATE are (first-differences of) prime lending rates, deposit rates (up to one-year maturity) and the Bank Rate, respectively. Prime lending rate and deposit rate data pertain to public sector banks. The equation has been estimated over September 1998 to March 2004, using quarterly data. The figures in brackets are t-values. * indicates significant at 1 per cent level.

Chart VII.3 : Pass-through to Prime Lending Rates

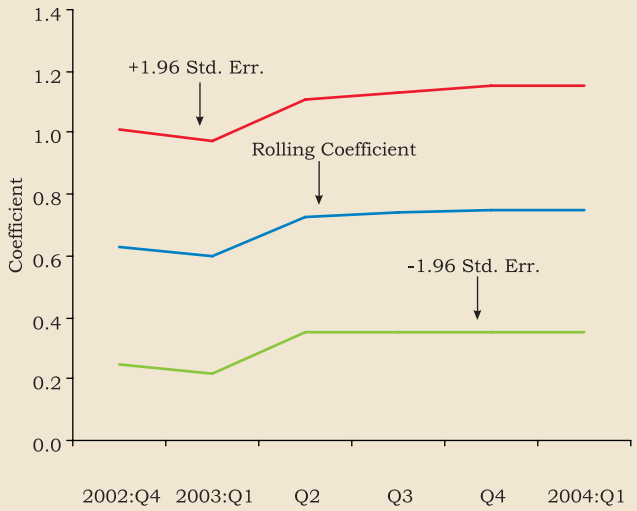
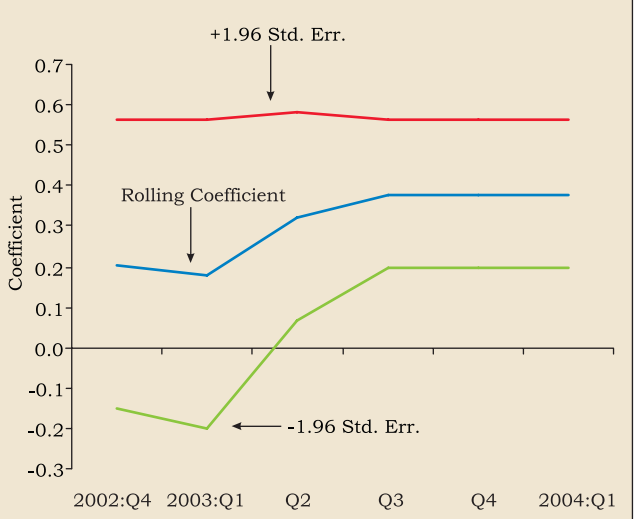


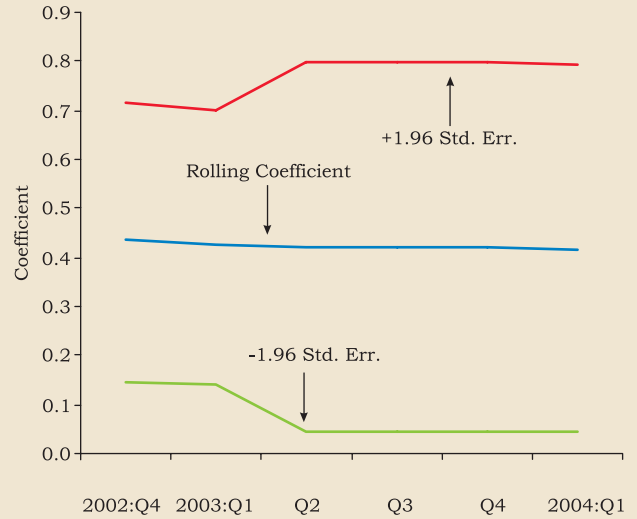
Chart VII.5 : Pass-through to Deposits of Above One-year Maturity



at the time of entry. The Committee also recommended abolition of income tax provisions on small savings to ensure a level playing field in the financial market. Pursuant to the recommendations of the Committee, the Union Budget 2002-03 announced that the interest rate on small savings would be linked to the average annual yield on Government securities in the secondary market. Corresponding adjustments in these rates were also announced in the Union Budget 2003-04.

7.38 The issue was revisited by the Advisory Committee to Advise on the Administered Interest Rates and Rationalisation of Saving Instruments (Chairman: Dr. Rakesh Mohan) (RBI, 2004). The Advisory Committee was constituted, *inter alia*, to suggest criteria for fixing the spreads on administered interest rates over the benchmark yields recommended by the Expert Committee chaired by Dr. Y. V. Reddy, taking a view on the need to avoid excessive volatility in returns; and, make recommendations on rationalisation of existing savings instruments offered by the Government. The Advisory Committee noted that the yields on these instruments have been higher than that would have prevailed based on the Reddy Committee's recommendations and this could partly be attributed to the sharp decline in yields on Government securities in recent years. Against this backdrop, benchmarking to previous year yields would lead to an equivalent sharp fall in administered interest rates and this would render financial planning difficult for small savers. Accordingly, in order to avoid excessive volatility in returns, the Advisory Committee recommended that interest rates on small saving instruments could be based on a weighted average of the previous two years rather than previous year alone. In view of tax benefits, effective yields on certain schemes are as high as 14.6-16.0 per cent and this renders the system regressive between taxpayers and non-taxpayers on the one hand and amongst the taxpayers in different brackets. The Committee, therefore, recommended discontinuation of a few such schemes (Box VII.5). The recommendations of the Committee in respect of introduction of a Senior Citizens Savings Scheme and discontinuation of the Deposit Scheme for Retiring Employees and 6.5 per Saving Bonds, 2003 (non-taxable) has been implemented with some modifications.

Chart VII.4 : Pass-through to Deposits of One-year Maturity



Box VII.5

Advisory Committee to Advise on the Administered Interest Rates and Rationalisation of Saving Instruments

The recommendations of the Committee covered three broad heads, *viz.*, (a) Benchmarking and Spread Rules, (b) Rationalisation of Existing Savings Schemes and (c) Structure of the Proposed Dada-Dadi Scheme as announced by the Finance Minister. Key recommendations of the Advisory Committee are set out below:

Benchmarking and Spread Rules

- In order to impart more stability, a weighted average of G-sec yields for the previous two years - a weight of 0.67 for the more recent year and 0.33 for the previous year - may be taken to work out the benchmark for administered interest rates.
- The fixed liquidity spread of 50 basis points over the benchmark and the interest rate revision at annual rest may continue in line with the suggestions made by the Reddy Committee.
- The inter-year movement of interest rate fluctuations may be limited to 100 basis points in either direction. The benchmark should be kept under review by appointing another Committee in case its movement exceeds by more than 200 basis points.

Rationalisation of Existing Savings Schemes

The Committee considered the removal of those schemes where investments are primarily motivated to obtain tax benefits available under Sections 88 and 10 of the Income Tax Act. The Committee, therefore, recommended the following rationalisation measures:

- Discontinuance of Kisan Vikas Patra, National Savings Certificates (VIII Issue) and the 6.5 per cent (tax free) GoI Savings Bond 2003.
- As the Public Provident Fund is a longer-term savings scheme providing old age income security, it may be continued in its present form for some time.
- The Deposit Scheme for Retiring Employees (DSRE) - applicable to only retired Government and public sector employees - may be discontinued in view of the proposed Dada-Dadi Scheme.

Structure of the Proposed Dada-Dadi Savings Scheme

- The interest rate on the Dada-Dadi Scheme could be kept at 100 bps higher than the average benchmark for other small savings instruments.
- The tenor of the Scheme may be kept shorter at three years to ensure liquidity; the benchmark rate may be based on Government security with a five-year tenor to make it more attractive.
- The Scheme should be taxable in terms of section 80L of Income Tax Act.
- As the Scheme is meant to provide regular income to senior citizens, the payment of interest income should be on a monthly basis.
- An individual ceiling of Rs. 20 lakh to be placed on investment.

Real Interest Rates

7.39 It is the real rate of interest that matters for investment and consumption decisions of firms and households in an economy. Although there has been some moderation of nominal interest rates since mid-1990s, inflation rates in India underwent an even more conspicuous decline. Illustratively, wholesale price inflation has averaged around five per cent per annum in the period since 1997 as compared with an average of 8-9 per cent per annum in the prior two decades (see Chapter V). Moreover, the moderation in respect of manufactured goods inflation was even more pronounced than that in the overall inflation rate. Accordingly, real interest rates for borrowers exhibited a distinctive hardening in the second half of the 1990s with adverse implications for investment demand in the economy (Table 7.8). The key issue, in terms of the growth objective, is the impact of the structure of real interest rates, especially as the interest cost as a proportion of sales of corporates is much higher in India as compared with many emerging market economies (Mohan, 2002).

7.40 Apart from a degree of stickiness in banks' lending rates, the increase in real rates could also be attributed to relatively high long-term inflation expectations, at least in the second half of the 1990s. "What is more relevant from the policy point of view is the expected or *ex ante* real interest rate which is measured by the difference between the nominal market interest rate and the expected inflation. An *ex post* high real interest rate may reveal the difference between the expected and actual inflation rate, rather than the factors which determine the real rate. …To the extent that the mind-set regarding the historical inflation rate in the Indian economy can be addressed, by credible policy measures, the nominal interest rate should decline, in tune with the decline in current inflation rate, thus bringing down the pressure on real interest rate" (Reddy, 1998). With consistently low and stable inflation since 1997-98 onwards, inflation expectations appear to have stabilised

and this has enabled a moderation in nominal and hence, *ex post* real rates for both Government and non-government borrowers during 2000-04 compared to the second half of the 1990s. Real deposit rates, on the other hand, remained positive and, on average, exhibited a marginal increase. In the recent couple of years, however, there has been some moderation in the real deposit rates, concomitant with a moderation in nominal deposit rates (Table 7.8 and Charts VII.6 - VII.8).

7.41 In this context, the appropriate level of real interest rates remains a topic of continuous debate. The Report of the Committee to Review the Working of the Monetary System (Chairman: S. Chakravarty) (RBI, 1985) felt that 'reasonably high positive real rate of interest' was needed on savings to deter 'leakages' of financial saving in the form of gold, real estate and physical assets. The Committee, therefore, recommended real rates of up to three per cent to depositors depending upon maturity, issuer and instrument: a marginally positive real return on 91-day Treasury Bills; a positive real return of 2 per cent per annum for bank deposits of maturity of 5 years or more; and, a positive real return of 3 per cent per annum on 15-year Government dated securities. *Ex post* real deposit rates in the period since the mid-1990s have been close to the benchmarks suggested by the Committee.

7.42 A more generalised approach on the level of real interest rates has been elaborated by Reddy (1998) with focus on long-term growth as a key determinant. "In the context of the economy as a whole, or in macroeconomic policy, the sustainability

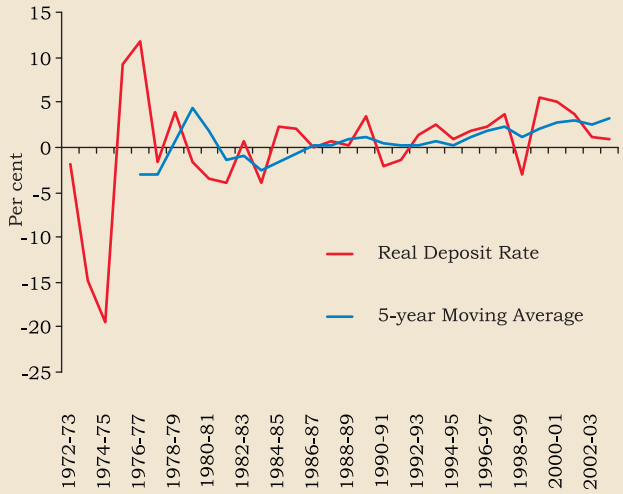
Table 7.8: Real Interest Rates

(per cent per annum)

Period Averages/ Year	Real Deposit Rate @	Real Lending Rate $	Real Yield on Government Securities #
1	2	3	4
1975-80	4.3	8.8 (8.7)	—
1980-85	-1.7	8.3 (7.3)	-0.9
1985-90	1.2	9.0 (8.4)	4.7
1990-95	0.3	7.1 (6.8)	1.0
1995-2000	2.1	9.9 (7.0)	7.4
2000-04	2.7	7.7 (7.4)	3.5
Memo:			
2000-01	5.0	8.2 (7.2)	3.8
2001-02	3.7	9.7 (8.4)	5.8
2002-03	1.0	8.0 (7.3)	3.9
2003-04	0.9	5.0 (6.6)	0.3

@ Interest rate on deposits of 1-3 year maturity less consumer price inflation.
$ SBI Advance Rate *less* manufacturing inflation.
# Weighted yield on Central Government market borrowings less wholesale price inflation.
Note : Figures in brackets are real lending rates when GDP deflator is used as a measure of inflation.

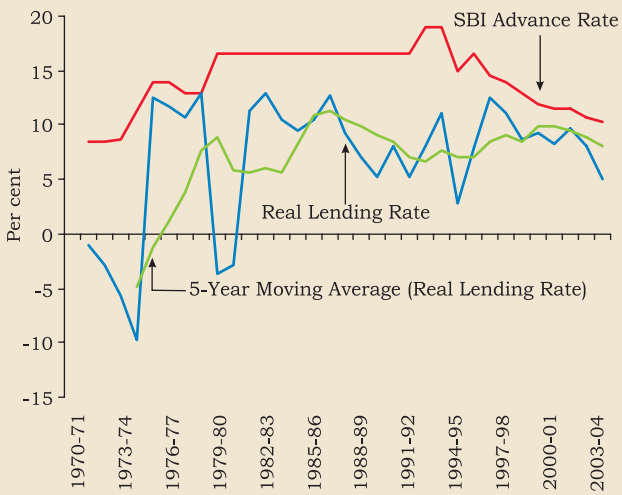
Chart VII.6 : Real Deposit Rate @



@ : Interest rate on deposits of 1-3 years maturity less consumer price inflation.

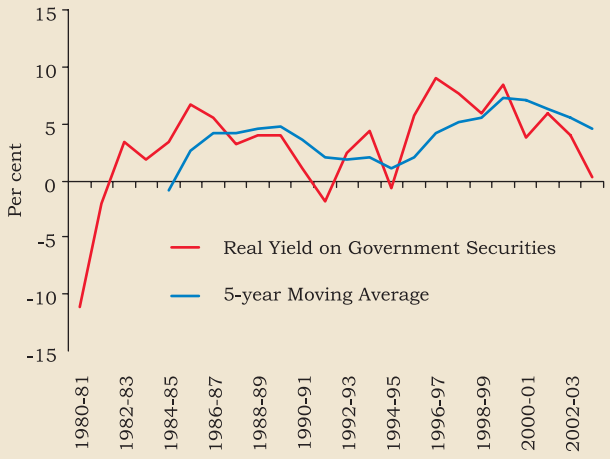
of the real interest rate is critical. Ideally, the expected real interest rate in the economy should reflect the potential rate of return on the capital stock. If an economy is operating on the maximum attainable efficiency, the rate of return on capital or the growth rate of real GDP should provide an indicator of the real interest rate in the economy. In the case of advanced economies, which are more or less operating on the best attainable efficiency level, the real growth rate sets the limit for the real interest rate in the economy. It is interesting, therefore, to observe that the typical real interest rates on Government paper in some of the

Chart VII.7 : Real Lending Rate @



@ Real Lending Rate is SBI Advance Rate less manufacturing inflation.

Chart VII.8 : Real Yield on Government Securities @



@ : Weighted yield on Central Government market borrowings less Wholesale price inflation.

advanced economies vary from 3 to 4 per cent, which is close to their growth rate of GDP. In the case of developing economies, the typical real interest rates are higher than those of the developed economies which is perhaps explained by the higher rates of growth in these economies. It is possible that for a fast growing and high performing economy, the real rate of interest may in fact stay higher than the real growth rate, if the potential growth rate is higher than the actual growth rate and if expectation regarding the future growth rate is strong" (Reddy, 1998).

7.43 High real interest rates are a cause of concern since these have an adverse impact on investment demand and output growth. Evidence for the G-7 countries suggests that a 100 basis points increase in real interest rate leads to a decline in output of 6-17 basis points in the short-run while the long-run impact is a decline of 25-69 basis points (Goodhart and Hofmann, 2003). To analyse the impact of real interest rates on output for India, aggregate demand curve specification on the same lines as Goodhart and Hofmann (*op cit.*) is employed, *i.e.,* output gap is regressed on its lags and real interest rates. As supply shocks can have an adverse effect on output, fuel prices and agricultural sector output are also included in the equation. Estimates of this equation over the period 1970-2003 using annual data suggest that a 100 basis point rise in real interest rates in India depresses real GDP and hence widens the output gap (actual less trend output) by five basis points in the short-run[4] . The impact increases over time and the long-run impact is almost 40 basis points.

Monetary Transmission

7.44 With the shifts in instruments and operating procedures of monetary policy during the 1990s, issues relating to monetary transmission in India continue to be an active area of research. As discussed in Chapter III, the fiscal dominance during the 1970s and 1980s changed the contours of the operating framework of monetary policy - the traditional instruments, the Bank Rate and open market operations, began to loose their efficacy and gave way to credit planning and reserve requirements as key instruments of monetary management. In order to infuse a degree of efficiency, the 1990s witnessed a shift from a planned and administrated interest rate system to a market-oriented financial system. Measures were taken to rekindle the process of price discovery in the financial markets. These measures included :

- deregulation of interest rates, beginning with the removal of restrictions on the inter-bank market as early as 1989;
- putting the market borrowing programme of the Government through the auction process in 1992-93;
- a phased deregulation of lending rates in the credit markets;
- the development of short-term money markets through introduction of money market instruments, such as commercial paper, short-term Treasury Bills and certificates of deposits;
- phasing out of *ad hoc* Treasury Bills;
- replacing cash credit with term loans;
- reduction in statutory reserve requirements;
- institution of a liquidity adjustment facility (LAF); and,
- development of a repo market outside the Reserve Bank.

[4] YGAP = - 0.05 RLINTWTP(-1) – 0.07 DFUEL + 0.36 GDPAGRI + 0.87 YGAP(-1)
(2.6)* (4.5)* (8.6)* (5.6)*
Durbin's h = 0.7; $\bar{R}^2$ = 0.69.
YGAP, RLINTWTP, DFUEL and GDPAGRI are output gap, real weighted bank lending rate (nominal weighted average *less* WPI inflation rate), fuel inflation and agricultural growth respectively. The equation has been estimated over 1972-73 to 2002-03 using annual data. The figures in brackets are t-values. * denotes significant at 1 per cent level.

7.45 The various measures enabled a shift from direct instruments of monetary control to indirect instruments in consonance with the increasing market orientation of the economy. The Reserve Bank is now able to influence short-term interest rates by modulating the liquidity in the system through LAF operations. Accordingly, monetary policy signals are increasingly transmitted to the real economy through modulations in the Bank Rate as well as the repo rate (now called the reverse repo rate) in contrast to the earlier reliance on reserve requirements and credit ceilings/sectoral allocation of credit (see Chapters III and VI). Against this brief overview, an assessment of the monetary transmission mechanism in India is attempted here.

7.46 The relationship between money, output and prices has been extensively analysed in India. With the initiation of reform measures in the 1990s, more recent studies have also focussed on the role of the interest rates and exchange rates in the transmission mechanism. Changes in money supply lead to changes both in output and prices, although the price effects of an increase in money supply are stronger than the output effects (Rangarajan and Arif, 1990; Jadhav, 1994). The Working Group on Money Supply (RBI, 1998) found a strong unidirectional causation running from real output to real money. Besides, the output response operating through the interest rate channel turned out to be stronger and more persistent than that of the credit channel.

7.47 In the context of the reforms and their implications for monetary transmission channels, Ray, Joshi and Saggar (1998) found that interest rates and exchange rate matter in the conduct of monetary policy in the post-liberalisation phase (April 1992-March 1997). They found that interest rates and exchange rate which were exogenous in the pre-reforms period turned out to be endogenous in the post-liberalisation phase: disequilibria in money market endogenously impacted the interest rates and the exchange rate. This evidence was interpreted as supportive of policy shifts in re-defining transmission channels. In the context of this study, it needs to be noted that the financial markets - money markets, debt markets and forex markets - have undergone significant shifts mainly from late 1990s onwards. A comparison of monetary impulses transmitted through interest rate effects and through liquidity effects for the period 1961-2000 indicates that the interest rate channel has emerged as a significant factor for explaining the variation in real activity in the 1990s as compared with its negligible impact in the 1980s (Dhal, 2000). The liquidity effect, although significant, diminished in terms of magnitude.

7.48 Al-Mashat (2003) analysed the key channels of monetary transmission for India in a vector error correction framework and found: (i) the impact of shocks on key macroeconomic variables is larger when the exchange rate is introduced in the model which suggests the importance of the exchange rate channel; (ii) little evidence that bank lending channel plays a very important role; and, (iii) response of interest rates to macroeconomic disturbances is larger than that during the 1980s.

7.49 A brief survey of these recent studies shows that monetary policy impulses are beginning to impact output and prices through interest rates and exchange rate movements in addition to the traditional monetary and credit aggregates. As discussed in the earlier section, lags of monetary transmission can vary from one business cycle to another. This may be all the more in case of countries like India where significant changes in the monetary policy operating framework as well as financial liberalisation took place during the 1990s. In particular, it needs to be stressed that most of the refinements in the operating procedures of monetary policy that have permitted short-term interest rates to emerge as instruments of signalling monetary policy stance have taken place only from 1997 onwards when the Bank Rate was re-activated. These efforts were strengthened with the introduction of a full-fledged LAF in 2000. These refinements in the operating framework alongwith ongoing measures by the Reserve Bank to impart greater flexibility to the interest rate structure of the commercial banking system are expected to increase the efficacy of the monetary policy signals. An attempt has been made here to extend the recent empirical work on monetary transmission in India using a vector autoregression (VAR) framework.

7.50 Empirical results show that monetary measures have the expected effect on output, prices and exchange rate (Box VII.6). Illustratively, monetary tightening is associated with a reduction in both output and prices. As regards exchange rate, it appreciates following a monetary tightening. This shows that monetary tightening measures to ensure orderly conditions in the foreign exchange market have the desired impact. Turning to the issue of the lags in transmission, empirical results suggest relatively quick effects. The peak effect of an interest rate shock on output as well as prices occurs around six months after the shock. The relatively quick response of prices

Box VII.6

Monetary Transmission in India

In order to explore channels of monetary transmission, a 5-variabe VAR is estimated (see Annex VII.1 for details). The variables are: index of industrial production (LIIP), wholesale price index (LWPI), Bank Rate (BRATE), broad money (LM_3) and exchange rate (Rupees per US dollar) (LEXCH).

The impulse responses show that a positive shock to the Bank Rate (*i.e.*, monetary tightening) has the expected negative effect on output, with the peak effect occurring around six months after the shock. In the subsequent months, output gradually returns to the baseline. Prices also decline following a shock to the interest rate. The maximum negative effect on prices occurs almost six months after the shock and, in the following months, prices return slowly to the baseline. As regards exchange rate, it appreciates following a monetary tightening. The peak effect occurs around four months after the shock and the exchange rate returns to the baseline around three years after the shock (Chart VII.9).

A positive shock to broad money (*i.e.*, monetary expansion) leads to an increase in output as well as prices. The peak effect on output occurs almost two years after the shock while that on prices is relatively quick (almost one year) (Chart VII.10). Qualitatively, the dynamics are broadly the same as in the case of monetary tightening through the bank rate.

A positive shock to the exchange rate (*i.e.*, depreciation of the rupee) leads to an increase in prices, with the peak effect taking place almost six months after the initial shock. As regards output, depreciation has the expected positive effect. The peak effect occurs nearly six months after the shock and peters out over time. Finally, a depreciation of the exchange rate attracts a monetary policy response that leads to an increase in interest rate. The peak rise in interest rate occurs around six months after the shock. Subsequently, interest rate starts to fall and returns to baseline three years after the shock (Chart VII.11). The temporary rise in interest rates is consistent with the monetary policy response that is aimed at ensuring orderly conditions in the foreign exchange markets.

Variance decomposition analysis examines the role of monetary policy and other shocks in contributing to output and price volatility in the economy. Empirical results show that the proportion of output variance, at 60-months ahead horizon, due to broad money as well as interest rates shocks is around 1-2 per cent (Table 7.9). In other words, a substantial part of volatility in output is not on account of monetary policy shocks. Looking at forecast error variance of prices, shocks to broad money explain almost 25 per cent of volatility in prices while shocks to interest rates explain less than two per cent of volatility in prices. Thus, as in case of output, monetary policy shocks are not the key drivers of volatility in prices and, to that extent, monetary policy in India can be viewed as contributing to output as well as price stability. Similarly, innovations to interest rate and broad money explain only a small part - 6 per cent and 11 per cent, respectively - of exchange rate volatility.

Lesser role of monetary policy shocks in output and price volatility, however, does not suggest that monetary policy does not matter. VAR analysis focuses on monetary policy shocks, *i.e.*, the non-systematic component of monetary policy. Monetary policy is mostly characterised by the endogenous (systematic) response to developments in the economy. Accordingly, the finding that non-systematic monetary policy is not a major source of fluctuations in the economy does not deny the proposition that systematic changes in monetary policy can play a larger role in price and output movements (Christiano *et al.*, 1999; Boivin and Giannoni, 2002).

in response both to interest rate and broad money shocks appears to be in line with evidence for EMEs *albeit* in contrast to the inertial response of prices in the context of advanced economies where prices are almost unchanged for one year after a monetary policy shock. As noted earlier, monetary policy lags may be shorter in emerging economies. Illustratively, Fung (*op cit.*) found that, in East Asian economies such as Indonesia, Korea and Malaysia, prices decline immediately after a monetary policy tightening. He attributes greater price flexibility in these economies to the labour markets being relatively less rigid. Thus, the Indian experience in regard to price dynamics appears to resemble the East Asian economies. In India, shorter transmission lags could perhaps reflect a variety of factors such as wage/price indexation and concerted policy efforts to contain inflation. Monetary policy measures are often supplemented with supply-side measures to contain inflation, given the key role of supply shocks in the inflation process in India. The public distribution system in India could also be an important contributory factor. These hypotheses would, however, need to be explored further.

7.51 In the context of a market-determined exchange rate system and opening up of the economy, estimates of pass-through from exchange rate movements to inflation are an important input to monetary policy formulation. The dynamic behaviour of prices and exchange rate emerging from the VAR analysis provides an estimate of exchange rate pass-through. According to these impulse responses, exchange rate pass-through is

Chart VII.9 : Response to Interest Rate Shock

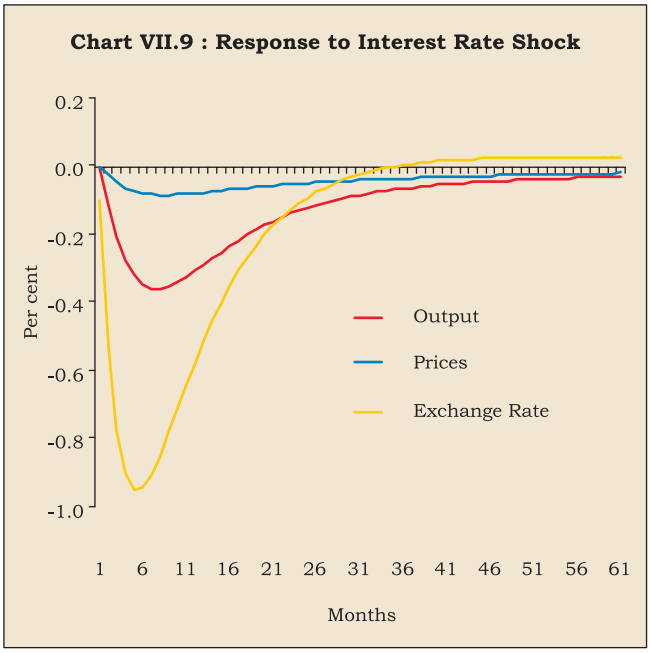
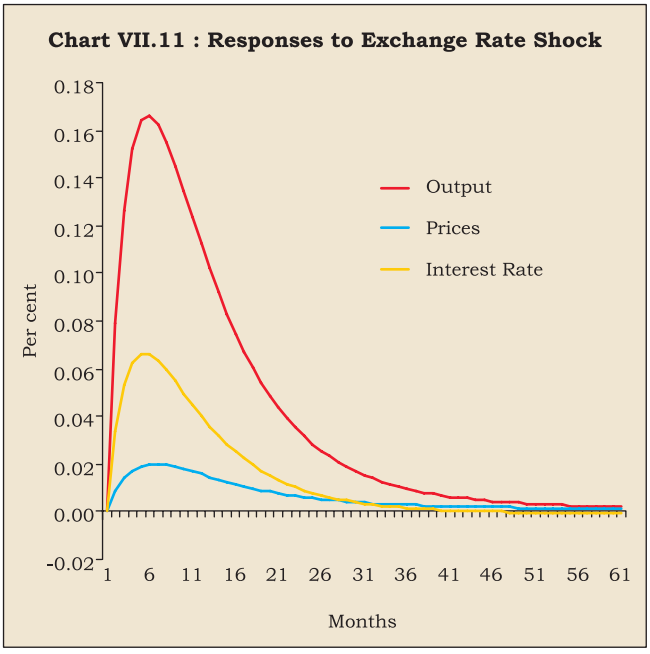


Chart VII.11 : Responses to Exchange Rate Shock



0.04, *i.e.*, a 10 per cent depreciation of the exchange rate increases wholesale prices by 0.4 per cent. Almost 60 per cent of this pass-through takes place within one year while 80 per cent of pass-through is completed within two years of a shock to the exchange rate (Chart VII.12). These estimates of the exchange rate pass-through are subject to a number of caveats. First, the study period has been characterised by a significant opening up of the economy. Openness of the Indian economy as measured by the ratio of merchandise imports to GDP has increased from 9.8 per cent in 1993-94 to 13.2 per cent in 2003-04 (see Chapter V). Second, and more importantly, the substantial decline in tariffs could have perhaps allowed domestic producers to absorb some part of exchange rate depreciation without any effect on their profitability. Furthermore, the increased threat of imports at low import duties in an environment of a phased reduction in non-tariff barriers could have reduced the exchange rate pass-through. Perhaps, these factors can explain as to why pass-through estimates based on a longer time-span 1976-2004 (see Chapter V) are almost double of the estimate emerging from the exercise based on the sample

Chart VII.10 : Responses to Broad Money Shock

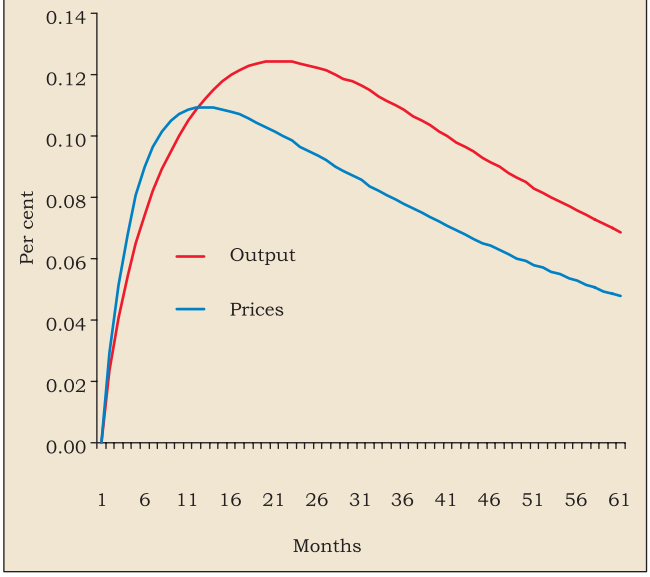
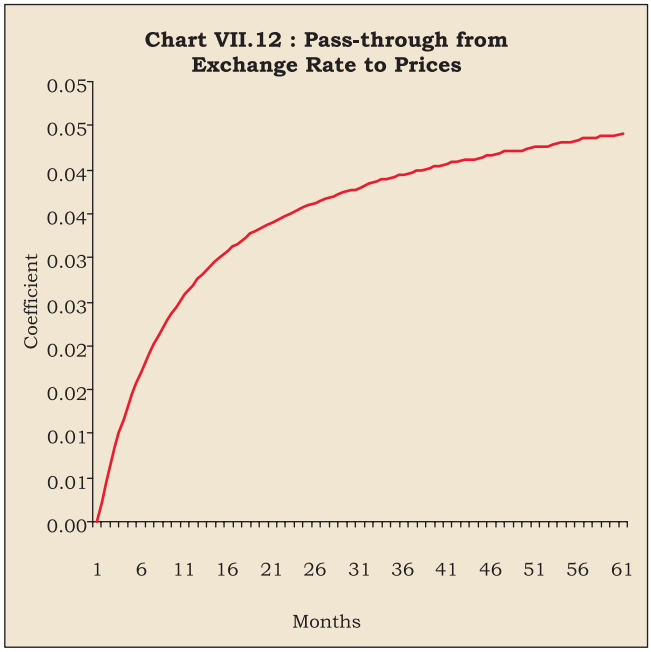


Table 7.9: Variance Decomposition Analysis

(Per cent)

Forecast Horizon (months)	Innovations to	Proportion of Forecast Error Variance in		
		Output	Prices	Exchange Rate
1	2	3	4	5
1	Interest Rate	0.0	0.0	1.0
	Broad Money	0.0	1.4	0.8
	Exchange Rate	0.1	0.0	94.0
12	Interest Rate	0.7	0.8	6.4
	Broad Money	0.3	8.0	7.0
	Exchange Rate	2.0	0.6	62.2
60	Interest Rate	1.0	1.4	6.4
	Broad Money	2.3	24.8	11.1
	Exchange Rate	2.3	0.7	57.1



period of 1993 onwards. At the same time, it must be stressed that the pass-through estimates from the post-1993 period based on the VAR exercise are rather imprecise. Thus, the estimates of pass-through would need to be evaluated on an ongoing basis, before a definitive conclusion is reached.

7.52 The empirical results are illustrative of the evolving channels of transmission and accord with *a priori* beliefs. These are, however, subject to a number of caveats. First, the transmission lags are average lags and are surrounded by a great deal of uncertainty. In view of the ongoing structural changes in the real sector as well as financial innovations, the precise lags may differ in each business cycle. This is all the more as the period of the study was characterised by the ongoing process of structural reforms in the Indian economy involving financial deregulation and liberalisation. This period was also marked by heightened volatility in the international economy, including developments such as a series of financial crisis beginning with the Asian crisis. Moreover, as noted earlier, the period under study has been marked by sharp reductions in customs duties and increasing trade openness which could have impacted the transmission process. The 1990s was also marked by global disinflation. Thus, overall the period has been one of substantial ongoing changes in various spheres of the Indian economy as well as its external environment. In this context, the observations of the Bank of England (1999) become all the more relevant: "the actual outcome of any policy change will depend on factors such as the extent to which it was anticipated, business and consumer confidence at home and abroad, the path of fiscal policy, the state of the world economy, and, the credibility of the monetary policy regime itself".

7.53 Second, the study period has been characterised by significant shifts in the monetary policy operating framework from a monetary-targeting framework to a multiple indicator approach. Third, the study period has been marked by a sluggish pass-through from policy rates to bank lending rates which weakens the intended policy impact. The empirical estimates of interest rate pass-through undertaken in this Chapter suggest that the size of the pass-through has increased in the recent years, with implications for transmission. Fourth, in recent years, consumer demand, especially in the form of housing credit and personal loans, has been an important driver of bank credit. Housing loans which were only 2.8 per cent of bank credit in March 1995 have more than doubled and formed 6.5 per cent of bank credit in March 2003. In future, changes in monetary policy stance could have a stronger effect on private consumption behaviour with implications for transmission channels and lags. Illustratively, a cut in policy interest rates will increase cash flow of households and have a positive impact on private consumption and output and *vice versa* in case of a monetary tightening. This might increase the effectiveness of a given change in monetary policy stance. Finally, the above empirical exercise is constrained by the use of industrial production as a measure of output in the absence of a reasonably long quarterly time series on total GDP of the economy. In view of the significant structural shifts towards the services sector and the inter-linkages between agriculture, industry and services, the results of this empirical exercise should be considered as tentative and would need to be ratified with a comprehensive measure of output, as also by considering alternative techniques.

III. CONCLUDING OBSERVATIONS

7.54 This Chapter addressed key issues relating to the process through which monetary policy actions affect output and prices. Despite substantial progress, there is still no unanimity on the precise channels of monetary transmission and these remain a "black-box". A few stylised facts that emerge from a survey of recent cross-country studies are: (i) pass-through from monetary policy signals to bank lending rates is only partial in the

short-run; (ii) output displays a hump-shaped response to monetary policy shocks; (iii) prices are quite sluggish - almost unchanged for one year and it can take almost two years for monetary policy to have a noticeable effect on prices; and, (iv) in the case of emerging economies, the lags may be somewhat shorter. The effectiveness of monetary policy signals depends upon the speed with which the policy rates are transmitted to market rates of interest. Cross-country evidence suggests that this pass-through is only partial in the short-term. Although it increases over time, it still remains usually less than complete. The speed and size of the pass-through depend upon a number of factors such as volatility in the money market rates, the extent to which the policy change was anticipated and the maturity structure of bank balance sheets. Finally, monetary authorities in future will have to contend with implications of electronic money on the transmission process. The dominant view is that monetary policy is likely to remain a key instrument of macroeconomic stabilisation *albeit* its effectiveness could be weakened to some extent by the growing use of electronic money.

7.55 With structural reforms and financial liberalisation, monetary transmission channels in India have undergone a significant transformation. Monetary policy stance is now being increasingly signalled through variations in key policy interest rates. Financial prices – interest rates and exchange rates - are now an important part of the transmission chain. Although rigidities in the financial system have blunted the pass-through from policy rates to bank's lending rates, there is some evidence of an improvement in the pass-through in recent years. This has been possible through concerted efforts of the Reserve Bank to impart greater flexibility to the interest rate structure. Concomitantly, this has also enabled a moderation in real lending rates for borrowers over time. This is expected to have a positive impact on investment demand in the economy.

7.56 Empirical evidence on transmission channels suggests that monetary policy impulses have the expected effect on output and prices. Furthermore, monetary policy measures are able to ensure orderly conditions in the foreign exchange market. The empirical results are, however, subject to a number of caveats. The transmission lags are average lags and are surrounded by a great deal of uncertainty. The study period has been one of significant structural changes in the Indian economy. In view of the ongoing structural changes in the real sector as well as financial innovations, the size of the effect as well as the precise transmission lags may differ in each business cycle.

Annex VII.1

Monetary Transmission: Methodological Issues

Notwithstanding recent progress in monetary research, monetary transmission remains a "black-box". The recent research on monetary transmission has, therefore, largely relied on vector autoregression (VAR) framework. A VAR framework treats all variables as endogenous in order to avoid infecting the model with spurious or false identifying restrictions and thus provides a convincing solution to the "black-box" problem. Although the VAR methodology has also been subjected to criticism, the method remains popular since it offers a straightforward solution to the simultaneity problem and appears to yield a reasonable characterisation of the economy's response to monetary policy (Kuttner and Mosser, 2002). A VAR framework focuses on the responses of the key macroeconomic variables to exogenous monetary policy shocks rather than to systematic component of monetary policy. This method also makes the lag structure and dominance of the channels transparent. In view of lack of a consensus on the workings of the transmission, the preference for VAR methodology in the recent literature comes from the minimum restrictions that it places on as to how the monetary shocks affect the economy. Accordingly, this Chapter (Box VII.6) uses a VAR framework to explore the monetary transmission dynamics in India. In view of significant structural changes in the economy, a study based on a long-period may be subject to the problem of structural breaks and the results may not fully reflect the current lags in the transmission. The empirical exercise in this section thus focuses on the post-liberalisation period (April 1994 to March 2004).

Two key issues in estimating a VAR model are the list of variables to be included and the identifying assumptions. In India, operating procedures have undergone significant shifts over the sample period. It is only recently that interest rates have emerged as signals of monetary policy stance. Moreover, despite a switch away from a monetary targeting framework, broad money continues to be an important information variable. Given that the period of empirical study covers the period 1994 onwards, when these changes to monetary policy framework have been gradually evolving, the VAR, therefore, includes both interest rates and broad money. As output stabilisation and price stability are the key objectives of monetary policy, these variables are included in the VAR. Finally, reflecting the opening up of the economy, exchange rate is also included in the VAR. Furthermore, ensuring orderliness in foreign exchange market is a key policy objective and, towards this objective, monetary policy has been occasionally tightened through increases in key policy rates over the sample period. This also provides a strong rationale for inclusion of exchange rate as an endogenous variable in the VAR. In all, the VAR model includes five endogenous variables.

As regards the identification assumptions, this Chapter estimated a recursive VAR with short-run restrictions on the contemporaneous effect of variables (Christiano, Eichenbaum and Evans, 1999). A common identifying assumption in the VAR literature is that monetary policy can react to output and price developments contemporaneously (*i.e.*, in the same period) but there is no contemporaneous output and prices reaction to monetary signals. Accordingly, output and prices are placed before monetary policy variables in the model. This ordering appears reasonable, especially given the use of monthly data. The variables are thus ordered as follows: index of industrial production (LIIP), wholesale price index (LWPI), Bank Rate (BRATE), broad money (LM_3) and exchange rate (Rupees per US dollar) (LEXCH). Exchange rate, being a financial market variable, can react to monetary signals contemporaneously and, therefore, is placed last in the VAR. A sensitivity analysis undertaken on the ordering of variables indicated that the impulse responses are broadly unchanged whether exchange rate is placed after or before interest rate and money supply variables. In addition to the endogenous variables, oil prices (to control for supply shocks) are included as an exogenous variable. Real world exports and global non-fuel commodity prices are also included as exogenous variables to account for external demand and price shocks. Monthly dummies were included to control for seasonality. All the variables (except interest rate variables) are in logarithmic form. All the variables in the VAR are found to be non-stationary. As the option of differencing of series produces no gain in asymptotic efficiency and throws away information, the VAR is estimated in levels.

The results of the VAR model are typically analysed in terms of impulse response and variance decomposition. While impulse responses track the dynamics of key macro variables in response to an exogenous monetary policy shock, variance decomposition analysis attempts to quantify the role of monetary policy shocks in the volatility of key macroeconomic aggregates. These results are presented in Box VII.6.

VIII FINANCIAL STABILITY

8.1 The significant decline in global inflation in the 1990s can be regarded as a distinctive feature of macroeconomic developments in this period. The lowering of inflation is attributed in large part to anti-inflationary monetary policy practised worldwide in the 1990s, supported by a mutually reinforcing mix of freer trade, globalisation, deregulation and productivity gains. The decline in inflation has generally been accompanied with reduced output volatility (see Chapter V). Even as macroeconomic stability - low and stable inflation with reduced output volatility - has been achieved during the 1990s, the same period has also been witness to an increase in frequency of episodes of banking and currency crises. The expected 'peace dividend' of war against inflation has been, to some extent, neutralised by such crises episodes. Issues related to financial stability and the role of the central banks in contributing to financial stability have, therefore, come to the forefront in the latter half of the 1990s. Financial stability, apart from price stability, has thus become a major focus of most central banks. At a number of central banks, the growing emphasis given to financial stability has led to significant changes, such as the establishment of departments dedicated to financial stability. Reports on financial stability published by a large number of central banks also bear testimony to these changes.

8.2 Concerns related to financial stability have attracted renewed focus during the 1990s, mainly on account of the forces of financial liberalisation and globalisation. Financial liberalisation has led to the emergence of financial conglomerates. These financial conglomerates cut across not only various financial sectors such as banking and insurance, but also a number of countries. Moreover, the progressive opening up of the economies to external flows since 1990s has led to massive cross-border capital flows. As discussed in Chapter IV, such flows display a boom-bust pattern. During periods of excessive capital inflows, such flows are often intermediated to speculative activities such as real estate and stock markets. This can lead to asset price bubbles. As these bubbles burst over a period of time, they pose serious risks to the balance sheets of financial institutions as well as non-financial corporations. Finally, the volatility in capital flows is reflected in sharp movements in exchange rates. Large devaluations also have an adverse impact upon the balance sheets of residents. This is especially true for emerging economies as they are usually forced to borrow in foreign currencies. Large devaluations can create serious currency mismatches and, as the Asian financial crisis showed, even banking crises. Such crises have large costs in terms of output and employment losses. In addition, governments are forced to bear the large costs entailed in restructuring of the financial institutions. For all these reasons, maintenance of financial stability has emerged as a key objective for a number of central banks.

8.3 As noted before, the concerns with financial stability have arisen in a decade that has been characterised by price stability. Traditionally, it has been believed that monetary stability leads to financial stability. However, as the events of the 1990s show, it need not necessarily be the case. On the contrary, it has been argued that the achievement of price stability itself may sow seeds of financial imbalances (Borio and White, 2003). In a low inflation environment, imbalances do not get reflected in inflationary pressures. Rather, they exhibit themselves in asset price bubbles, which over time, can turn into financial crises. This weakens the financial system and, in turn, the efficacy of the monetary transmission mechanism. If the health of the financial sector is weak, an increase in interest rates can aggravate the fragility of the financial sector. Accordingly, the monetary authority may be constrained in its efforts to raise interest rates in order to fight inflationary pressures. A sound financial system is thus an important pre-condition for effective implementation of monetary policy. Concomitantly, a debate has emerged on the role of monetary policy in responding to asset price bubbles. More or less, it is agreed that monetary policy measures, by themselves, may not be effective in correcting misalignments. Given the limitations of monetary policy *per se*, central banks can still contribute to financial stability by making the financial system resilient to various shocks. Central banks can do so through effective regulation and supervision of the financial system, encouraging corporate governance, promoting accounting standards and maintaining integrity of payments and settlement systems.

8.4 As in the rest of the world, in India too, issues related to financial stability have come to the forefront since the 1990s. This development is largely on account of the structural reforms initiated in the early 1990s. The process of financial liberalisation and deregulation has led to emergence of some financial conglomerates in the Indian economy. In view of the possibility of contagion arising from such conglomerates and their systemic implications, regulation of such systemically important financial intermediaries necessitates a focused attention from the perspective of financial stability. Furthermore, with interest rates emerging as the key channel of monetary policy signals, the efficacy of monetary transmission depends upon the health of the financial sector. Finally, with the gradual opening up of the external sector, developments in India are increasingly influenced by developments abroad. Capital flows have increased substantially since 1993-94. Although these flows have, by and large, been stable reflecting the cautious approach to liberalisation, there have nonetheless been episodes of volatility in these flows. These vicissitudes of capital movements show up in volatility in exchange rate movements (Mohan, 2004a). Large swings in exchange rates affect not only demand and inflation, but also, more importantly, given the foreign-currency denominated liabilities, affect balance sheets of a range of financial as well as non-financial borrowers. This can induce large scale financial instability, as was evidenced during the Asian financial crisis. Often emerging market economies do not have adequate self-correcting mechanisms in respect of cross border capital flows. This would suggest the need to institute special defences for ensuring financial stability in the case of countries like India that are faced with the prospect of volatile capital flows.

8.5 Like other central banks, financial stability has, therefore, emerged as a key consideration in the conduct of monetary policy in India, apart from price stability and provision of adequate credit for growth. While there are complementarities between the objectives, especially in the long run, it cannot be denied that there are certain trade-offs, particularly in the short run. The overall approach of the Reserve Bank to maintain financial stability is three-pronged: maintenance of overall macroeconomic balance; improvement in the macro-prudential functioning of institutions and markets; and, strengthening micro-prudential institutional soundness through regulation and supervision (Jadhav, 2003).

8.6 In light of the aforesaid discussion, Section I of this Chapter provides an international perspective on the key issues relating to financial stability. It discusses the concepts of monetary and financial stability followed by various theories of financial stability. A critical assessment of the appropriate response of monetary policy to asset price misalignments is undertaken. This is followed by a cross-country survey of the role of central banks in contributing to financial stability in critical areas such as regulation and supervision, payments and settlement systems, accounting standards and governance norms. Section II of the Chapter focuses on the Indian approach to financial stability. Accordingly, it provides an overview of the financial system, highlighting the measures initiated to nurture stability of financial institutions and markets and their performance. Concluding observations are contained in the final section.

I. FINANCIAL STABILITY: INTERNATIONAL EXPERIENCE

Monetary and Financial Stability - Definitions and Concepts

8.7 Monetary stability commonly refers to stability of the price level (or its rate of change, inflation), the inverse of the value of money in terms of a basket of current goods. Price stability is often thought of as an environment where inflation does not materially affect economic decisions. Such an environment promotes efficient allocation of resources and has led to stable macroeconomic conditions in many countries. Price stability refers not to individual prices, but prices of an aggregate 'basket' of consumer goods and services that can be summarised into a single index. In this respect, price stability - whether formalised in terms of an explicit inflation target or otherwise - is considered to be relatively well understood, transparent and measurable.

8.8 Financial stability, on the other hand, is not tractable to any commonly agreed definition. Indeed, financial stability is often thought of as the absence of financial instability - such as a banking crisis or even extreme financial market volatility - which can have severe macroeconomic consequences for countries experiencing such episodes. Officials, central banks and academics have proposed a myriad of definitions of financial stability (Box VIII.1).

8.9 As Box VIII.1 elucidates, the concept of financial stability is nebulous, with no commonly accepted definition (Fisher and Lund, 2002). Some have defined it in terms of what it is not: a situation in which financial instability impairs the real economy,

Box VIII.1

Financial Stability - Definitions

Financial stability refers to the conditions in financial markets that harm, or threaten to harm, an economy's performance through their impact on the working of the financial system. ..[Such instability] can also disrupt the operations of particular financial institutions so that they are less able to continue financing the rest of the economy (John Chant, Bank of Canada, 2003).

..define financial stability as an absence of instability…a situation in which economic performance is potentially impaired by fluctuations in the price of financial assets or by an inability of financial institutions to meet their contractual obligations (Andrew Crockett, Bank for International Settlements and Financial Stability Forum, 1997).

The term financial stability broadly describes a steady state in which the financial system efficiently performs its key economic functions, such as allocating resources and spreading risks as well as settling payments, and is able to do so even in the event of shocks, stress situations and periods of profound structural change (Deutsche Bundesbank, 2003).

Financial stability does not have as easy or universally accepted a definition. Nevertheless, there seems to be a broad consensus that financial stability refers to the smooth functioning of the key elements that make up the financial system (Wim Duisenberg, European Central Bank, 2001).

It seems useful to define financial stability by defining its opposite, financial instability. Financial instability [is defined] as a situation characterised by these three basic criteria (1) some important set of financial asset prices seem to have diverged sharply from fundamentals and/or (2) market functioning and credit availability, domestically and perhaps internationally, have been significantly distorted, with the result that (3) aggregate spending deviates (or is likely to deviate) significantly, either below or above, from the economy's ability to produce (Roger Ferguson, Board of Governors of the Federal Reserve, 2003).

Financial stability is the avoidance of financial crisis. A financial crisis is a more modern term for describing what used to be called 'banking panics', 'bank runs' and 'banking collapses'. We use the broader term *financial* because, with today's more sophisticated financial systems, the source of the crisis could be the capital markets or a non-bank financial institution, although almost certainly banks would become involved (Ian Macfarlane, Reserve Bank of Australia, 1999).

In a broad sense…think of financial stability in terms of maintaining confidence in the financial system. Threats to that stability can come from shocks from one sort or another. These can spread through contagion, so that liquidity or the honouring of contracts becomes questioned. And symptoms of financial instability can include volatile and unpredictable changes in prices (Andrew Large, Bank of England, 2003).

Financial instability occurs when shocks to the financial system interfere with information flow so that the financial system can no longer do its job of channelling funds to those with productive investment opportunities (Fredrick Mishkin, Colombia University, 1999).

…[financial stability is] a condition where the financial system is able to withstand shocks without giving way to cumulative processes which impairs the allocation of savings to investment opportunities and the processing of payments in the economy (Tomasso Padoa-Schioppa, European Central Bank, 2003).

On the concept of financial stability…it goes without saying that I agree with the fact that financial stability means stability of financial institutions and stability of markets. I don't have a problem with defining stability of financial institutions as the institutions having the ability to meet all their commitments on a sustainable basis…But the stability of markets is a much more challenging concept…Illiquidity of markets is the ultimate crisis we have to prevent (Jean-Claude Trichet, Bank of France, 1997).

Sources :

1. Houben, A., J.Kakes and S.Schinasi (2004), 'Towards a Framework for Safeguarding Financial Stability', IMF Working Paper 101, Washington DC.
2. Maintaining Financial Stability in a Global Economy (1997), Symposium sponsored by Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming.
3. McFarlane, I. (1999), 'The Stability of the Financial System', R.C.Mills Memorial Lecture, <available at www. rba.gov.au>

owing perhaps to informational asymmetries. Others adopt a macro prudential viewpoint and specify financial stability in terms of limiting risks of significant real output losses associated with episodes of system-wide financial distress (Borio, 2003).

8.10 The challenge of reaching a working definition is exacerbated by difficulties in measurement. Price stability is easily quantifiable in terms of a measure. Financial stability, in contrast, cannot be summarised in a single measure: a financially stable system depends as much on the health of financial institutions as it does on the complex inter-linkages between those institutions and the interplay between the financial system, the real economy and financial markets.

8.11 Apart from definitional issues, there is the issue of instruments. While price stability can be achieved through modulations in short-term interest rates - an instrument under the central bank's control - central banks lack any such single instrument to achieve the objective of financial stability. As a consequence, the instruments and institutional arrangements employed to pursue the financial stability objective are much more varied than for price stability. In most countries, financial stability policy consists of a number of elements designed to improve the resilience of the financial sector to unexpected developments and to respond should they spill over into a financial crisis. These policies include: prudential regulation and supervision, promotion of sound payment and settlement architecture, appropriate corporate governance and accounting standards and a robust legal framework. The nature of these instruments means that they are often difficult to adjust in a timely fashion in response to a shock, an issue which is often complicated by these instruments being under the domain of different authorities. Before a discussion of these policy responses is undertaken, a review of various theories of financial crises would be useful.

8.12 Several strands of thinking have emerged towards the understanding of financial crises. Most of these explanations are, at best, partial; taken in totality, these explanations offer some clues of the causes of financial crises. The basic theories include:

- Debt and financial fragility: Financial crises follow a credit cycle with an initial positive shock provoking rising debt, mispricing of risk by lenders and an asset bubble, which is punctured by a negative shock, leading to a crisis (Kindleberger, 1977).
- Monetarist: Bank failures impact on the economy *via* a reduction in the supply of money. Crises tend to be frequently the consequence of policy errors by monetary authorities generating 'regime shifts' that, unlike the business cycle, are impossible to allow for in advance in risk-pricing (Friedman and Schwartz, 1963).
- Uncertainty: One cannot apply probability analysis to rare and uncertain events such as financial crises and policy regime shift and accordingly, price them correctly. Financial innovations are subject to similar problems when their behaviour in a downturn is not yet experienced. Uncertainty is closely linked to confidence, and helps to explain the frequently disproportionate responses of financial markets in times of stress.
- Disaster myopia: Competitive, incentive-based and psychological mechanisms in the presence of uncertainty lead financial institutions and regulators to underestimate the risk of financial instability, accepting concentrated risk at low capital ratios. This pattern leads to sharp increases in credit rationing when a shock occurs (Guttentag and Herring, 1984).
- Asymmetric information and agency costs: Aspects of the debt contract, which generate market failure due to moral hazard and adverse selection, help to explain the nature of financial instability, *e.g.*, credit tightening as interest rates rise and asset prices fall (Mishkin, 1997) or the tendency of lenders to make high risk loans owing to the shifting of risk linked to agency problems (Allen and Gale, 2000).

Complementing these explanations, it is also possible to include:

- Bank runs: The basic ingredient of crises is panic runs on leveraged institutions such as banks which undertake maturity transformation, generating liquidity crises (Diamond and Dybvig, 1983).
- Herding: Institutions imitate each other in strategies, regardless of the underlying fundamentals; among banks, there may be herding to lend at excessively low interest rates due to inadequate incentives to loan officers to assess credit risk; among institutional investors, herding is a potential cause for price volatility in asset markets driven, for instance, by peer-group performance comparisons (Scharfstein and Stein, 1990).
- Industrial: Effects of changes in entry conditions in financial markets can both encompass and provide a supplementary set of underlying factors and transmission mechanism. For example, entry of new intermediaries leads to deterioration of information for existing players and heightened uncertainty about market dynamics (Davis *et. al.*, 1999).
- Inadequacies in regulation: Such inadequacies may exacerbate the tendency to assume disproportionate risk. Mispriced 'safety nets' assistance generates moral hazard, which if not offset by enhanced prudential regulation may lead to heightened risk taking.

8.13 A list of recent episodes of systemic risk is illustrated in Table 8.1. Although these events seem to be disparate in genesis and manifestation, on a closer look, however, it is possible to discern certain

Table 8.1: Selected Episodes of Financial Instability since 1970

Year	Event	Main feature
1	2	3
1974	Herstatt (Germany)	Bank failure following trading losses
1979-89	US Savings & Loan crisis	Bank failure following loan losses
1987	Stock market crash	Price volatility after shift in expectations
1990-91	Norwegian banking crisis	Bank failure following loan losses
1991-92	Finnish and Swedish banking crises	Bank failure following loan losses
1992-96	Japanese banking crisis	Bank failure following loan losses
1992-93	ERM crises	Price volatility after shift in expectations
1995	Mexican crisis	Price volatility after shift in expectations
1997-98	Asian crises	Price volatility after shift in expectations and bank failure following loan losses
1998	Russian default and LTCM	Collapse of market liquidity and issuance
2000	Argentine banking crisis	Bank runs following collapse of currency board
2000	Turkish banking crisis	Bank failure following loan losses

Source : Davis *et al.* (1999).

common threads running through such crises. This would suggest that financial instability can be broadly categorised into three major categories (Davis, 2003).

8.14 One generic type of instability is centred on bank failures, typically following loan losses or trading losses. Examples include the US thrifts crisis as well as the banking crises in Japan, the Nordic countries and the Asian countries. Most developing/emerging countries have suffered such crises in recent decades (Caprio and Klingebiel, 2003). A second type of financial disorder involves extreme price volatility after a shift in expectations (Davis, 1995). Such crises are distinctive in that they often tend to involve institutional investors as principals and are focused mainly on the consequences for other financial institutions of sharp price changes which result from institutional 'herding' as groups of institutions imitate one another's strategies. Examples include the stock market crash of 1987, the ERM crisis and the Mexican crisis. A third type of turbulence, which is linked to the second, involves collapses of market liquidity and issuance. Again, often involving institutional lending, the distinction with the second type is often largely one whether markets are sufficiently resilient and that these tend to characterise debt and derivatives markets, rather than equity or foreign exchange. Examples include the Long Term Capital Management (LTCM) affair in 1998.

8.15 Whatsoever be the cause of the financial crises, financial instability can pose a severe threat to important macroeconomic objectives such as sustainable output growth and price stability. According to Caprio and Klingebiel (2003), there have been 117 episodes of systemic crises and 51 cases of borderline or non-systemic crises in developed and emerging markets since the late 1970s. Output losses during banking crises have been, on average, over 10 per cent of annual GDP and bank lending is often subdued for years after the crisis (Hoggarth and Reidhill, 2003). Given such large costs, central banks have long had a keen interest in financial stability. Central banks' interest in financial stability also stems from their role in the operation or oversight of payment systems that, in turn, act as the critical 'plumbing' supporting activity in financial markets. Widespread financial instability undermines the role of the financial system in performing the primary functions such as intermediation between savers and borrowers with an efficient pricing of risks and the smooth operation of the payments system. When financial instability rises to a crisis proportion, it often brings in its wake a macroeconomic crisis or a currency crisis or both (Jadhav, 2003). Recognising the interdependence of macroeconomic performance and financial stability, several central bank charters reflect a concern for both macro objectives - price stability and satisfactory economic performance - and financial stability (Table 8.2). While some central banks have at least some implicit reference to financial stability, many have quite explicit references to financial stability.

Table 8.2: Financial Stability as a Central Bank Objective

Bank of Canada	Regulate credit and currency in the best interest of the economic life of the nation, to control and protect the external value of the national monetary unit and to mitigate by its influence fluctuations in the general level of production, trade, prices and employment so far as may be possible within the scope of monetary action, and generally to promote the economic and financial welfare of Canada.
Bank of England	Objectives of the Bank of England shall be (a) to maintain price stability, and (b) subject to that, to support the economic policy of Her Majesty's Government, including its goals for economic growth and employment. Note : A Financial Stability Board has been created under the Chairmanship of Deputy Governor to prioritise potential risks to UK financial stability, judging which warrant follow-up action and reviewing the progress made in mitigating the potential threats.
Bank of Japan	The objective of the Bank of Japan, as the central bank of Japan, is to issue bank notes and to carry out currency and monetary control. In addition…the Bank's objective is to ensure smooth settlement of funds among banks and other financial institutions, thereby contributing to the maintenance of an orderly financial system.
European Central Bank	The primary objective of the ESCB shall be to maintain price stability. Without prejudice to the objective of price stability, it shall support the general economic policies in the Community with a view to contributing to the achievement of the objectives of the Community. The ESCB shall contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system.
Reserve Bank of New Zealand	The primary functions of the Bank is to formulate and implement monetary policy directed to the economic objective of achieving and maintaining stability in the general level of prices. In formulating and implementing monetary policy the Bank shall…have regard to the efficiency and soundness of the financial system.
Riksbank (Bank of Sweden)	The objective of the Riksbank's operations shall be to maintain price stability. In addition, the Riksbank shall promote a safe and efficient payment system.
Danmarks Nationalbank (Denmark)	The overall objectives of Danmarks Nationalbank as an independent and credible institution [among others] are: (a) To ensure a stable krone; (b) to ensure efficient and secure production and distribution of banknotes and coins of high quality, (c) to contribute to efficiency and stability in the payment and clearing systems and in the financial markets, (d) to maintain its financial strength by means of consolidation and risk management
Magyar Nemzeti Bank (National Bank of Hungary)	The primary objective of the MNB shall be to achieve and maintain price stability. The MNB shall promote the stability of the financial system and the development and smooth conduct of policies related to the prudential supervision of the financial system.
De Nederlandsche Bank	The mission of the Nederlandsche Bank is to aim for stability in the financial system and the institutions that make up that system.
Banco de España	The Law of Autonomy stipulates the performance of the following functions [among others] by the Banco de España: (a) the holding and management of currency and precious metal reserves not transferred to the European Central Bank, (b) the promotion of the sound working and stability of the financial system and, without prejudice to the functions of the ECB, of national payment systems.

Source : Ferguson (2002) supplemented by central bank websites.

Asset Prices, Financial Stability and Monetary Policy

8.16 In the context of the involvement of central banks with financial stability, a widely discussed issue has been the 'degree of activism' that central banks should adopt in pursuing this objective. The conventional view is that (i) monetary stability contributes to financial stability as high inflation is one of the main factors creating financial instability in the first place and (ii) monetary and financial stability reinforce each other. Nonetheless, as recent developments suggest, monetary stability need not necessarily lead to financial stability in the short-run although, in the long-run, monetary and financial stability reinforce each other (Issing, 2003).

8.17 In an era of price stability and well-anchored inflation expectations, imbalances in the economy need not show up immediately in overt inflation. Increased central bank credibility is a double-edged sword as it makes it more likely that unsustainable booms could take longer to show up in overt inflation. For instance, unsustainable asset prices artificially boost accounting profits of corporates and thereby mitigate the need for price increases; similarly, large financial gains by

employees can partly substitute for higher wage claims. In an upturn of the business cycle, self-reinforcing processes develop, characterised by rising asset prices and loosening external financial constraints. 'Irrational exuberance' can drive asset prices to unrealistic levels, even as the prices of currently traded goods and services exhibit few signs of inflation (Crockett, 2001). These forces operate in reverse in the contraction phase. In the upswing of the business cycle, financial imbalances, therefore, get built-up. There is, thus, a 'paradox of credibility' (Borio and White, 2003). The role of financial imbalances was brought out strikingly by the recent global slowdown of 2000 which reflected the interplay of unwinding of such financial imbalances in contrast to earlier episodes of slowdowns which were induced by monetary tightening. Of course, financial crises during the 1990s were also partly a reflection of shortcomings of the reform agenda pursued by many developing economies. Issues such as institutional and governance reforms, and macroeconomic fragilities arising from the financial system and capital account of the balance of payments were not fully addressed (Montiel and Serven, 2004).

8.18 For all the above reasons, central banks are now simultaneously preoccupied with both monetary and financial stability. Historically, however, central banks have typically been concerned with one of the two objectives at a point of time but not both together (Crockett, 2004). Given the possibility that monetary stability itself can induce financial instability, a key question is: should monetary policy respond to asset price misalignments so as to contribute more directly to financial stability? While the debate on the issue is yet unresolved, an emerging consensus is that lengthening of monetary policy horizons beyond the usual two-year period, developing early warning indicators of financial imbalances and prudent regulation will be a more appropriate monetary policy response to tackle asset price bubbles and achieve financial stability (Box VIII.2).

8.19 In case of extreme misalignments in asset prices, the central bank could also consider communicating its views to the public which, in turn, could lead market participants to increase their own doubts about the sustainability of asset price bubbles (Issing, *op cit.*). Capital requirements on banks could be increased in line with credit extensions collateralised by assets whose prices have increased (Schwartz, 2002). Finally, a central bank, in case of need, should ensure the integrity of the financial infrastructure - the payments and settlements system - and provide adequate liquidity (Bernanke, 2002). Central banks, therefore, need to pursue a multi-faceted approach towards ensuring financial stability. Illustratively, following the global financial turmoil set off by the Russian debt default in August 1998 and exacerbated by the failure of the hedge-fund LTCM, risk spreads widened sharply, stock prices fell, and liquidity conditions tightened. The US Fed responded by cutting policy interest rates by 75 basis points in three steps. In part, this response was necessitated by a change in economic forecasts but "part of this cautious behaviour reflected the FOMC's concerns about financial instabilities and associated downside risks to the economic forecast" (Ferguson, 2003). Similarly, in the aftermath of September 11, 2001, the U.S. Fed was concerned about maintaining stability in the financial system and it undertook a number of steps to provide adequate liquidity through discount window lending, open market operations (OMOs), waiving of normal overdraft fees on daylight overdrafts and a 50 basis points reduction in the Fed Funds rate.

8.20 At the same time, in view of the growing integration of financial markets around the world, the pursuit of financial stability requires structural changes in the world economic order, beyond national central bank policy-making. In particular, a need has been felt for refinements in international financial architecture (Jadhav, 2003). At the global level, crisis prevention initiatives have prominently centred around strengthened IMF surveillance and include a number of aspects: data dissemination, greater transparency, development of standards and codes, constructive involvement of the private sector, Sovereign Debt Restructuring Mechanism (SDRM) and introduction of facilities like Contingent Credit Line (CCL).

8.21 While the debate on the appropriate monetary policy response to asset prices is still evolving, a number of studies have attempted to examine as to whether central banks, in practice, display any systematic response to asset prices. The Bank of Canada reduces policy rates significantly in response to an appreciation of trade weighted exchange rate, whereas the Reserve Bank of Australia does not respond to changes in any of the asset prices (Smelt, 1997). Evidence for the US indicates that monetary policy responds significantly to stock market movements. A five per cent rise in the S&P 500 index, over a day, increases the likelihood of a 25 basis point tightening by about a half (Rigobon and Sack, 2001). The magnitude of this response is consistent with rough calculations of the impact of stock prices on aggregate demand. Therefore, it appears that the US Fed systematically responds to stock price movements to the extent warranted by their impact on the economy. Per contra, estimates for the US show that 25 basis

Box VIII.2

Monetary Policy and Asset Prices

Asset price misalignments that typically precede and accompany financial instability can profoundly affect consumption and investment decisions, misallocating resources across sectors and over time (Crockett, 2004). In the context of sharp movements in asset prices such as equity and property prices and exchange rates, a protracted debate has emerged on the appropriate response of monetary policy. A dominant view is that a central bank should not respond to changes in asset prices, except in so far as they signal changes in expected inflation (Bernanke and Gertler, 1999). According to Woodford (2003), monetary policy should target only goods prices and not asset prices. Woodford's argument is based on the fact that goods prices are sticky while asset prices are flexible. It is the stickiness in the goods prices as well as wages that leads to deviation of actual output from its natural (potential) level of output. Therefore, monetary policy should aim to stabilise those prices that are infrequently adjusted. Large movements in frequently adjusted prices - such as stock prices - can be allowed and may be even desirable if such large movements make possible greater stability of the sticky prices.

According to the other view, an inflation-targeting central bank might improve macroeconomic performance by adopting a lean-against-the-wind policy (Cecchetti, Genberg and Wadhwani, 2002; Bordo and Jeanne, 2002). Having a transparent reaction function consisting not only of the inflation forecast but also an adjustment to asset price misalignment could potentially make bubbles less likely to occur. Cecchetti *et al.* (*op cit.*) emphasise that they do not advocate that asset prices should be targets for monetary policy, but rather that central banks should react systematically to misalignment. Similarly, Borio and White (*op cit.*) favour a pre-emptive monetary policy response against a build-up of financial imbalances, supported by improved financial regulation and supervision.

A usual argument against monetary policy response to asset price misalignments is that it is difficult to identify bubbles. Although true, same difficulties are inherent in estimation of potential output - a key variable in monetary policy decision-making. Notwithstanding claims of difficulties in identification, it is debatable that extreme cases of stock market bubbles cannot be detected in real time - for instance, the NASDAQ in early 2000 (Cecchetti *et al.*, *op cit*). Moreover, available empirical evidence suggests that bubbles can be identified in real time if a central bank widens its information base to include indicators such as credit aggregates. According to Borio and White (*op cit.*), excessive increases in just two indicators - real asset prices and credit/GDP ratio - contain useful leading information about future systemic banking distress. Real asset prices (when 60 per cent or more above trend) and credit-GDP ratio (4 percentage points or more above trend) individually predict more than 70 per cent of episodes of banking distress. For emerging markets, real exchange rate appreciation is an additional leading indicator. In this context, the European Central Bank's two-pillar approach - where the second pillar is explicitly based on monetary and credit developments - takes into account build-up of financial imbalances. The two-pillar strategy provides warning signals in cases where inflation remains benign but monetary and credit aggregates rise strongly (Issing, *op cit.*).

A related issue of the debate is: whether 25 or 50 basis point hikes in policy rates - the usual size of policy response - are sufficient to counter the sharp increases in stock prices? As Fed Chairman Greenspan has recently noted, a moderate monetary tightening has often been associated with subsequent increases in the level of stock prices. Moreover, the notion that a well-timed incremental tightening could have been calibrated to prevent the late 1990s bubble while preserving economic stability is "almost surely an illusion" and, therefore, the strategy of addressing the bubble's consequences rather than the bubble itself is appropriate (Greenspan, 2004). The prevention of bubble can be arrested only by a sharp increase in interest rates, with adverse implications for the real economy. Nonetheless, central banks are not oblivious of the need of a pre-emptive policy response against future bubbles. Illustratively, the recent tightening of monetary policy by the Bank of England has been partly in response to the movement in housing prices.

In the presence of subdued inflation, another criticism of pre-emptive monetary tightening is that it would be seen as the central bank exceeding its remit. However, as Borio and White (*op cit.*) argue, it was the recognition of the absence of a long-run inflation-output trade-off that has led to clear-cut price stability mandates for central banks. Likewise, a view of economic processes that stresses the role of financial imbalances could promote the necessary intellectual consensus for action.

In brief, although there are arguments against a pre-emptive monetary policy strike to asset price misalignments, there are strong counterarguments when faced with a suspected bubble. There are, of course, difficulties in implementing acceptable solutions. Lengthening of monetary policy horizons, developing early warning indicators of financial imbalances and prudent regulation are considered as apposite central bank responses to asset price bubbles.

points increase in short-term interest rates leads to a decline of about two per cent in stock prices (Rigobon and Sack, 2003). Ehrmann and Fratzscher (2004) report qualitatively similar results: an unexpected 50 basis point increase in the policy rate reduces S&P index by about three per cent on the day of the monetary policy announcement. Individual stocks react in quite a heterogeneous manner. In particular, stocks of

financially constrained firms - those with low cash flows, poor credit ratings - show a higher order of decline, a result consistent with the credit channel of transmission. Overall, the response of equity prices to interest rates appears to be fairly modest and the estimates confirm the earlier observation that monetary policy response would have to be quite aggressive to have any significant effect on asset prices.

8.22 In sum, monetary stability is a necessary but not a sufficient condition for financial stability. Central banks are now therefore pursuing a more pro-active approach in maintaining financial stability. Two issues arise in this context: how does the financial stability objective affect central banks' other policy goals and how is the objective of financial stability perceived by the public? A financial stability objective that is accorded too much weight could, at the margin, impair the conduct of monetary policy (Ferguson, 2002). Monetary policy instruments are, therefore, required to be supplemented with other instruments as safeguarding financial stability is a multi-faceted task requiring action at micro as well as macro levels. For central banks, the macroeconomic levers are the instruments of monetary policy. The levers related to the micro area relate primarily to infrastructure and institutions. These include: the payment and settlement systems, the provision of a safety net for depositors and procedures for resolving crisis, the regulation and supervision of institutions and the formulation of accounting conventions. However, the provision of a safety net for depositors and prudential controls over banks may also have macroeconomic implications, as well as constituting a part of the central bank's armoury of micro levers. A cross-country survey of practices in these areas is discussed in the following paragraphs.

Payment and Settlement System

8.23 Credit and liquidity risks inherent in payment and settlement system have the potential to contribute to systemic problems if not properly managed and controlled. A robust payments and settlement system is essential to maintain integrity of the financial system. Accordingly, central banks tend to have a key role in the oversight of payment and settlement systems. Central bank involvement is greatest in the core inter-bank large value funds transfer systems, which central banks in many cases own or operate. While all central banks have an oversight role, the degree of operational involvement differs widely, largely reflecting the development of their financial systems (Table 8.3).

Table 8.3: Central Bank Involvement in Payment System and Safety Net Provisions

Country	PS	ELA-Market	ELA-Depositories	ESA-Depositories	ELA-Non depositories	ESA-Non depositories	Deposit Insurance
1	2	3	4	5	6	7	8
Industrial Economies							
Australia	Y	Y	Y	N	Y	N	N
Canada	Y	Y	Y	N	N	N	N
Netherlands	Y	Y	Y	N	N	N	Y
New Zealand	Y	Y	Y	N	Y	N	N
Norway	Y	Y	Y	N	Y	N	N
Singapore	Y	Y	Y	N	N	N	N
Sweden	Y	Y	Y	N	Y	N	N
United Kingdom	Y	Y	Y	N	N	N	N
Emerging Economies							
Bulgaria	Y	N	N	N	N	N	N
Czech Republic	Y	Y	Y	N	N	N	N
Hungary	Y	Y	Y	N	N	N	N
Poland	Y	Y	Y	N	N	N	N
Argentina	Y	Y	Y	N	N	N	N
Brazil	Y	Y	Y	N	N	N	N
Chile	Y	Y	Y	Y	N	N	Y
India	**Y**	**Y**	**Y**	**N**	**Y**	**N**	**Y**
Mexico	Y	Y	Y	N	N	N	N
South Africa	Y	Y	Y	N	N	N	N

PS : Payment and settlement system; ELA : Emergency liquidity assistance; ESA - Emergency solvency assistance.
Y : Yes; N : No
Source : Sinclair (2000).

8.24 In industrial economies, central banks have increasingly withdrawn from operational involvement in payment and settlement systems in order to focus on ensuring the maintenance of an effective service and protection against systemic financial risk. For example, Fry *et al*. (1999) found that for industrial countries, operational involvement did not fully reflect strong formal oversight responsibilities, even in the large value funds transfer systems. On the other hand, the oversight responsibilities of central banks generally tend to be more formal in transition and developing economies than in industrial countries, either under the authority of the central bank law and/ or banking laws. Not surprisingly, there is considerably more central bank ownership and operational involvement in transition and developing countries. Fry *et al*. (2000) documented that around 60 per cent of central banks in industrial countries own or part own their country's Real Time Gross Settlement (RTGS) system, compared with 100 per cent in transition and developing economies.

8.25 These differences are not surprising given the relative development of financial systems. In particular, transition economies have been faced with the challenge of building new payment systems and developing competitive market-based financial sectors. Although the starting point may be different in emerging economies, the challenges may be large if the financial sector is relatively closed and the commercial banking sector may not have the resources, skills or incentives to develop new payment and settlement system on their own. Given their concern to reduce risk and promote the efficiency of a country's payment system, central banks in transition and emerging economies often play a prominent role in the development of these systems.

8.26 In the context of payment and settlement system, an emerging issue is the use of electronic money (e-money) and its implications for financial stability. E-money can facilitate the process of transactions for the parties involved (Box VIII.3). Implications of e-money for monetary transmission have been discussed in Chapter VII. This Section briefly touches upon the implications for financial stability. Notwithstanding the recent progress, the use of e-money as a means of payments remains fairly modest, with a notable exception of Singapore (Table 8.4).

8.27 At this point of time, it looks unlikely that demand for e-money will be widespread. Risks of e-money to financial stability could possibly arise from an e-money issuer becoming reckless in its issuances. Excessive issue of private e-money, apart from being inflationary, could lead to a run on the provider and introduce gridlocks into the payment system if private e-money payments are refused. Bailouts by a central bank to preserve financial stability could create moral hazards. Regulation of e-money would, therefore, need to be undertaken to minimise such systemic risks. One possibility is to impose prudential requirements such as capital adequacy, ratings and standards on e-money issuers, akin to the banking system. Another option could be to require e-money issuers to redeem their private e-money for government money in large quantities (Fullenkamp and Nsouli, 2004). At the organisational level,

Box VIII.3
E-Money

E-money is defined as an 'electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transactions, but acting as a prepaid bearer instrument' (European Central Bank, 1998). The main forms of e-money are e-money cash, network money and access products. e-cash includes reloadable electronic purses and multi-purpose stored value cards. Network money defines funds stored in software products that are used for making payments over communication networks like the internet. Access products enable the customers to access their bank accounts and transfer funds.

In most of the developed and developing countries, card-based e-money schemes have been introduced. E-money products are intended to be used as a general, multi-purpose means of payments. The Western European countries have the most mature market for e-money systems, with the largest volume of purchases. In 2003, about 40 per cent of e-money systems in the world were located in Western Europe.

Card based e-money schemes have been successfully launched and gaining gradual acceptance in a number of countries including those in Asia (China, Japan, Korea, Malaysia), Europe (Austria, Denmark, France, Germany, Netherlands, Switzerland) and Australia and Russia. Even in India, progress in this regard is considerable. On the other hand, in highly advanced economies *viz*., the US, the UK and Canada, some of the e-money schemes have been discontinued. In North America, popularity of traditional credit cards for small value payments kept the use of e-money limited. In Central and South America, the use of e-money systems had an early start, but did not have a successful impact. Since 2000, e-money systems in some countries including Mexico, Venezuela and Costa Rica have been discontinued. In contrast, new e-money systems were introduced in Brazil in 2002.

Table 8.4: Relative Importance of Cashless Payment Instruments in Developed Economies

(Per cent of total volume of cashless transactions)

Country	Cheques		Payment by credit/debit cards		Card-based e-money	
	2002	2003	2002	2003	2002	2003
1	2	3	4	5	6	7
Belgium	1.7	..	34.6	..	7.0	..
Canada	23.0	20.8	59.1	60.7	..	..
France	32.0	29.7	31.4	32.8	0.1	0.1
Germany	1.2	1.0	17.5	16.9	0.3	0.3
Hong Kong SAR	69.5	68.8	..	..	..	..
Italy	17.2	15.6	24.7	29.1	Negligible	Negligible
Japan	4.9	..	61.3	..	..	..
Netherlands	Negligible	Negligible	32.7	33.7	2.6	3.1
Singapore	9.6	4.9	11.2	6.3	74.1	85.3
Sweden	0.1	Negligible	51.4	57.6	0.1	..
Switzerland	0.5	0.4	33.5	33.9	2.2	2.0
UK	21.0	18.6	41.2	42.9	..	..
US	49.9	..	41.7	..	..	..

.. Not available.

Source : BIS (2004b).

institutional mechanisms can be designed in order to review policies, practices, measures, and procedures to review e-security regularly. There is also a need to understand threats and dangers and the steps that need to be taken to mitigate the vulnerabilities. In addition, understanding access control systems and methodology, telecommunication and network security, as well as security management practice assume importance (Mohan, 2004d).

Safety Net Provisions

8.28 Almost all central banks accept the possibility of providing emergency liquidity assistance to the market or to individual institutions when failure would lead to systemic effects. Exceptions to this are countries like Bulgaria that operate under currency board arrangements which inhibit last-resort lending (Table 8.3). Some central banks recognise the possibility, at least in principle, of providing emergency liquidity assistance to non-depository institutions (Australia, Denmark, India, New Zealand, Norway, South Korea and Sweden). In practice, however, emergency liquidity support to non-banks is less likely than for banks because they are less likely to be systemic and/or illiquid (Healey, 2001).

8.29 There is also considerable variation in the provision of, and the involvement of central banks in, deposit insurance schemes. In nearly all the industrial countries, there is usually some form of deposit protection scheme operated either by a supervisory agency or a separate body. Transition economies generally have separate entities that operate a deposit insurance scheme. The widest variation in practice is among emerging economies. Some have recently developed deposit insurance schemes (South Africa), or enacted revisions to the earlier scheme (Argentina and Brazil).

Regulation and Supervision

8.30 According to a recent survey of over 150 countries, prudential banking supervision was the responsibility of the central bank in almost three-quarters of the countries (Central Banking Publications, 2004). Furthermore, the most common model of supervisory structure is for the central bank to supervise banks only. Although it is still most common to have separate supervisory agencies for banks, insurance and securities firms, there is an increasing interest in integrating the supervision of different financial sectors. Goodhart *et al.* (1998) have identified several reasons for this:

- The rapid structural change in financial markets spurred by the acceleration in financial innovation.
- The realisation that financial structure in the past has been the result of a series of *ad hoc* and pragmatic policy initiatives raising the question of whether, particularly in the wake of widespread banking crises, a more coherent structure should be instituted.

- The increasing complexity of financial business as evidenced by the emergence of financial conglomerates.
- The increasing demands being placed on regulation and its complexity, in particular, the development of a need for enhanced regulation of 'conduct of business' (covering financial products like pension schemes and insurance offered to consumers).
- The increasing internationalisation of banking, which has implications for the institutional structure of agencies, at both the national and international levels.

8.31 A majority of industrial economies do not have prudential regulation and supervision within the central bank (Table 8.5). An important exception to this is the United States, where the Federal Reserve has the responsibility for banking regulation and supervision, while that of non-banks is with the Office of Thrift Supervision. However, central banks often retain a role, formal or informal, in the design of regulatory framework. Norway was the first country to establish an integrated agency outside the central bank in 1986, followed by Denmark in 1988 and Sweden in 1991. As Taylor and Fleming (1999) point out, there were strong similarities between these countries' economic and financial systems. This consequently produced many similarities in terms of the basic structure and organisation of their integrated regulatory agencies. There was also a common motivation for the move towards an integrated regulator, *viz.*, (a) a desire for more effective supervision of financial conglomerates and (b) to obtain economies of scale in the use of scarce regulatory resources. As regards EMEs, the survey indicates that, in most cases, central banks are primarily responsible for the regulation and supervision of deposit-taking institutions and, in some cases, other financial intermediaries as well (India, Malaysia). Amongst the sample EMEs, two central banks, *viz.* Chile and Mexico do not perform the prudential regulator and supervisor role.

Table 8.5: Central Bank Involvement in Regulation and Supervision

Country	Bank regulation	Bank supervision	Bank business code of conduct	Non-bank regulation	Non-bank supervision
1	2	3	4	5	6
Industrial Economies					
Australia	N	N	N	N	N
Canada	N	N	N	N	N
Netherlands	Y	Y	Y	Y	Y
New Zealand	Y	N	N	N	N
Norway	N	N	N	N	N
Singapore	Y	Y	Y	Y	Y
Sweden	N	N	N	N	N
United Kingdom	N	N	N	N	N
Emerging Economies					
Bulgaria	Y	Y	Y	N	N
Czech Republic	Y	Y	N	N	N
Hungary	N	N	N	N	N
Poland	Y	Y	N	N	N
Argentina	Y	Y	N	N	N
Brazil	Y	Y	Y	N	N
Chile	N	N	N	N	N
India	**Y**	**Y**	**Y**	**Y**	**Y**
Mexico	N	N	N	N	N
South Africa	Y	Y	N	N	N

Y : Yes; N : No.
Source : Sinclair (2000).

8.32 Given the broad range of financial stability functions with respect to regulation and supervision, two issues of interest are: first, should supervision be vested with the central banks and second, whether the supervision of the three major segments[1] of the financial system should be integrated? Perhaps the most strongly emphasised argument in favour of assigning supervisory responsibility to the central bank is that as a bank supervisor, the central bank will have first-hand knowledge of the condition and performance of banks. Illustratively, the Federal Reserve is able to exploit the synergies by retaining supervision with itself (Peek *et al.*, 1999). This, in turn, can help the central bank in identifying and responding to the emergence of systemic problems in a timely manner. Sceptics, however, point to the inherent conflict of interest between supervisory and monetary policy responsibilities. Table 8.6 compares the supervisory role of the central bank in 98 countries. More than three-fourths of the countries assign banking supervision to the central banks, including 66 per cent in which the central bank is the single supervisory authority. Like the United States, a few countries (13 per cent of the total) assign bank supervisory authority to the central bank and at least one other agency. About a fifth of the countries do not assign any bank supervisory responsibilities to the central bank.

[1] These are banking, insurance and securities.

Table 8.6: Supervisory Responsibilities within and outside the Central Bank

Region	Central bank only		Central bank among multiple supervisors	Central bank not a bank supervisor	
1	2		3		4
Africa	Botswana Burundi Egypt Gambia Ghana Kenya	Lesotho Malawi Morocco Nigeria South Africa Zambia	Rwanda		
Americas	Brazil Guatemala Guyana	Jamaica Trinidad & Tobago	Argentina United States	Bolivia Canada Chile El Salvador	Mexico Panama Peru Puerto Rico
Asia/Pacific	Armenia Azerbaijan Bangladesh Bhutan Cambodia China **India** Indonesia Israel Jordan Kazakhstan Kuwait Kyrgyz Rep. Lebanon	Malaysia Maldives Nepal New Zealand Philippines Qatar Saudi Arabia Singapore Sri Lanka Tajikistan Tonga Turkmenistan Vietnam	Taiwan Thailand	Australia Japan Korea	Venezuela
Europe	Albania Bosnia-Herzegovina Bulgaria Croatia Estonia Georgia Greece Ireland Italy Lithuania	Macedonia Cyprus Moldova Netherlands Portugal Romania Russia Slovakia Slovenia Spain	Belarus Czech Republic Germany Hungary Latvia Poland Turkey Yugoslavia	Austria Belgium Denmark Finland France Iceland Luxembourg Sweden Switzerland	
Memo:	66 per cent of countries		13 per cent of countries	21 per cent of countries	

Sample : 98 countries.
Source : Office of the Comptroller of Currency (2002) and Central Banking Publications (2004).

8.33 Table 8.7 presents a broader international comparison of the scope of supervision across 96 countries. In the majority of these countries (61 per cent), the authority responsible for bank supervision is confined solely to the banking industry. However, bank supervisory authorities also supervise securities firms in 11 per cent of the countries and insurance firms in 14 per cent of the countries. In 13 countries, the authority responsible for bank supervision also supervises both insurance and securities firms.

8.34 In the UK, a single agency, the Financial Services Authority (FSA) was created in 1997 by amalgamating ten different supervisory agencies. The move was motivated by a host of factors, salient among them being the growth of conglomerates and the blurring of distinctions between financial services carried out by different types of institutions and a desire for a less costly and more coordinated supervisory structure. Korea and Japan also adopted similar models to the UK by integrating the supervision of banks, insurance and securities into a single agency outside the central

Table 8.7: Scope of Supervision of Central Banks – International Comparison

Region	Banks only		Banks and securities	Banks and insurance	Banks, securities and insurance
1	2		3	4	5
Africa	Botswana Cambodia Kenya	South Africa Nigeria Tunisia		Gambia Malawi Sierra Leone	Zambia
Americas	Argentina Brazil Chile Panama	United States Jamaica Trinidad & Tobago	Guyana Mexico	Canada Ecuador El Salvador Guatemala Paraguay Peru Suriname	Bolivia Uruguay
Asia/Pacific	Armenia Bangladesh Cambodia **India** Indonesia Israel Jordan Kazakhstan Kuwait Lebanon Venezuela Turkey	Maldives Nepal New Zealand Philippines Sri Lanka Tajikistan Taiwan Thailand Tonga Turkmenistan Kyrgyz Rep. Vietnam	Saudi Arabia	Anguilla Malaysia	Australia China Japan Korea Singapore
Europe	Albania Belarus Bosnia-Herzegovina Bulgaria Croatia Czech Republic Estonia Georgia Germany Greece Italy Latvia Liechtenstein Lithuania	Macedonia Netherlands Portugal Romania Russia Slovakia Slovenia Spain	Belgium Cyprus Finland France Hungary Ireland Luxembourg Switzerland	Austria	Denmark Iceland Norway Sweden United Kingdom
Memo:	61 per cent of countries		11 per cent of countries	14 per cent of countries	14 per cent of countries

Sample : 96 countries.

Source : Office of the Comptroller of Currency (2002) and Central Banking Publications (2004).

bank. Even if financial supervision is undertaken by an agency outside the central bank, the central bank cannot ignore financial stability issues. For instance, in the UK, although financial sector supervision has been entrusted to the FSA, the Bank of England remains responsible for the stability of the financial system as a whole. In this context, central banks can contribute to financial stability through: (1) payments system oversight, (2) contingency planning against market disruption, (3) lender of last resort (LOLR), (4) share in procedures for financial regulation and (5) analysis and communication through reports such as Financial Stability Reviews (Goodhart, 2004).

Accounting Standards

8.35 In industrial economies, the role of the central bank in the process of establishing accounting standards is limited. Exceptions to the rule include the Netherlands, New Zealand and Singapore. On the other hand, for most transition economies and several developing countries, central banks play an active role in establishing uniform accounting standards (Table 8.8).

Table 8.8: Central Bank Involvement in Accounting Standards

Country	Establishes/participates in establishing uniform accounting standards
1	2
Industrial Economies	
Australia	N
Canada	N
Netherlands	Y
New Zealand	Y
Norway	N
Singapore	Y
Sweden	N
United Kingdom	N
Emerging Economies	
Bulgaria	Y
Czech Republic	Y
Hungary	N
Poland	Y
Argentina	Y
Brazil	Y
Chile	N
India	**Y**
Mexico	N
South Africa	Y

Y : Yes; N : No.
Source : Sinclair (2000).

Table 8.9: Financial Stability Reports published by Select Central Banks

Central Bank	Name of Document
1	2
Developed Economies	
Australia	Financial Stability Review
European Central Bank	Financial Stability and Supervision (section in Annual Report)
Finland	Financial Stability
France	Financial Stability Review
Germany	Report on the Stability of the German Financial System (section in Monthly Report)
Netherlands	Financial Stability (section in Quarterly Bulletin)
New Zealand	Recent developments in New Zealand's financial stability (section in Quarterly Bulletin)
Norway	Financial Stability Report
Sweden	Financial Stability Report
United Kingdom	Financial Stability Review
Emerging Economies	
Argentina	Financial Stability Bulletin
Brazil	Financial Stability Review
Hungary	Report on Financial Stability
South Africa	Financial Stability Review

Source : Central bank websites.

8.36 The increased concern of central banks with financial stability in recent years is clearly reflected in the publication of reports dedicated to financial stability. In addition, several central banks prepare such information which is published as a part of regular reports (Table 8.9). Central banks publish such financial stability reviews (FSRs) to create public understanding and awareness of what financial stability is and the role that they can play in the process. Such reports also serve as a means of sharing knowledge and information across various departments of central banks that have a bearing on the financial stability function. Notwithstanding these positive aspects, FSRs have their own limitations. A key drawback is that these FSRs are only qualitative in nature and, in contrast to the Inflation Reports, lack robust models. As such, the FSRs lack the quantitative discipline and rigour associated with the Inflation Reports. In part, the absence of suitable models to analyse financial stability issues is the consequence of the usual assumptions made in economic models - complete financial markets, inter-temporal budget constraints and representative agent models. These assumptions rule out default and contagion which are key characteristics of financial instability. Recent theoretical work has, therefore, made efforts to build models that encompass incomplete financial markets, default probability, and heterogeneous agents (Goodhart, 2004).

Regulation and Surveillance of Markets

8.37 There are several aspects of the involvement of central banks in the regulation and surveillance of markets. For instance, the central bank might be involved only in collection and monitoring of information relevant to these markets. Alternatively, the central bank might be consulted in the design of the regulatory framework or even actively involved in the design of the regulatory framework. As another possibility, the central bank might be formally responsible for the implementation of regulation and supervision or it might have no role at all. A cross-country survey of the central involvement in regulation and supervision of financial markets is presented in Table 8.10. Notwithstanding the varied roles the central bank might have, unless there is no role at all, it is presumed that central bank would have some role and accordingly marked as Y (Yes) in Table 8.10. The three markets that are generally the focus of

Table 8.10: Central Bank Involvement in Regulation and Surveillance of Markets

Country	Market				
	Money	Forex	Bond	Equity	Derivatives
1	2	3	4	5	6
Australia	Y	Y	Y	N	Y
Canada	Y	Y	Y	Y	Y
Finland	Y	Y	Y	Y	Y
France	Y	Y	Y	Y	Y
India	**Y**	**Y**	**Y**	**N**	**Y**
Italy	Y	Y	Y	N	Y
Netherlands	Y	Y	Y	N	N
Norway	Y	Y	Y	Y	Y
Sweden	Y	Y	Y	N	Y
Switzerland	Y	Y	Y	Y	Y
UK	Y	Y	Y	Y	Y
USA	Y	Y	Y	Y	Y

Y : Yes; N : No.
Source: Central bank websites.

surveillance by central banks are the money, bond and foreign exchange markets. The money market is the focal point of the implementation of monetary policy and therefore, central banks often exert influence on its development and functioning through the choice of operating procedures, which determines the mechanisms for the provision of liquidity to the system. Central banks are active participants, and overseers of, the foreign exchange market. In case of bond markets, central bank involvement in their surveillance is sometimes underpinned by a fiscal agent role. The role of central banks in the regulation and surveillance of equity market is generally less significant.

8.38 In sum, monetary stability is a necessary but not a sufficient condition for financial stability. While in the long-run, monetary and financial stability reinforce each other, the same need not be the case in the short-run. Several central banks are, therefore, pursuing financial stability as an explicit objective in addition to their price stability objective. Although financial innovations have enabled an improved risk management, their success so far is mainly in dispersing risks at a point in time; their ability to manage risks inter-temporally is still not clear. While pursuing their objective of price stability, central banks can contribute to financial stability through appropriate regulation and supervision, enhancing risk management practices in the financial sector, encouraging improved governance practices and by raising the level of transparency in the financial sector.

II. FINANCIAL STABILITY: THE INDIAN APPROACH

8.39 The Indian economy has witnessed a gradual opening up since the 1990s. Significant and far-reaching reforms were effected in the various sectors of the Indian economy. Consequent to these reforms, the financial system has been transformed from a planned and administered regime to a market-oriented financial system. The external sector has been progressively opened up. Reflecting the policy framework with stress upon attracting non-debt creating stable flows, capital flows to India have been largely stable. At the same time, episodes of volatility have been witnessed with attendant consequences for exchange rate movements. Moreover, the financial sector liberalisation and deregulation has led to emergence of financial conglomerates in the Indian economy with implications for contagion and systemic risks. Finally, in the context of the shift to a system whereby monetary impulses are transmitted through modulations in short-term interest rates, it is important that policy signals are quickly passed onto the market rates of interest such as lending interest rates. The efficacy of this transmission channel depends upon the strength of the balance sheet of financial sector. Consequently, for all these reasons, the issue of financial stability has become much more important than in the erstwhile administered regime.

8.40 Before the onset of reforms in the early 1990s, the Indian financial sector was a Government-dominated system with limited efficiency and too much stability through rigidity. This would suggest that financial stability in India has to be viewed contextually, more so when the sector is graduating towards a market-oriented one, with focus on efficiency and avoiding instabilities. Accordingly, financial stability in India would mean (a) ensuring uninterrupted financial transactions, (b) maintenance of a level of confidence in the financial system amongst all the participants and stakeholders and (c) absence of excess volatility that unduly and adversely affects real economic activity (Reddy, 2004a). Such financial stability has to be particularly ensured when the financial system is undergoing structural changes to promote efficiency.

8.41 Thus, at present, the Reserve Bank simultaneously pursues the objectives of price stability and provision of adequate credit for growth. In addition, financial stability has gradually emerged as

a key consideration in the conduct of monetary policy. The Reserve Bank has followed a three-pronged strategy to maintain financial stability (Jadhav, 2003):

- Maintaining the overall macroeconomic balance, especially through the twin objectives of price stability and growth;
- Enhancing the macro-prudential functioning of institutions and markets; and,
- Strengthening micro-prudential institutional soundness through regulation and supervision.

8.42 Against this brief overview, this Section dwells upon the various initiatives by the Reserve Bank to ensure financial stability in India. The Section starts with the role of monetary policy *per se* in contributing to financial stability in India - contribution to price stability and ensuring orderly conditions in financial markets. This is followed by a discussion of various regulatory and supervisory initiatives to achieve financial stability. In order to place these regulatory and supervisory initiatives in a proper context, a brief overview of the Indian financial sector is followed by the policy framework to promote stability of the financial system. Finally, an evaluation of the performance of various segments of the financial sector is undertaken, especially of the banking sector.

8.43 As discussed in Section I, monetary stability and financial stability complement each other in the long-run. Monetary stability is an important pre-condition for financial stability and, therefore, the most significant contribution that monetary policy can make to financial stability is through maintaining low and stable inflation. Looking at the Indian experience, this pre-condition seems to be in place. In India, price stability has been an abiding objective of monetary policy since Independence. Compared to many other developing economies, the inflation record of India can be considered quite satisfactory although, as discussed in Chapters III and V, the degree of success has varied over time, in line with the evolving monetary-fiscal interface. More recently, since the second half of the 1990s, inflation has been brought down to an average of five per cent per annum compared to an average of around 8-9 per cent per annum in the preceding two and a half decades. The reduction in inflation since the early 1990s has also enabled to stabilise inflation expectations. There is virtually a national consensus that high inflation is not good and that it should be brought down (Reddy, 2004c). Low and stable inflation expectations increase confidence in the domestic financial system and, thereby contribute in an important way to stability of the domestic financial system. By achieving a reasonable degree of monetary stability, the Reserve Bank has created the necessary enabling environment for financial stability. Inflation expectations, *inter alia,* depend upon fiscal prudence. The recently enacted Fiscal Responsibility and Budget Management Act with its envisaged reduction in key deficit indicators is expected to reduce the fiscal dominance over time and, in turn, provide the Reserve Bank further flexibility so as to maintain low and stable inflation. Adherence to these fiscal rules will stabilise inflation expectations and thus contribute to efforts of price stability.

8.44 Second, with the ongoing financial liberalisation, a number of measures have been taken to widen, deepen and integrate various segments of the financial markets. These measures have imparted efficiency to the financial system and are an important pre-requisite for transmission of monetary policy signals to the real sector. At the same time, financial markets are often characterised by herd behaviour and contagion which can be destabilising and lead to overshooting. Indian policy makers have been conscious of the fact that international financial markets act in a strongly pro-cyclical manner in the case of EMEs. The capacity of economic agents in developing economies to manage volatility in all prices, goods or foreign exchange is highly constrained and there is a legitimate role for non-volatility as a public good (Reddy, 2004a). Maintaining orderly conditions in various financial markets is, therefore, important for financial stability. Accordingly, ensuring orderly conditions in the financial markets is an important aspect of the Reserve Bank's approach towards maintaining financial stability. Operating procedures and instruments of monetary policy have evolved over time to meet these objectives. As regards money markets, the liquidity adjustment facility (LAF) has emerged as the main instrument to modulate liquidity in the system. In the context of large capital flows, LAF operations coupled with open market sales played a key role in absorbing liquidity in order to ensure macroeconomic and financial stability. With persistent capital flows, a new facility in the form of Market Stabilisation Bills/Bonds (MSBs) was put in place effective April 2004 (see Chapter IV). The MSS has provided the Reserve Bank greater flexibility in its market operations. A key message of the Indian experience is that a central bank constantly needs to innovate in terms of instruments in order to meet its policy objectives. India's exchange rate policy of focusing on managing volatility with no fixed rate target, while allowing the underlying demand and

supply conditions to determine the exchange rate movements over a period in an orderly way has stood the test of time. Monetary measures supported with market operations in the foreign exchange markets and administrative measures have been employed to maintain stable conditions in the forex markets. A key lesson of the Indian approach is that flexibility and pragmatism are required in the management of exchange rate in developing countries, rather than adherence to strict theoretical rules. Of course, prudent external sector management with a cautious approach to capital account liberalisation has been an important component of macroeconomic policies to ensure financial stability. Safeguards developed over a period of time to limit the contagion include: low current account deficit; comfortable foreign exchange reserves; low level of short-term debt; and absence of asset price inflation or credit boom. These positive features were the result of prudent policies pursued over the years notably, cap on external commercial borrowings with restrictions on end-use, low exposure of banks to real estate and stock market, insulation from large intermediation of overseas capital by the banking sector, close monitoring of off-balance sheet items and tight legislative, regulatory and prudential control over non-bank entities (RBI, 2004).

8.45 Overall, the Reserve Bank's approach is to minimise volatility in the financial markets and, in public policy, minimise knee-jerk reactions, while focusing on price stability and the underlying inflation (Reddy, 2004b). The objective has been to ensure that there are no avoidable uncertainties in policy, while mitigating undue pressures on the functioning of markets without undermining market efficiency. These issues have come to the forefront during 2004 with the upturn in the interest rate cycle. As interest rates fell consistently in recent years, market participants were not fully prepared for the inevitable turn in the interest rate cycle. With the gradual increase in market yields since early 2004, market participants have now begun to get a feel of this interest rate cycle for the first time, even as the Reserve Bank had been continuously highlighting this possibility in its policy pronouncements. Against these developments, the Reserve Bank's endeavour has been to facilitate adaptation to the new environment by working together with the banking system to ensure that the appropriate systems to withstand interest rate cycles are built more consciously.

8.46 The stability of the Indian financial system has been tested on certain occasions, the most recent being in May 2004. A brief discussion of the policy response would be apposite. On May 17, 2004, the stock market witnessed turbulent conditions, caused mainly by political uncertainty after the general elections. External factors such as rising oil prices and apprehensions of rise in international interest rates also contributed to the sudden reversal of market sentiment. In response to these market developments, the Reserve Bank initially intervened in the forex market and once it was realised that there were no spillovers into other markets, maintaining the integrity of the payment and settlement system assumed prominence. Accordingly, the Reserve Bank operated at three different levels. First, settlement banks were informed that in case of liquidity problems, they could access the 'backstop facility' under LAF from the Reserve Bank. Second, a statement was made informing market participants that there was no shortage of liquidity in the system, either in domestic or foreign currency. Finally, this was followed by a statement that carried credibility for the system at large. A Task Force was also constituted for providing clarifications and liquidity assistance. Certain prudential relaxations were provided for a temporary period to market players in the light of market conditions and the same was subsequently restored to normal levels once markets returned to normal functioning. The idea inherent in the Reserve Bank's strategy during this period was to ensure no transmission of panic from equity markets to other markets. Thus, stability in the financial markets was maintained even as the Reserve Bank did not take any view on the equity markets (Reddy, 2004d).

8.47 To sum up, by maintaining relatively low inflation and stabilising inflation expectations, in particular, monetary policy in India has created a conducive environment for financial stability. Second, given the limited capacity of economic agents to manage volatility in developing economies like India, a central bank has a key role to play in maintaining stability in financial markets. In the Indian context, the Reserve Bank has been able to maintain stability in the financial markets through a judicious use of instruments - both existing as well as by developing innovative instruments. The central bank acts as a shock absorber to ensure stability as it manages volatility in the system.

Regulatory and Supervisory Initiatives

8.48 As indicated above, in the pursuit of financial stability, monetary policies need to be supported by

proactive regulatory and supervisory initiatives in regard to the financial sector. In what follows, a brief overview of the Indian financial system is presented followed by a discussion of the various initiatives and an assessment of the health of the financial sector. The financial sector in India is sufficiently deep (Table 8.11). Financial savings have grown steadily in line with developments and liberalisation of the financial sector, reflecting high savings rate (24.2 per cent in 2002-03) and prudent management that has fostered macroeconomic stability.

8.49 The financial sector, which was closed and tightly regulated till the early 1990s, has become open and competitive. The approach towards financial sector reforms has been based on *pancha sutra* or five principles (Reddy, 1998): (a) cautious and appropriate sequencing of reform measures; (b) introduction of norms that are mutually reinforcing; (c) introduction of complementary reforms across sectors (most importantly, monetary, fiscal and external sector); (d) development of financial institutions; and, (e) development of financial markets. The reforms have aimed at enhancing productivity and efficiency of the financial sector, improving the transparency of operations and ensuring that it is capable of withstanding idiosyncratic shocks. Interest rates were gradually liberalised, directed credit allocations were expanded to encompass an extended range of activities, competition was increased in the banking sector and the insurance sector was opened up to private competition. At the same time, the regulatory and supervisory apparatus was strengthened. Salient features of the Indian financial system are briefly discussed below:

- Commercial banks are the most important financial intermediaries, accounting for about 66 per cent of total assets and public sector banks (PSBs) dominate the sector, comprising nearly 47 per cent of the banking system assets. New private and foreign banks, whose activities were limited until the onset of reforms, represent a rising share of the sector, promoting new financial products with strong technological backup[2].
- A large network of regional rural banks (RRBs) and cooperative banks (rural and urban) serves borrowers in rural and urban areas. The RRBs were established under an Act of Parliament with the Central Government, State Governments and sponsor PSBs all taking holdings in them to improve credit delivery in rural areas. The cooperative banks cater to the credit needs of specific communities or groups of people in a region and comprise both rural and urban entities.
- The term-lending institutions are mostly government-owned and have been the traditional providers of long-term project loans. Accounting for approximately six per cent of total assets, these institutions raise funds in capital markets as well as through retail sales of savings instruments. Over the past few years, two such institutions have since transformed into a bank.
- Investment institutions are currently largely in public domain, although the sector has since been opened up to private participation. The Life Insurance Corporation of India has a dominant position in the public sector category.
- Non-life insurance providers - the General Insurance Corporation of India and its four erstwhile subsidiaries - account for two per cent of total financial sector assets.
- State-level institutions - the State Financial Corporations registered under the State Financial Corporations Act, 1951 and the State Industrial Development Corporations (SIDCs) - purvey credit to industries/sectors in different states and account for about 0.8 per cent of total assets[3].
- There are also the Deposit Insurance and Credit Guarantee Corporation (DICGC), a wholly-owned subsidiary of the Reserve Bank providing insurance for deposits with commercial and cooperative banks and the Export Credit

[2] In March 2004, the Government of India issued notification while raising foreign direct investment limit in private sector banks up to a maximum of 74 per cent under the automatic route, including the investments made by foreign institutional investors. According to the Government's notification, foreign banks are permitted to have either branches or subsidiaries only. They may operate in India through one of the three channels, *viz*., (i) branch/es; (ii) wholly-owned subsidiary; or (iii) a subsidiary with aggregate foreign investment up to a maximum of 74 per cent in a private bank.

[3] Other institutions established to meet specific financing needs include Power Finance Corporation (PFC) and Rural Electrification Corporation (REC) (financial assistance to the power sector) and Indian Railway Finance Corporation (IRFC), which is the capital market financing arm of Indian Railways. These institutions have been notified as Public Financial Institutions (PFIs) under the *Companies Act, 1956*. In addition, at the state-level, there exist the North Eastern Development Finance Corporation (extending credit to industry/agricultural concerns in the North Eastern region) and Technical Consultancy Organisations (providing technical inputs for feasibility studies on viability of projects).

Table 8.11: Structure of Indian Financial System, end-March 2004

(Amount in Rupees crore)

Institution	No. of Institutions	Outstanding Asset	Asset (% to total)
1	2	3	4
Financial Sector (A+B)		**3,124,427**	**100**
A. Banking Sector (1+2)		**2,347,337**	**75.1**
1. Commercial banks (a+b)	291	2,045,948	65.5
(a) Scheduled commercial banks	286	2,045,748	65.5
Public sector banks	27	1,471,428	47.1
State Bank group	8	5,49,257	17.6
Nationalised banks	19	9,22,171	29.5
Private sector banks	30	3,67,276	11.8
Old private banks	20	1,20,700	3.9
New private banks	10	2,46,576	7.9
Foreign banks	33	1,36,316	4.4
Regional rural banks	196	70,728	2.3
(b) Non-scheduled commercial banks	5	200	0.01
2. Cooperative banks (a+b)	3111	3,01,589	9.7
(a) Rural cooperative banks	1185	1,78,984	5.7
Short-term structure*	397	1,72,595	5.5
Long-term structure	788	6,389 **	0.2
(b) Urban cooperative banks	1926	1,22,605 **	3.9
of which: Scheduled	55	56,256	1.8
B. The Broader Financial Sector (3 to 7)		**7,77,090**	**24.9**
3. Term lending institutions	8	2,00,089	6.4
IDBI	1	66,921	2.1
IFCI	1	20,293	0.6
EXIM Bank	1	15,552	0.5
NABARD	1	55,889	1.8
NHB	1	13,108	0.4
IIBI	1	3,073	0.1
SIDBI	1	19,327	0.6
IDFC	1	5,926	0.2
4. Investment institutions	7	4,66,306	14.9
UTI[4]	1	57,946	1.9
LIC	1	3,46,119	11.1
GIC	1	16,441	0.5
Former subsidiaries of GIC #	4	45,800	1.5
5. State-level Institutions	46	25,012	0.8
SFCs	18	12,712	0.4
SIDCs	28	12,300	0.4
6. Other Institutions	2	10,477	0.3
DICGC	1	8,740 &*	0.28
ECGC	1	1,737	0.06
7. Non-banking financial companies	892	75,206	2.4
NBFC $	870	37,709	1.2
RNBC	5	20,362	0.7
Primary Dealers	17	17,135	0.5
Memo			
C. Capital Markets (8 to 9)		**1,340,823**	**100**
8. Equity		1,201,207 #*	89
9. Mutual Funds		1,39,616	11
Public		34,624	3
Private		1,04,992	8

Note : Data for rural cooperative banks pertain to end-March 2003; Data on SFCs, SIDCs and ECGC pertain to end-March 2004 and refer to their financial assets only. Figures for NBFCs and RNBCs relate to end-March 2003. For mutual funds, refers to asset under management.

&* Deposit insurance fund.

\# Includes National Insurance Company, New India Assurance, Oriental India Insurance and United India Insurance.

* Excludes Primary Agricultural Credit Societies (PACS).

** Comprising of capital plus reserves plus deposits.

$ Comprises of equipment leasing, hire purchase, investment and loan and other (miscellaneous NBFCs, unregistered and unnotified *Nidhis*) NBFCs.

#* BSE market capitalisation at end-March.

Source : Report on Trend and Progress of Banking in India, 2003-04; Handbook of Statistics on Indian Economy, 2004; Report on Development Banking in India, 2004; Securities and Exchange Board of India, Annual Report, 2004 and Association of Mutual Funds of India website <www. amfiindia.com>

Guarantee Corporation (ECGC), providing guarantee cover to exports. Their share of total financial sector assets approximates 0.3 per cent.

- Non-bank financial companies provide a gamut of services and account for roughly two per cent of financial sector assets. This sector witnessed a rapid growth in the mid 1990s, but consequent upon the introduction of new norms for their registration and functioning, growth has since slowed down and the Reserve Bank has authorised 584 NBFCs to accept/hold public deposits.
- Primary dealers are active players in the Government securities market. Numbering 17, they account for 0.5 per cent of assets. The majority of them are promoted by banks, which largely continue to retain majority stakes in their sponsored primary dealers. In 2003-04, they accounted for 25 per cent of the outright market turnover.
- There are 23 stock exchanges in India, dominated by the two large exchanges: National Stock Exchange of India (NSE) and the Stock Exchange, Mumbai (BSE). The functioning of the stock exchanges has witnessed significant developments after the initiation of reforms in the 1990s. At end-March 2004, market capitalisation was Rs.1,201,207 crore, while turnover aggregated Rs.5,02,620 crore at the BSE; turnover in equity derivatives was also significant at Rs.2,130,610 crore at the NSE.

Policy Measures and Performance

Scheduled Commercial Banks: Policy Initiatives

8.50 The commercial banking sector occupies a central position in systemic stability because of its dominance in the financial system as well as through its crucial payment focus. Strengthening of prudential supervision coupled with the gamut of measures undertaken by the Government/Reserve Bank has significantly improved the health of the sector (Box VIII.4 and Table 8.12). The Reserve Bank's approach to the institution of prudential norms has been one of gradual convergence with international best practices with suitable country specific adaptations. As a result of improvements in the regulatory and supervisory framework, the degree of compliance with Basel *Core Principles* has generally been high, and observed areas

[4] In terms of Unit Trust of India (Transfer of Undertaking and Repeal) Act, 2002, the schemes of Unit Trust of India have been transferred and stand vested in two entities *viz.,* the Administrator of the Specified Undertaking of the Unit Trust of India and the UTI Mutual Fund with effect from February 2003. Consequently, UTI's financial data pertain to the period July-January 2002-03.

Box VIII.4

Prudential Financial Sector Regulation

A number of regulatory bodies are involved in financial stability in India. The Reserve Bank of India (RBI), the Securities and Exchange Board of India (SEBI), the Insurance Regulatory and Development Authority (IRDA), the National Bank for Agriculture and Rural Development (NABARD), the National Housing Bank (NHB) and the Department of Company Affairs (DCA) along with the Ministry of Finance all have an overarching interest in the promotion of financial stability.

The preamble to the Reserve Bank of India, 1934 sets out the objectives of the Reserve Bank as 'to regulate the issue of bank notes and the keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage'. With respect to financial stability, the Reserve Bank is entrusted with the sole responsibility of regulation and supervision of commercial and urban cooperative banks under the Banking Regulation Act, 1949. In addition, the Reserve Bank also regulates and supervises nine select development finance institutions (eight since October 2004 subsequent upon the conversion of IDBI into a scheduled bank), non-banking financial companies and primary dealers. In addition, the Reserve Bank also contributes to financial stability by:

- promoting the sound development of the financial system and
- maintaining orderly conditions in financial markets *via* the promotion of prudent regulation, the development and adoption of new technology, prudential documentation and a robust legal framework.

In its supervisory role, the Reserve Bank carries out both on-site inspection and off-site surveillance and has in recent times, moved towards a risk-based supervisory framework. In 1994, a Board for Financial Supervision (BFS) was constituted under the aegis of the Reserve Bank to exercise 'undivided attention to supervision'. The RBI's supervisory responsibilities were expanded in 1995 to include select development finance institutions and in 1997 to include non-banking financial companies and thereafter in 2001 to include primary dealers. The BFS ensures an integrated approach to supervision of commercial banks, development finance institutions, non-banking financial companies, urban cooperative banks and primary dealers. Illustratively, the Department of Banking Operations and Development regulates the banking sector, while the responsibility of bank supervision rests with the Department of Banking Supervision. Select development finance institutions are regulated and supervised by the Financial Institutions Division. Rural Planning and Credit Department regulates regional rural banks (their supervision rests with the NABARD), the Urban Banks Department regulates and supervises urban cooperative banks, while non-banking financial companies are regulated and supervised by Department of Non-Banking Supervision. Finally, Primary Dealers are regulated and supervised by the Internal Debt Management Department. As part of the Reserve Bank's initiatives in adopting international best practices for monitoring stability of the financial system in India, the Bank has been compiling macroprudential indicators (MPIs) from March 2000 onwards.

In terms of the relationship among the three main regulatory agencies (*i.e.*, Reserve Bank, SEBI and IRDA), earlier there existed no formal arrangement to this effect. In 1999, a High Level Co-ordination Committee on Financial and Capital Markets (HLCCFCM) was constituted, comprising the Governor, Reserve Bank, Chairman, SEBI and Chairman, IRDA along with the Finance Secretary, Government of India to iron out regulatory gaps and overlaps. More recently, the process of coordination among the regulatory agencies has been strengthened with the setting up of a special monitoring system for Systemically Important Financial Intermediaries (SIFIs), defined as (a) a group entity coming under the jurisdiction of specified regulators and having a significant presence (defined in terms of its position in the top 70 per cent of asset /deposit base or turnover) in the respective financial market segment and (b) having operations in at least one more financial market segment. The process has developed (a) a reporting system for SIFIs on financial matters of common interest to the Reserve Bank, SEBI and IRDA; (b) the reporting of intra-group transactions of SIFIs; and (c) the exchange of relevant information among Reserve Bank, SEBI and IRDA. The following actions have been initiated: (i) twenty four conglomerates have been identified and the first report based on the prescribed format is under compilation; (ii) a nodal cell has been established at the Reserve Bank for smooth implementation of the framework.

of weaknesses, primarily with respect to country risk guidelines have been addressed. Consolidated accounting for banks has been introduced along with a system of risk-based supervision (RBS) for intensified monitoring of vulnerabilities. RBS will facilitate allocation of supervisory resources by focusing them on relatively vulnerable banks and in areas in which a bank is relatively more vulnerable. The RBS Manual, customising the international best practices to Indian conditions, has been finalised and the RBS scheme has been extended on a pilot basis to 23 banks. A scheme of Prompt Corrective Action (PCA) was introduced effective December 2002 to undertake 'structured' and 'discretionary' actions against banks exhibiting vulnerabilities in certain prudential/financial parameters.

8.51 In view of banks being 'special', issues of ownership, size and governance have gained importance from the standpoint of financial stability. Banks are special in the sense that being financial intermediaries, they are critical for mobilising public

Table 8.12: Evolution of Prudential Norms for the Banking Sector

Variable	1992-93	1995-96	1999-2000	2001-02	2002-03	2003-04
1	2	3	4	5	6	7
1. CRAR (% of risk weighted asset)						
Domestic banks with international business	4	8	9	9	9	9
Other domestic banks	4	8	9	9	9	9
Foreign banks	8	8	9	9	9	9
2. Non-performing asset (period overdue in quarters)						
Sub-standard assets	4	2	2	2	2	1
Doubtful assets	8	8	8	6	6	4*
3. Provisioning requirements (% of corresponding asset)						
Standard asset **			0.25	0.25	0.25	0.25
Sub-standard asset	10	10	10	10	10	10
Doubtful asset						
Secured portion	20-50	20-50	20-50	20-50	20-50	20-50
Unsecured portion	100	100	100	100	100	100
Loss asset	100	100	100	100	100	100
4. Mark to market (%)	30	40	75	$$	$$	$$

* Effective March 31, 2005; ** On global portfolio basis

\# 20% if doubtful asset (DA) = 1 year; 30% if DA of 1-3 years and 50% if DA>3 years.

$$ Revised investment classification norms effective half-year ended September 30, 2000 required banks to classify the portfolio (including SLR and non-SLR securities) into three categories: Held to Maturity (HTM), Available for Sale (AFS) and Held for Trading (HFT). HTM was not to exceed 25 per cent of banks' total investments.

savings and for deploying them to provide safety and return to the savers. For an emerging economy like India, there is also much less tolerance for downside risks among depositors many of whom place their entire savings in the banks. Hence, there is a more onerous responsibility on the regulator (Mohan, 2004b). Accordingly, in July 2004, the Reserve Bank issued draft guidelines on ownership for discussion and feedback, which are in consonance with the regulatory regimes in major countries. The objective of these guidelines is to have a regulatory road map for ownership and governance in private sector banks in the interest of depositors and financial stability. The draft guidelines envisage diversified ownership and restrictions on cross-holding of banks.

8.52 Safety and soundness in the banking system can be strengthened by market discipline through enhanced transparency in bank's disclosures to the public. Accordingly, the Reserve Bank has decided to disclose the penalties imposed by it on banks. Effective November 1, 2004, the Reserve Bank would issue a press release giving details of the circumstances under which the penalty is imposed on a bank and would also place the communication on the imposition of penalty to the bank in public domain.

8.53 With liberalisation, financial conglomerates are emerging. The Reserve Bank has, therefore, focused on consolidated supervision. Banks have been advised to prepare and disclose consolidated financial statements and prepare consolidated prudential reports. The inter-regulatory coordination has also been streamlined with the establishment of a monitoring system in respect of Systemically Important Financial Intermediaries (SIFIs), coupled with the establishment of three Standing Technical Committees constituted by the High Level Coordination Committee on Financial and Capital Markets (HLCCFCM) to provide a more focused inter-agency forum for sharing of information and intelligence. The reporting framework under SIFI would (a) capture intra-group transactions and exposures among group entities within the identified financial conglomerate and large exposures of the group; (b) track any unusual movement in respect of intra-group transactions manifested in major markets and (c) track any direct/ indirect cross-linkages amongst group entities. Individual group transactions beyond threshold levels (Rs.1 crore for fund based transactions and Rs.10 crore for others) would be incorporated in the reporting format.

8.54 In the context of financial stability, both crisis prevention and crisis management and resolution assume importance. In this respect, availability of the lender-of-last-resort facility can play an important role. In India, liquidity adjustment facility (LAF) has evolved as an effective mechanism for absorbing and/or injecting liquidity on a day-to-day basis in a more flexible manner. Nevertheless, in some very rare and unusual circumstances, a situation may arise when a bank faces a sudden and unforeseen liquidity problem particularly outside the normal LAF auction timings and on days on which such auctions are not held. In such exceptional and unforeseen circumstances, the Reserve Bank has indicated that, at its discretion, it may extend liquidity support to such a bank if the said bank is otherwise financially sound, and after taking into account other relevant factors. The liquidity support in such exceptional circumstances will be made available only for a minimum number of days required to overcome the unexpected liquidity pressure. Such liquidity support will be available against eligible securities with adequate margin and other conditions as the Reserve Bank may consider appropriate.

8.55 A related issue is approach towards treatment of insolvent banks. Rather than closing them down, policymakers in India have shown a preference to merge such banks with healthy public sector banks. As regards concerns that such an approach may give rise to a moral hazard problem, two issues need consideration. First, commercial banks are the most dominant and systemically important segment of the financial system. Second, over 70 per cent of the bank depositors in India are small depositors. Therefore, systemic concerns coupled with the necessity to safeguard the interest of such depositors have been paramount in the minds of policy makers while dealing with insolvent banks (Mohan, 2004c).

Scheduled Commercial Banks: Performance

8.56 Since the reforms began in the early 1990s, financial performance, especially of public sector banks, has gradually improved. Illustratively, the return on assets (RoA) of public sector banks has improved markedly over the last few years, to reach 1.1 per cent of total assets in 2003-04 (Table 8.13). Operating expenses have also been by and large contained. Most other bank groups also witnessed similar improvements, although provisioning levels for old private banks have declined. Since the initiation of reforms, the financial health as well as efficiency of the public sector banks has closely matched and for several such banks, even surpassed their private sector and foreign counterparts. The competitive pressures induced by the new private sector and foreign banks has re-energised the Indian banking sector as a whole: new technology is now the norm, new products are being introduced continuously, and new business practices have become common place (Mohan, 2004c).

8.57 Regarding asset quality, the ratio of gross non-performing loans (NPL) to total loans which was at a high of 15.7 per cent for SCBs at end-March 1997 witnessed a marked decline to 7.2 per cent at end-March 2004. Net NPLs also witnessed a significant decline, driven by the improvements in loan loss provisioning, which comprises over half of the total provisions and contingencies. At the same time, in view of the impending Basel II with its focus on operational and market risks, in addition to credit risks, banks have improved their capital adequacy ratio. The overall capital adequacy ratio of SCBs at end-March 2004 was 12.9 per cent; for most banks, the ratio was higher than this figure, as against the regulatory requirement of nine per cent (Table 8.14). All banks (except one), including the systemically important banks, satisfy the regulatory

Table 8.13: Indicators of Financial Performance of the Banking Sector

(per cent to total asset)

Bank Group	Operating Expenses			Provisioning expenses			Net interest margin			Return on asset		
	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04
1	2	3	4	5	6	7	8	9	10	11	12	13
Public sector banks	2.29	2.25	2.20	1.16	1.36	1.56	2.73	2.91	2.97	0.72	0.96	1.12
Private sector banks	1.44	1.99	2.02	1.07	1.44	1.29	1.58	1.97	2.18	0.66	1.00	0.95
Old private banks	2.07	2.05	1.97	1.62	1.50	1.45	2.39	2.47	2.60	1.08	1.17	1.20
New private banks	1.10	1.96	2.04	0.78	1.41	1.21	1.15	1.70	1.98	0.44	0.90	0.83
Foreign banks	3.00	2.79	2.75	1.78	1.63	2.01	3.22	3.35	3.46	1.32	1.56	1.65
Scheduled commercial banks	**2.19**	**2.24**	**2.20**	**1.19**	**1.39**	**1.54**	**2.57**	**2.77**	**2.86**	**0.75**	**1.01**	**1.13**

Source : Reserve Bank of India.

Table 8.14: Soundness Indicators of the Banking Sector in India

(per cent)

Bank Group	Capital Adequacy Ratio			NPL/Total Loans			Provisions/NPL			Capital/Asset		
	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04
1	2	3	4	5	6	7	8	9	10	11	12	13
Public sector banks	11.8	12.6	13.2	11.1	9.4	8.1	43.9	47.2	57.5	5.3	5.6	5.8
Private sector banks												
Old private banks	12.5	12.8	13.7	11.0	8.9	7.7	31.4	35.8	47.1	6.3	6.8	6.6
New private banks	11.6	11.3	10.6	8.9	7.6	4.8	45.3	42.1	53.4	8.6	7.9	6.8
Foreign banks	12.9	15.2	15.0	5.4	5.2	4.9	57.2	58.9	61.9	8.9	10.9	10.6
Scheduled commercial banks	**11.9**	**12.7**	**12.9**	**10.4**	**8.8**	**7.3**	**43.7**	**46.4**	**56.6**	**6.0**	**6.3**	**6.3**

Source : Reserve Bank of India (various years).

capital adequacy requirements[5]. Only one bank had capital adequacy ratio below the regulatory minimum at end-March 2004, but its share in total banking sector assets was less than 0.5 per cent. Notwithstanding definitional differences, the capital adequacy ratio of the Indian banks is broadly comparable with the international levels. However, emerging markets with a high quantum of NPL also tend to have higher provisions. Finally, the capital to asset ratio of banks is also in consonance with international levels (Table 8.15 and Chart VIII.1).

8.58 Since the 1980s, the Government has injected funds towards strengthening the capital base of nationalised banks. There appear to be three distinct phases of recapitalisation: phase I (regular and general) covering the period 1984-85 to 1992-93 when all nationalised banks were recapitalised without any pre-set norm; phase II (pre-designed under a recovery programme) covering the period 1993-1995, when financial sector reforms were given a big push and recapitalisation of all nationalised banks had to be accorded priority; and, phase III (case-by-case basis)

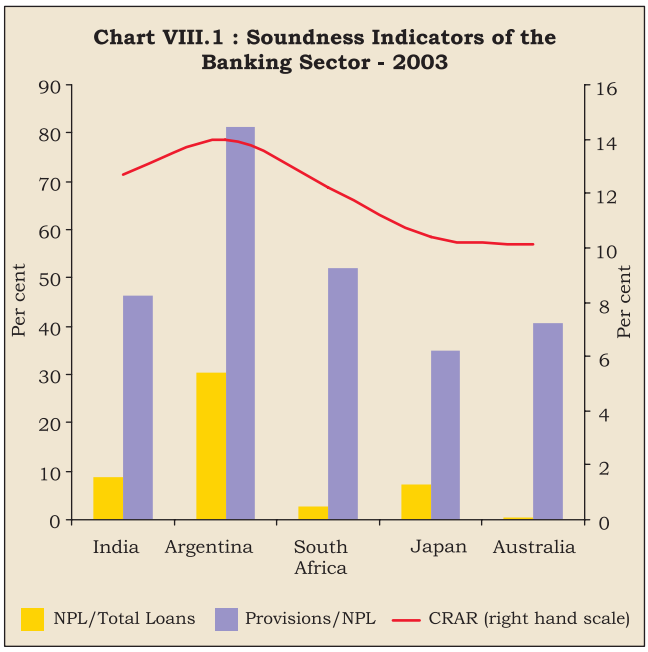
Table 8.15: Soundness Indicators of the Banking Sector - International Comparison

(per cent)

Year	Capital Adequacy Ratio			NPL/Total Loans			Provisions/NPL			Capital/asset		
	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04
1	2	3	4	5	6	7	8	9	10	11	12	13
Developed economies												
US	12.8	12.8	12.8	1.5	1.2	1.1	127.2	145.8	156.2	9.2	9.1	9.2
UK	12.2	12.5	..	2.6	2.2	..	72.3	..	..	6.7	6.8	..
Japan	10.9	10.4	..	8.9	7.2	..	31.6	34.9	..	3.0	..	..
Canada	12.2	13.3	13.3	1.6	1.2	1.0	41.1	43.5	46.2	4.6	4.7	4.7
Australia	9.9	10.1	10.1	0.6	0.4	0.4	36.5	40.8	39.7	6.3	5.8	5.9
Emerging economies												
Argentina	..	14.0	14.0	37.4	30.5	27.7	73.3	81.2	83.8	13.9	12.2	11.5
Brazil	16.7	18.9	..	5.3	4.4	..	143.5	165.6	..	13.5	16.2	..
Mexico	15.5	14.2	14.5	4.6	3.2	3.2	138.1	167.1	167.4	11.1	11.4	11.5
Korea	10.5	10.5	..	1.9	2.6	..	109.4	..	..	4.0	4.1	..
India	**11.9**	**12.7**	**12.9**	**10.4**	**8.8**	**7.3**	**43.7**	**46.4**	**56.6**	**6.0**	**6.3**	**6.3**
South Africa	12.6	12.2	12.7	3.3	2.5	2.3	42.9	52.0	..	8.2	7.0	6.9

Source: RBI and Global Financial Stability Report, IMF (2004).

[5] In order to ensure smooth transition to Basel II norms, the Annual Policy Statement 2004-05 proposed to phase the implementation of capital charge for market risk in respect of their trading book exposures (including derivatives) by March 31, 2005 and banks would be required to maintain capital charge in respect of the securities included under the 'available for sale' category by March 31, 2006.



covering the post-1995 period wherein Government, as the owner of banks, had to improve their capital position to the stipulated levels (Mathur, 2002). This also included years (2000-01 and 2003-04) when no capital injection was provided to the nationalised banks. Several banks have since returned substantial amount of capital back to the Government. The total recapitalisation till end-March 2004 aggregated Rs.22,516 crore, equivalent to roughly one per cent of GDP at current prices during 2003-04 (Table 8.16). Around the same time, measures were undertaken to broaden the banks' capital base. The Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970/1980 and the State Bank of India Act, 1955 were amended to allow banks to raise capital not exceeding 49 per cent of their equity. Equity sales in the market aggregating over Rs.8,000 crore have been made by the PSBs, with several banks approaching the market twice. Over the period 1993-2004, as many as 17 PSBs have accessed the capital market; their divestment presently ranges from 57 - 75 per cent.

8.59 An assessment of the key performance indicators suggests that there is still room for further improvement. First, there is headroom to improve the capital cushion in terms of Tier-I capital, in order to build up a cushion against market, operational and other non-measured risks. Second, notwithstanding improvement in credit quality, NPLs at Rs.64,786 crore remain high with gross NPL/gross advances at 7.2 per cent at end-March 2004[6]. Third, most emerging markets with high quantum of sticky assets also have high 'coverage' (*i.e.*, provisions/NPL). Despite the improvements in 'coverage' by Indian banks over the last few years, it remains low compared to international standards. Some significant recoveries have been effected under the SARFAESI Act, 2002 (Rs.1,748 crore at end-June 2004) and other accompanying measures (Rs.18,899 crore)[7] .

8.60 On the positive side, first, loan classification norms in India are, at present, on par with international best practices, so that the decline in NPL has occurred despite the gradual switchover to more stringent norms.

Table 8.16: Recapitalisation and Return of Capital by Nationalised Banks

(Rupees crore)

Year	Amount recapitalised	Amount returned to the Government	Amount written off	Amount raised from the capital market	*Memo*: Dividend paid to Government
1	2	3	4	5	6
Up to 1992-93	4,000	..	..	..	187#
1993-94 to 1994-95	10,987*	..	..	2,472	18
1995-96 to 2003-04	7,529	1,303	8,680	5,752	3,048**
Total	**22,516**	**1,303**	**8,680**	**8,224**	**3,253**

* including Rs.925 crore as part of Tier II capital.
** till end-March 2003; # 1990-91 to 1992-93.

Source: RBI and Comptroller and Auditor General of India supplemented by Union Government (Finance Accounts).

6 Using a dynamic panel framework to examine the determinants of problem loans in state-owned banks in India, Das and Ghosh (2003) find that at the macro level, GDP growth and at the micro level, real loan growth, operating expenses and bank size as the factors affecting problem loans.

7 These included selling of assets to Asset Reconstruction Company of India Ltd. (Rs.9,631 crore), recoveries under Debt Recovery Tribunal (Rs.7,845 crore) and recoveries under compromise settlement (Rs.1,095 crore) and *Lok Adalats* (Rs. 328 crore).

Second, the difference between gross and net NPL has gradually narrowed, reflecting the improved loan loss provisions by the banking sector, despite the differential provisioning levels across bank groups[8]. Third, profitability of the banking sector has improved in recent years, with return on assets trending at around one per cent, a figure comparable with international levels (Table 8.17). A part of this high profitability level was the result of high trading incomes in a soft interest regime. The significant improvement in non-interest income notwithstanding, its share in total income for PSBs is still around 20 per cent, compared with about 25 per cent for foreign banks.

8.61 Another notable feature has been that banks' exposure limits in India have gradually been brought on par with international standards. Effective March 31, 2002, the exposure ceiling is computed in relation to total capital as defined under capital adequacy standards (Tier-I plus Tier-II) and includes credit exposure (funded and non-funded credit limits) and investment exposure (underwriting and similar commitments). The exposure limits for single borrowers, at present, stand at 15 per cent and that for group borrowers at 40 per cent; the latter is extendible by an additional 10 per cent in case of financing infrastructure projects (Table 8.18).

8.62 Banks foreign exchange exposure is limited by position limits, which in most cases, limit a bank's open position to 15 per cent of Tier I capital. Foreign exchange-related credit risk is limited and the magnitude of foreign currency lending is small (around 5 per cent of gross advances at end-March 2004).

Table 8.17: Return on Assets – Cross-Country Comparison

(per cent)

Country	2001-02	2002-03	2003-04
1	2	3	4
Developed economies			
US	1.3	1.4	1.4
UK	0.9	1.1	..
Japan	-0.7	-0.6	..
Canada	0.4	0.7	..
Australia	1.2	1.1	..
Emerging economies			
Argentina	-9.7	-2.5	-3.2
Brazil	1.9	1.6	..
Mexico	-1.1	1.7	1.7
India	**0.8**	**1.0**	**1.1**
Philippines	0.8	1.1	1.1
Korea	0.6	0.1	..
South Africa	0.4	0.8	1.2

Source : RBI and Global Financial Stability Report (2004).

Table 8.18: Cross-Country Limits for Loan Exposure to Single Borrower

Country	Per cent of capital
1	2
Chile	5
China, Colombia, Mexico	10
Argentina, India, Israel, Korea, United States	15
Brazil, Hong Kong, Hungary, Japan, Malaysia, Philippines, Poland, Russia, Singapore, Thailand	25
Australia	30

For United States, 10-25% for state-chartered banks; For Thailand as per cent of tier-I capital.

Source: Hawkins and Turner (1999) and Morris (2001).

8.63 Interest rate risk could be important in the event of a large shock. The 'gap' method estimates indicate that an increase of 200 basis points in interest rate is likely to have a positive impact of 4.9 per cent on banks' net interest income, with the largest impact being on PSBs (RBI, 2003). To safeguard banks' investment portfolio against adverse movements in interest rate risk, the Reserve Bank advised banks to build up an Investment Fluctuation Reserve (IFR) of a minimum of five per cent of investments under 'Available for Sale' (AFS) and 'Held for Trading' (HFT) categories, within a period of five years (*i.e.*, by end-March 2006) beginning end-March 2002. At end-March 2004, 20 PSBs had build up IFR of three per cent and above. Bank group-wise, the IFR ratio was the highest for PSBs (3.1 per cent) and the lowest for new private banks (2.3 per cent).

8.64 Banks exposure to sensitive sectors (capital market, real estate and commodities) remains low (Table 8.19). While public sector banks have negligible exposure to the equity market, it remains slightly higher for new private banks. The vulnerability on this count appears to be limited. The buoyancy in the housing market has increased banks' exposure to real estate: at 1.6 per cent of total loans in 2003-04, this, however, is within the overall cap of 5 per cent to sensitive sectors[9]. Nonetheless, banks need to be on guard against rise in loans to the housing sector. Cross-country evidence suggests that (a) housing

[8] In June 2004, the Reserve Bank introduced graded higher provisioning on the secured portion of NPAs as on March 31, 2004, ranging from 60 per cent to 100 per cent over a period of three years in a phased manner, with effect from March 31, 2005. However, in respect of all advances classified as 'doubtful for more than three years' on or after April 1, 2004, the provisioning requirement would be 100 per cent. The provisioning requirement for unsecured portion of NPAs under the above category would be 100 per cent as hitherto.

[9] As a temporary measure, the Reserve Bank has increased the risk weight on housing loans from 50 per cent to 75 per cent as a risk containment measure.

Table 8.19: Banks' Exposure to Sensitive Sectors

(Rupees crore)

Bank Group	2001-02			2002-03			2003-04		
	CM	RE	Comm.	CM	RE	Comm.	CM	RE	Comm.
1	2	3	4	5	6	7	8	9	10
Public sector banks	1,299	6,044	6,235	1,032	7,988	6,111	1,199	8,558	6,657
	(0.3)	(1.3)	(1.3)	(0.2)	(1.5)	(1.1)	(0.2)	(1.4)	(1.1)
Old private banks	258	1,122	1,328	207	1,067	1,327	280	1,231	1,490
	(0.6)	(2.7)	(3.1)	(0.4)	(2.2)	(2.7)	(0.5)	(2.2)	(2.7)
New private banks	1,026	1,208	900	660	2,702	1,062	823	3,270	1,593
	(1.4)	(1.6)	(1.2)	(0.7)	(3.0)	(1.2)	(0.7)	(2.8)	(1.4)
Foreign banks	499	637	265	585	708	235	1,032	1,111	212
	(1.0)	(1.3)	(0.6)	(1.1)	(1.4)	(0.5)	(1.7)	(1.8)	(0.4)
Scheduled commercial banks	**3,082**	**9,012**	**8,727**	**2,484**	**12,464**	**8,735**	**3,334**	**14,170**	**9,952**
	(0.5)	**(1.4)**	**(1.4)**	**(0.3)**	**(1.7)**	**(1.2)**	**(0.4)**	**(1.6)**	**(1.2)**

CM : Capital market; RE : Real estate; Comm. : Commodities.

Note : Figures in brackets are per cent to total advances of concerned bank group.

Source : Reserve Bank of India.

price peaks tend to follow equity price peaks with a lag of around one year, and (b) the feedback from property prices to credit growth is strongest in countries with a greater prevalence of variable rate mortgages. This indicates a possibility of mutually reinforcing imbalances in the real estate market and the financial sector, with implications for financial stability (Tsatsaronis and Zhu, 2004; Borio and McGuire, 2004).

8.65 Banks have ample liquidity in view of their large holdings of Government securities - at around 41 per cent of their net demand and time liabilities at end-March 2004 - well in excess of the statutory requirement of 25 per cent - and predominance of stable deposits as a core source of funding. Among the major bank groups, foreign banks seem to rely more on borrowed funds than the other three groups. Funding volatility ratio[10] suggests that the dependence of the Indian banking sector on volatile liabilities to finance their assets is relatively limited (Table 8.20 and Chart VIII.2).

Regional Rural Banks and Cooperative Banking Sector

8.66 Notwithstanding their low profitability and relatively high non-performing assets, the regional rural banks (RRBs) and cooperative banking segment appears to present minimal risk, owing to their small size (Tables 8.21). The Government had recapitalised 187 RRBs to the tune of Rs.2,188 crore to shore up their capital base. Several constraints, both at the institutional level (inappropriate implementation of policy programmes, governance structures) as well as at the field level (inadequate infrastructure, staff motivation) have acted as impediments on the financial performance of the RRBs (Bhatt and Thorat,

Table 8.20: Commercial Bank Funding Volatility Ratios

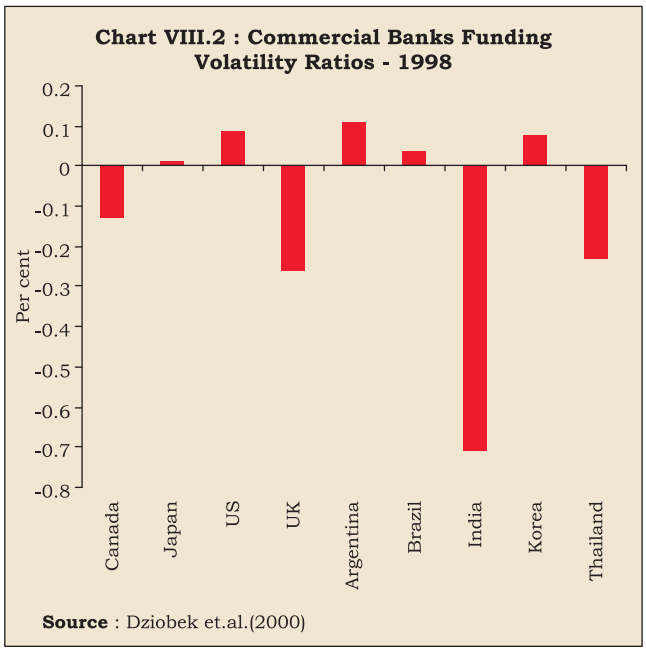
Bank Group	2002-03	2003-04
1	2	3
Public sector banks	-0.13	-0.13
Private sector banks	-0.16	-0.10
Old private banks	-0.23	-0.25
New private banks	-0.14	-0.08
Foreign banks	-0.04	-0.02
Scheduled commercial banks	**-0.11**	**-0.09**

Figures for 2002-03 and 2003-04 for India are calculated as per the following formula:

FVR=[(VL-LA)/(TA-LA)] where VL=volatile liabilities (savings and demand deposits), TA=total asset (on balance sheet *plus* off-balance sheet asset) and LA = liquid asset (cash in hand and balances with RBI *plus* balances with banks and money at call and short notice *plus* investments under AFS and HFT categories taken together).

Source : Reserve Bank of India.

[10] The funding volatility ratio (FVR) is calculated as the ratio of total borrowed funds net of liquid assets to total assets net of liquid assets. It measures the extent to which banks rely on volatile liabilities to finance their assets. A FVR<0 implies volatile liabilities are more than fully covered by liquid assets and reverse for FVR>0. A FVR=0 implies volatile liabilities are fully covered by liquid assets. The smaller the ratio, the better the liquidity profile (Dziobek *et al.*, 2000).



2001). The Union Budget 2004-05 has made the sponsor banks 'squarely accountable' for the performance of RRBs under their control (Government of India, 2004). As regards the scheduled urban cooperative banks (UCBs), which account for a major portion of the cooperative sector, the Reserve Bank undertook a series of policy initiatives, including subjecting these banks to CRAR discipline (the same CRAR as applicable for commercial banks for scheduled UCBs and nine per cent for non-scheduled UCBs, effective March 31, 2004), introducing a system of gradation of UCBs based on financial/prudential parameters for initiating prompt corrective action, 90-day norm for loan impairment (excluding gold loans and small loans) and enhanced disclosures in their balance sheets (effective March 31, 2003) for UCBs with at least Rs.100 crore of deposits. The rural cooperative banking is also plagued by low profitability and high non-performing loans (Table 8.22). As regards the long-term rural cooperative credit structure, which makes a major contribution to the capital formation in agriculture through investment credit, it lacks a sound appraisal system, effective monitoring

Table 8.21: Performance Indicators of Regional Rural Banks

(Amount in Rupees crore, ratios in per cent)

Year	2000-01	2001-02	2002-03	2003-04
1	2	3	4	5
Profit-making RRBs (No.)	170	167	156	163
Net profit /total asset (%)	1.2	1.1	0.8	1.1
Non-performing loan/ total loan (%)	18.8	16.1	14.4	..
Recovery (%)	70.6	71.5	73.5	..

Source: Reserve Bank of India and NABARD.

Table 8.22: Financial Position of Co-operative Banks

(Amount in Rupees crore, ratios in per cent)

Item	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04
1	2	3	4	5	6	7
	Urban cooperative banks			*of which* **Scheduled urban cooperative banks**		
Non-performing loans*	13,706 (21.9)	12,509 (19.0)	11,922 (17.6)	6,968 (29.9)	6,927 (30.2)	6,892 (28.8)
Net profit/total asset (%)	..	..	..	-0.9	-1.1	0.6
	Rural cooperative banks (short-term structure)					
	State cooperative banks			District central cooperative banks		
	2000-01	2001-02	2002-03	2000-01	2001-02	2002-03
Net profit/total asset (%)	0.4	0.3	0.9	0.06	-0.03	-0.1
Non-performing loan/total loan (%)	12.7	13.5	17.6	18.3	22.2	19.7
Recovery to Demand (%)**	82	82	79	67	66	61
	Rural cooperative banks (long-term structure)					
	State cooperative agriculture and rural development banks			Primary cooperative agriculture and rural development banks		
	2000-01	2001-02	2002-03	2000-01	2001-02	2002-03
Net profit	-39	-94	-102	-116	-247	-276
Non-performing loan/total loan (%)	20.5	18.5	21.1	24.3	30.3	33.1
Recovery to Demand (%)**	58	55	49	53	48	44

* Number of reporting banks varies from year to year. Figures in brackets are percentage to total loans.
**As on June 30; data for 2003 are provisional.
Source : RBI and NABARD.

mechanism and proper loan policies and procedures (NABARD, 2004). The Union Budget 2004-05 proposed the appointment of a Task Force to examine the reforms required in the cooperative banking segment including the appropriate regulatory regime. Additionally, the Budget also provided an amount of Rs.800 crore as grants through NABARD for providing incentives to States and cooperative institutions to adopt reform measures for strengthening the cooperative credit structure (Government of India, 2004).

Development Finance Institutions

8.67 Development Finance Institutions (DFIs) were established in the 1950s with the objective of providing medium to long-term project finance to industry. The absence of a long-term debt market to provide risk capital to industry coupled with the short-term asset liability profile of banks meant that DFIs emerged as an ideal vehicle to fund long-term industrial projects. On the supply side, DFIs had recourse to cheap credit from the Reserve Bank and with limited competition from banks on project finance on the demand side, this ensured them a comfortable spread. Post-reforms, DFIs have been significantly impacted upon on both the supply and demand sides. The drying up of long-term concessional resources has meant that they had to access the market for resources at competitive rates, putting pressure on their margins. On the supply side likewise, the entry of banks into project financing has intensified the competition for DFIs. Over the past several years, DFIs have accumulated substantial NPLs. A rapid expansion of loans has been accompanied by a commensurate increase in net NPLs (Table 8.23). Additionally, since DFIs raise resources with short maturities to fund long gestation projects, their loan portfolio might also entail a term mismatch.

8.68 The concentrated portfolio of DFIs also exposes them to sector-specific vulnerabilities. In view of the slowdown in industrial performance during the last few years and the restructuring and repositioning of several industries, which weigh heavily in the portfolio of DFIs, their asset quality could come under pressure (Table 8.24).

Table 8.23: Loan Performance of Development Finance Institutions

Item	1997-98	1999-2000	2002-03	2003-04
1	2	3	4	5
Net NPL				
IDBI	16.9	18.3	12.6	21.5
IFCI	20.3	-3.0	54.5	-35.4
IIBI	10.4	37.1	51.9	-2.3
SIDBI	-14.1	2.1	23.8	-52.2
TFCI	..	21.7	-3.2	-5.3
NPL/Net Loan (%)				
IDBI	10.9	13.4	15.8	21.1
IFCI	13.9	20.7	34.8	32.3
IIBI	19.3	16.7	40.3	38.0
EXIM Bank	14.9	8.4	2.2	1.3
SIDBI	2.5	1.3	3.8	2.4
TFCI	0.9	3.5	20.5	21.1

Note : Figures under net NPL are percentage growth over the previous year.
Source : Reserve Bank of India

Non-banking Financial Companies

8.69 Another important segment of the financial segment is the NBFCs. After a period of rapid growth in the 1990s, the growth in this sector has slowed down, consequent upon the introduction of strict entry and prudential norms, rationalisation of interest rates offered by these entities and the process of providing a Certificate of Registration (CoR) to NBFCs accepting public deposits. As many as 584 NBFCs were authorised to accept/hold public deposits at end-June 2004. The number of NBFCs has stabilised since the introduction of CoR process and at end-March 2003, the total number of reporting NBFCs was 870 with total asset of Rs.37,709 crore and public deposits of Rs.5,035 crore (Table 8.25). The RNBC segment

Table 8.24: Sectoral Loan Performance and Exposure of DFIs

(as per cent of capital funds)

Exposure to	2001-02			2002-03			2003-04		
	IDBI	IFCI	EXIM Bank	IDBI	IFCI	EXIM Bank	IDBI	IFCI	EXIM Bank
1	2	3	4	5	6	7	8	9	10
Largest single borrower	12.46	5.76	13.21	15.28	5.62	10.40	N.A.	6.45	13.69
Largest borrower group	19.92	8.00	13.21	24.30	9.08	12.04	N.A.	10.60	25.36
Largest industrial sector	4.14	24.14	10.87	18.81	9.08	10.31	N.A.	10.60	11.57

For EXIM Bank, exposure to 'largest industrial sector' is as percent to adjusted total credit exposure. N.A. : Not available
IDBI has become a scheduled bank effective October 1, 2004.
Source: Respective balance sheets (various years).

Table 8.25: Profile of NBFC/RNBC Segment

(Amount in Rupees crore)

Item	NBFC			RNBC		
	2000-01	2001-02	2002-03	2000-01	2001-02	2002-03
1	2	3	4	5	6	7
Reporting numbers	974	905	870	7	5	5
Net owned funds (NOF)	5,122	4,272	4,141	-179	111	809
Public deposits	6,459	5,933	5,035	11,625	12,889	15,065
Public deposit/NOF	1.3	1.4	1.2	Negative	116.1	18.6
Total asset	37,634	39,832	37,709	16,244	18,458	20,362

Source: RBI.

accounts for a disproportionately high quantum of public deposits (over 60 per cent) with high public deposit to net owned funds (NOF) ratios. The Mid-term Review of Annual Policy 2004-05 announced several measures to focus on improvements in the functioning of RNBCs in order to ensure that the depositors are served appropriately and systemic risks are avoided. Additionally, the interest rate paid by NBFCs on their public deposits is high with a quarter of these deposits being of short (less than one year) maturity. This raises twin concerns: the risk-premium on NBFC deposits *vis-à-vis* banks and their long-term commercial viability (Table 8.26).

Corporate Balance Sheets and Financial Stability

8.70 The state of the balance sheet of non-financial firms is a critical factor for the stability of the financial system. If there is widespread deterioration of balance sheet among borrowers, it worsens both the adverse selection and moral hazard problems. Several possible channels can be discerned. First, if a firm has high net worth, then if it defaults on debt payments, the lender can take title of its net worth and use the proceeds to recoup some of the losses. A decline in net worth increases incentives for borrowers to engage in moral hazard, since the lenders are less protected against the consequences of adverse selection because the value of net assets is lower. This reduces lending and economic activity declines. Second, a rise in interest rates raises interest payments, decreases cash flows and engenders deterioration in their balance sheets. This exacerbates the adverse selection and moral hazard problems, resulting in a further decline in lending and economic activity. On account of all these reasons, it has, therefore, been argued that financial stability indicators need to incorporate corporate balance sheets (Davis and Stone, 2004).

8.71 In this context, it is important to make a distinction between public and private corporate firms. Using a balanced panel dataset of over 1,000 manufacturing and services firms over the period 1992-2002, Ghosh and Sensarma (2004) find that: (a) public firms are relatively more responsive to a monetary contraction *vis-à-vis* their private counterparts; (b) listed firms lower their long-term bank borrowings in favour of short-term borrowings, post monetary tightening, as compared with unlisted firms; and, (c) manufacturing firms are relatively more responsive to a monetary shock than services firms. The financial stability indicators in manufacturing suggest that public limited companies have considerably higher debt equity ratios than their private counterparts. Private companies have improved their profitability levels in 2003. On the other hand, current ratio (current assets/current liabilities) declined for public firms, while it remained same for private limited companies (Table 8.27). To sum up, this suggests that the risk to financial stability arising from non-financial corporations may have moderated.

Table 8.26: Public Deposits of NBFCs according to Interest Rate and Maturity

(Per cent)

Year	Interest rate (per cent)			Maturity period (years)			*Memo*
	Up to 10	10-12	Above 12	Less than 1	1-2	Exceeding 2	Total deposit (Rs. crore)
2000-01	1.8	21.8	76.4	26.7	27.0	46.3	6459
2001-02	6.0	34.6	59.4	25.0	23.9	51.1	5933
2002-03	23.3	41.7	35.0	23.9	24.6	51.5	5035

Source: RBI.

Table 8.27: Indicators of Financial Stability in Manufacturing

(Per cent)

Year	2000-01		2001-02		2002-03	
	Public	Private	Public	Private	Public	Private
1	2	3	4	5	6	7
Debt-Equity Ratio	68.3	32.5	70.5	28.6	64.7	N.A.
Net worth /Total asset	37.6	40.2	36.4	41.6	36.0	N.A.
Total outside liabilities/net worth	166.1	148.6	174.6	140.6	177.7	N.A.
Memo:						
Gross profit/Sales	9.8	6.5	10.2	6.2	10.3	11.3
Sales / Gross fixed asset	110.7	192.1	100.6	189.7	103.3	N.A.
Current asset/Current liabilities	1.2	1.3	1.2	1.3	1.1	N.A.

N.A. : Not available; Public : Public limited companies; Private : Private limited companies
Source: Reserve Bank of India.

8.72 Another important channel through which non-financial firms can be a source of possible financial instability is unanticipated exchange rate depreciation or devaluation. With debt contracts denominated in foreign currency, unanticipated exchange rate changes increase the debt burden of firms. Since assets are typically denominated in domestic currency, the resulting decline in net worth once again propagates instability and contraction in lending and output. In recognition of these concerns, the Reserve Bank has stressed upon the banks to monitor large unhedged foreign currency exposures of their corporate borrowers. Banks were advised to extend foreign currency loans above US $ 10 million (or such lower limits as may be deemed appropriate *vis-a-vis* the banks' portfolios of such exposures), only on the basis of a well laid out policy with regard to hedging of such foreign currency loans.

Capital Market

8.73 The growth and development of capital markets has strengthened the resilience of the financial system. Since the liberalisation of both domestic capital markets and portfolio flows from abroad, and the development of modern capital market infrastructure led by efforts to establish a national stock exchange system, the growth of capital market has been impressive (Table 8.28 and Chart VIII.3). While the infrastructure and operations of stock markets have improved substantially, liquidity is not evenly spread, with a large proportion of infrequently traded stocks.

8.74 There are signs of increased integration of the Indian capital markets with global markets. Using daily data for the years 1999-2000 and 2000-01, Hansda and

Chart VIII.3 : Market Capitalisation

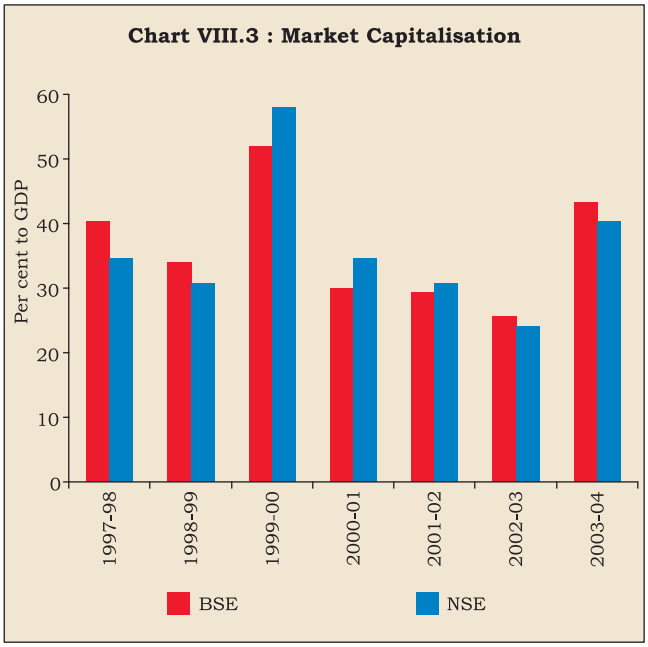


Table 8.28: Equity Market Growth 1991-2004

(Amount in Rupees crore)

Year	1990-91	1999-2000	2002-03	2003-04
1	2	3	4	5
No of stock exchanges	22	23	23	23
No. of listed companies	6,229	9,871	9,413	5,528*
Market capitalisation	1,102,790	11,926,300	6,319,212	1,201,207*
Turnover	36011**	20,670,310	9,689,098	16,039,340

* BSE only.
Source: SEBI and NSE.

Ray (2002) find evidence that domestic IT indices have generally been a follower *vis-à-vis* the general or IT-related indices of the foreign bourses. Notwithstanding the turbulence in stock markets in several instances, no major disruption or failures of intermediaries has occurred. This suggests that Indian capital markets and their intermediaries are reasonably resilient to equity price shocks.

8.75 An important facet of financial sector vulnerability, *viz.*, pertaining to Unit Trust of India (UTI) has been addressed. The Unit Trust of India Act, 1963 was repealed through an Ordinance in October 2002 by splitting UTI into two parts: UTI-I (comprising US-64 and assured return schemes placed under a Government-appointed administrator) and UTI-II[11] (consisting of NAV-based schemes, professionally managed and brought under the regulatory purview of SEBI). The Government has committed to small investors that it would meet all obligations for US-64 (estimated at Rs.6,000 crore) and other assured income schemes (estimated at Rs.8,561 crore). The Union Budget 2004-05 has made a provision of Rs.1,200 crore to meet the shortfall in assured returns schemes maturing in 2004-05 and related obligations (Government of India, 2004). This is in addition to Rs.6,500 crore provided in Union Budget 2003-04 to enable UTI to meet the shortfall between assured repurchase prices and NAV and to provide smooth transition to the NAV-based scheme[12].

8.76 The growth in private placements raises some important informational and regulatory issues. According to available information, total private placements over the period 1999-2000 to 2002-03 accounted for, on average, around 90 per cent of total debt issues and over 85 per cent of the total resource mobilised (NSE, 2003). This raises the concern of the quality of such issues and the extent of transparency in such deals. Additionally, the lack of 'market discipline' inherent in such issues enhances risks and distorts the 'level playing field' *vis-à-vis* public issues, which might engender regulatory arbitrage.

Payment and Settlement Systems

8.77 A wide range of improvements in the payment and settlement systems has been undertaken over the past several years. Salient among these include Electronic Clearing Service (ECS - Debit and Credit), Electronic Funds Transfer (EFT), the Special EFT and card-based systems (credit, debit, ATM and smart cards). An important feature of technological development in recent years has been the growth of large value payment systems (LVPS) (comprising inter-bank clearing, high-value clearing, negotiated dealing system and forex clearing). More recently, the Real Time Gross Settlement (RTGS) settlement has been operationalised since March 2004. The RTGS provides for an electronic based settlement of inter-bank and customer-based transactions with intra-day collateralised liquidity support from the Reserve Bank to the participants in the system. More than 75 per cent of the value of inter-bank transactions, which were earlier settled through the Deferred Net Settlement (DNS) system based inter-bank clearing, is since being settled under the RTGS. The status of conformity with the Core Principles for Systemically Important Payment Systems (CPSS) reveal a high degree of compliance (RBI, 2003). The ongoing initiatives of the Reserve Bank are intended to provide a safe, secure, efficient and integrated payment and settlement system in the country and thereby contribute to financial stability.

Electronic Money

8.78 In India, where cash transactions are high in number, the use of e-money can be beneficial in terms of reduced miscellaneous costs, *viz.*, cost of printing and minting of smaller denomination notes and coins and transportation and storage costs. However, certain additional costs for setting up of network infrastructure to operate nationwide are also associated with it. The Reserve Bank has been partnering a multi-application smart card project - under the aegis of the Ministry of Communications and Information Technology, Government of India to run a pilot project on the use of multi-application smart cards in the country. Various issues relating to technology, security, regulatory and supervisory concerns and legal implications have been examined to make the use of smart cards a viable proposition after the conclusion of the pilot project. The project is aimed at combining applications relating to banking, insurance, postal services, identification, etc in a single card.

8.79 To examine the likely challenges that may emanate from the use of e-money, the Reserve Bank set up a Working Group on Electronic Money in 2002 (RBI, 2002). The Group examined various dimensions and implications of e-money for payments system, its

[11] Renamed as UTI Mutual Fund.

[12] Unit Scheme-64 (US-64) was converted to NAV basis as on January 1, 2002.

potential use and suggested appropriate policies from a central bank's point of view. The Working Group recommended the introduction of a multi-purpose e-money by banks only against payment of full value of central bank money or against credit only by the banks. In order to preserve unit of account function of money and control money supply, the issuing authority of e-money must ensure its obligation to offer redemption of E-money liabilities net of service charges, if so required. Non-banks should not be permitted to issue multi-purpose money. Since there is scope for issuers of e-money (on credit) to assume a leveraged position, there is a need for continuous monitoring of the behaviour of issuing authorities for balanced growth of their assets and liabilities arising out of issuance of e-money.

8.80 Three banks have been given permission by the Reserve Bank to issue prepaid multi-purpose cards. A few banks allow withdrawal of cash from ATMs using the prepaid card. The fee structure has been left to the participants. In order to facilitate faster and more efficient service to customers, some banks in India have started providing services *via* the internet banks and are integrating the internet banking services being offered into the RBI Electronic Funds Transfer (RBI-EFT) system, facilitating transfers of funds across accounts with other banks (BIS, 2004a).

8.81 To conclude, the regulatory and supervisory setup in India has moved from micro management to prudential regulation. The Reserve Bank's approach to the institution of prudential norms has been one of gradual convergence with international standards and best practices with suitable country specific adaptations. One of the successes of the Indian financial sector reforms has been the maintenance of financial stability and no reversal of direction in the financial sector reform process over the last 15 years, in addition to the avoidance of any major financial crisis during the reform period (Mohan, 2004c). In recent years, emphasis has been laid on issues relating to governance and transparency. Notwithstanding a few areas of concern, the gamut of policies has been successful in imparting stability to the Indian financial sector, especially the systemically important banking sector. The Indian financial system on the whole is in sound health (Jadhav, 2003).

III. CONCLUDING OBSERVATIONS

8.82 This Chapter has discussed issues related to financial stability, with a focus on the role of central banks in maintaining financial stability. The conventional view is that price stability is a sufficient condition for financial stability. Developments during the 1990s suggest that this may not be the case, at least in the short-run. Ironically, price stability itself may lead to "irrational exuberance" which could over time be reflected in financial imbalances. Thus, although central banks have always been concerned with maintenance of financial stability, recent developments have placed renewed emphasis on financial stability as a key consideration in the conduct of monetary policy. Apart from lengthening their monetary policy horizons beyond the usual two-year framework, central banks can contribute to financial stability through regulation and supervision ensuring that banks are well-capitalised and well-diversified. Encouraging greater transparency in accounting and disclosure practices can also contribute to financial stability.

8.83 In India, prudential norms have been gradually brought on par with international standards and best practices, with suitable country specific adaptations. More recently, the Reserve Bank has undertaken significant initiatives on graduating towards Basel II, keeping in view the country-specific requirements. These include, *inter alia*, ensuring the institution of suitable risk management framework by banks, introduction of risk-based supervision, encouraging banks to formalise their Capital Adequacy Assessment Programme (CAAP) in alignment with business plan and performance budgeting system and enhancing the area of disclosures. At the same time, several challenges such as encouraging ratings of issuers, assessing the level of additional capital requirement by banks, capital requirement for operational risk and addressing the systemic risk posed by large conglomerates would all need to be satisfactorily addressed before the transition to Basel II can occur (Udeshi, 2004).

8.84 The survey of the Indian financial sector undertaken in this Chapter suggests that India's approach to financial sector reforms has served the country well, in terms of aiding growth, avoiding crises, enhancing efficiency and imparting resilience to the system. The development of financial markets has been, by and large, healthy. The basic features of the Indian approach are gradualism; co-ordination with other economic policies; pragmatism rather than ideology; relevance to the context; consultative processes; dynamism and good sequencing so as to be able to meet the emerging domestic and

international trends. In the banking system, diversified ownership of public sector banks has been promoted over the years and the performance of their listed stocks in the face of intense competition indicates improvements in the system. Since the initiation of reforms, financial health as well as efficiency of the banking sector has improved (Reddy, 2004e). From the vantage point of 2004, one of the successes of the Indian financial sector reform has been the maintenance of financial stability and avoidance of any major financial crisis during the reform period - a period that has been turbulent for the financial sector in most emerging market countries.

8.85 At the same time, there remains scope for improvements in the operational efficiency of the banking sector. Moreover, despite the decline in the stock of NPLs in the banking system, these figures remain high compared to international standards. The improved institutional and legal arrangements accompanied by concomitant strengthening of risk management practices by banks are likely to keep incremental NPLs low. Initiatives such as setting up of Asset Reconstruction Companies and greater emphasis on compromise settlements are likely to deal with the stock problem for NPLs. Banks may need to adopt a more pro-active approach in dealing with these issues. Enforcement of creditors rights will need continuous strengthening. The legal provisions and practice in bankruptcy of the real sector are still inadequate and need further reform (Mohan, 2004c).

8.86 To conclude, ensuring an acceptable degree of financial stability is a never-ending process. In an ideal world, there is often a smattering of small disturbances. The real world, however, is often far divorced from idealism: there are long periods of quiescence when virtually no financial disturbance takes place, creating a false sense of security which eventually leads to periods that contain several failures and the threat of many more. The task for all involved in ensuring financial stability is to remain alert and proactive during such tranquil periods, to identify and monitor newer risks, eschew harmful incentives and adjust the regulatory environment to keep abreast with fast-paced changes in the economic environment.

IX ASSESSMENT OF MONETARY POLICY

9.1 Structural reforms initiated in the Indian economy since the early 1990s have encompassed all spheres of economic activity. Reforms included industrial deregulation, liberalisation of the foreign trade and investment regime, public enterprises reform and financial sector liberalisation. These reforms, aimed at reorientation of the Indian economy from a centrally directed command and control economy to a market oriented economy so as to foster greater efficiency and growth, have contributed to a sustained pick-up in growth.

9.2 These wide-ranging reforms have inevitably impacted upon the conduct of macroeconomic policy in India. Monetary policy framework, in particular, had to contend with a number of changes in its operating environment. These changes have been brought about primarily by financial and external sector liberalisation. First, the process of financial liberalisation now necessitates a greater market orientation of the process of monetary policy formulation than ever before in view of the shift to a market-oriented economy from a control-oriented regime. Second, financial liberalisation has led to emergence of financial conglomerates with implications for financial stability. Third, the globalisation of economies, while essential for greater competition and hence for efficiency, has posed several challenges for monetary management emanating, *inter alia,* from swings in international commodity prices, and, more importantly, from large and sudden movements in capital flows and exchange rates. Finally, advances in information technology are not only revolutionising payment and settlement practices but also speeding up the spread of information. For all these reasons, during the 1990s, monetary policy in India, like other countries, revisited issues related to objectives, intermediate targets, instruments and operating procedures of monetary policy.

9.3 In the monetary policy arena, a significant success has been in respect of reigning in inflation since the second half of the 1990s until recently. This has also enabled lower inflationary expectations. Efforts to improve the credit delivery mechanism have also begun to indicate some success recently. Real interest rates for borrowers have also softened. A noteworthy achievement, despite progressive opening up of the Indian economy, has been the maintenance of financial stability in the country. In contrast to the Indian experience, financial crises were endemic in many developing and emerging market economies during the 1990s. These issues have been addressed in detail in earlier Chapters. This concluding Chapter provides an overall assessment of the dynamics and challenges for monetary policy in India.

Key Issues in Monetary Policy

9.4 It is now widely agreed that monetary policy can contribute to growth and employment by maintaining price stability. Price stability does not mean a zero rate of inflation. For a number of reasons - quality biases in the measurement of prices, downward wage and price rigidities and the zero bound on nominal interest rates - price stability is defined as a low and stable rate of inflation conducive to economic growth. That price stability should be a key objective of monetary policy is reflected in a growing number of central banks, starting with New Zealand in the late 1980s, adopting inflation targeting frameworks. At present, there are more than 20 such central banks in the world who have price stability as the overriding objective of monetary policy. At the same time, a majority of central banks still operate under dual or even multiple mandates – for instance, the legislated objectives of the US Federal Reserve are maximum employment, price stability and moderate long-term interest rates. However, even in such cases, it is agreed that central banks can contribute to growth and employment objectives through maintenance of low and stable inflation. Price stability is considered to be a pre-requisite for the efficient allocation of resources in the economy and, hence this contributes to growth. There is a near unanimity now that there is no long-run trade-off between growth and inflation, *i.e.*, monetary policy cannot permanently raise output above its potential through inflationary policies. Any attempts to raise output above the economy's potential will be eventually reflected in higher inflation. One reason as to why inflation surged during the 1970s in many economies was the misplaced belief that there existed a long-run trade off between inflation and output. High inflation has an adverse effect on growth due to a

number of factors: distortion of relative prices which lowers economic efficiency; redistribution of wealth between debtors and creditors; aversion to long-term contracts; and, devotion of excessive resources to hedging inflation risks. In developing economies, in particular, an additional cost of high inflation emanates from its adverse effects on the poor population in the form of an implicit tax.

9.5 Notwithstanding the absence of a long-run trade-off, central banks have a key role in macroeconomic stabilisation. Due to a number of exogenous shocks hitting the economy, business cycles are a regular feature of market economies and central banks can stabilise economic activity by pursuing a countercyclical monetary policy. Illustratively, in the recent episode of global downturn, a number of central banks eased their monetary policies during 2002 and 2003 to provide a boost to aggregate demand in the economy. With incipient signs of inflation, the central banks have, however, since late 2003, started to withdraw their accommodative stance by raising policy rates in a measured manner. This holds true, both for inflation targeting as well as non-inflation targeting central banks.

9.6 Against this brief overview of the key objective, an analysis of actual inflationary movements throws some interesting results. The period since World War II has witnessed episodes of high inflation. In developing countries, high inflation has been mainly on account of expansionary fiscal policies and the subsequent accommodation of these fiscal imbalances by monetary authorities. Greater openness, large devaluations and a high degree of exchange rate pass-through have also added to inflationary pressures in these economies, apart from a greater degree of susceptibility to supply shocks. Developed economies also witnessed inflationary pressures during 1970s reflecting expansionary fiscal and accommodative monetary policies, oil shocks, and, overestimation of potential output and productivity growth. High inflation was also on account of the received wisdom regarding growth-inflation trade-off. By late 1970s, it came to be increasingly recognised that persistent high inflation was ultimately the outcome of lax monetary policies. With inflation in double digits, central banks in advanced economies adopted deliberate disinflation strategies in the late 1970s. Monetary policies were tightened and industrial economies could reduce inflation significantly by the second half of the 1980s, *albeit* at the cost of large output and employment losses. Inflation fell further in these economies during the 1990s to a range of 2-3 per cent per annum, a level more or less consistent with price stability. More importantly, in these economies, inflation expectations have been broadly stabilised at low levels. Developing countries have also been able to reduce inflation during the 1990s as fiscal consolidation and structural reforms provided flexibility to the conduct of monetary policy in meeting its price stability objective. In fact, the decline in inflation in developing economies has been quite dramatic - from 38 per cent per annum during the 1980s to around six per cent during 2000-03. Concomitantly, exchange rate pass-through to domestic prices has declined during the 1990s for advanced as well as developing economies, *inter alia*, due to success of monetary policy in maintaining a low and stable inflation environment. This low pass-through is one of the reasons as to why consumer prices in many developed economies have been relatively stable even in the context of sharp swings in exchange rates.

9.7 A number of factors explain the success of central banks in reducing inflation. These include: improvements in the institutional set-up - greater autonomy accorded to central banks, better communication strategies, increased transparency, improved techniques in terms of availability of market oriented instruments; prudent fiscal policies supported by fiscal rules; structural reforms; productivity growth; deregulation, globalisation and competition. It needs to be stressed that the actual inflation outturn depends critically upon inflation expectations. Successful monetary policy is not so much a matter of effective control of overnight interest rates as it is of shaping market expectations of the way in which inflation and other critical variables are likely to evolve (Woodford, 2003). Increased central bank autonomy, accountability of central banks through clear-cut targets, transparency and stress on communications backed by fiscal rules are believed to increase the credibility of the central banks and thus help stabilising inflation expectations. Monetary reforms such as an independent central bank *per se* have only limited power to fix real problems arising from a fiscal regime inconsistent with the goal of price stability. Looking ahead, a reversal in the trend of any of the above factors can be a threat to the present low inflation environment (Rogoff, 2003). A noteworthy development is that this reduction in inflation has not come, at least in the case of major developed economies, at the cost of increased output volatility. While there is greater unanimity that reduction in inflation and its volatility

is mainly due to improved monetary policy, the role of monetary policy in reducing output volatility remains a matter of debate.

9.8 Finally, in the recent years, an issue of debate is the usefulness of inflation targeting (IT) frameworks. Looking at the experience of the 1990s, both inflation targeting (IT) and non-IT central banks have been successful in reducing inflation. Therefore, it is not obvious that IT regimes have outperformed the non-IT regimes. Amongst IT central banks in emerging market economies (EMEs), while their performance is actually quite impressive when judged in terms of the reduction in inflation, they have not been always able to meet their inflation targets. Moreover, compared with many advanced economies, their performance is relatively weak, reflecting additional constraints prevailing in these economies. The jury is still out on the extent to which inflation targeting policies have actually contributed to the reduction in inflation that has occurred (Mohan, 2004a).

9.9 Developments during the 1990s, however, suggest that price stability by itself does not necessarily ensure overall macroeconomic and financial stability. Even in an environment of price stability, the 1990s witnessed episodes of financial instability. The traditional presumption is that price stability contributes to financial stability. This is true in the long-run, and the two objectives reinforce each other. However, the same may not be true in the short-run. An environment of price stability can generate excessive optimism and irrational exuberance on future growth prospects of the economy. Illustratively, during the late 1990s, technology-driven increases in productivity growth imparted upward momentum to expectations of earnings growth while macroeconomic stability reduced perceptions of risk. In an environment of (low and) stable inflation expectations, the incipient imbalances in the economy are not reflected in the headline inflation. Rather, these may get reflected in a sharp rise in asset prices - stock or real estate prices - and in excessive increases in financial aggregates such as credit and monetary aggregates. In the upswing of the business cycle, these imbalances get accentuated as self-reinforcing processes develop, characterised by rising asset prices and loosening external financial constraints. These forces operate in reverse in the contraction phase, as brought out strikingly by the recent global slowdown of 2000 which reflected the interplay of unwinding of financial imbalances in contrast to earlier episodes of slowdowns which were induced by monetary tightening. In brief, liberalisation of financial markets, together with advances in technology, increases the likelihood of "justified optimism" turning into "unjustified optimism" which breeds boom-bust cycles (White, 2004).

9.10 Financial stability concerns mainly arise from the growing globalisation and integration of economies. Swings in trade flows and especially capital flows are quite common and these impart a high degree of volatility to exchange rates. Large devaluations can wreck havoc on balance sheets of financial as well as non-financial entities due to currency mismatches. Such currency mismatches are quite severe in emerging market economies, given the fact that their external borrowings are typically serviced in foreign currencies while most of their revenues are largely earned in domestic currency. Furthermore, financial markets are often characterised by herd behaviour. In view of increased financial integration across countries, contagion can spread from one country to other, as it did during the Asian and the subsequent financial crises of the late 1990s. Financial crises during the 1990s were, in fact, a reflection of shortcomings of the reform agendas pursued by many developing economies. Issues such as institutional and governance reforms, and macroeconomic fragilities arising from the financial system and capital account of the balance of payments were not fully addressed (Montiel and Serven, 2004).

9.11 Concerns with future financial instability have also shaped the response of monetary authorities to the recent wave of capital flows. Following Mundell-Fleming, it is well-known that the triumvirate of the objectives - a fixed (or, managed) exchange rate, an open capital account and an independent monetary policy - cannot be achieved simultaneously. Large capital flows are often intermediated to speculative activities such as real estate and stock markets. Permitting unbridled appreciation of the exchange rate during periods of heavy capital inflows can be a harbinger of a future financial crisis. Sharp real appreciation of the domestic currency can hurt external competitiveness of the economy and could over time lead to large and unsustainable current account deficits. Given the volatile nature of capital flows, such flows can reverse easily and impose severe adjustment costs on the economy. Illustratively, in the aftermath of the Asian financial crisis, some economies in the region witnessed a turnaround as large as more than 10 per cent of GDP in their current account balances.

9.12 More recently, since 2000, emerging market economies are facing large persistent capital inflows.

They have also been recording surpluses on their current accounts. Accordingly, their overall balance of payments have posted large surpluses. Central banks in these economies are facing the constraints imposed by the 'impossible trinity' or the 'macroeconomic policy trilemma' by absorbing these capital flows into their reserves. The expansionary effect of these reserves on domestic money supply is subsequently sterilised through offsetting open market operations. The build-up of substantial reserves reflects a precautionary demand and self-insurance necessitated by volatility of capital flows. This response of EMEs may be all the more appropriate since capital flows in the past 3-4 years are widely believed, in a large part, to be due to "push" factors.

9.13 Given the boom-bust pattern of capital flows, volatile exchange rates and the emergence of financial conglomerates, ensuring orderly conditions in financial markets and maintaining financial stability has emerged as an important objective of central banks. This is true even for central banks not involved directly with banking regulation and supervision. Historically, central banks have focussed on only one of the two objectives at any given time, but not together. A distinguishing feature of the 1990s is the simultaneous pursuit of monetary and financial stability gradually subsuming issues relating to financial stability in the design of monetary policy.

9.14 Notwithstanding the agreement that financial stability should be an objective of central banks, the role of monetary policy *per se* in maintaining financial stability remains a matter of debate. Monetary policy is considered to be too blunt an instrument to achieve financial stability, especially to counter threats from asset price misalignments. First, it is argued that it is difficult to adjudge *ex ante* as to whether asset price misalignments are bubbles or not. Second, even if the central bank can identify a bubble in real time, the typical monetary tightening measures - such as moderate increases in interest rates - might be ineffective in containing or deflating asset price bubbles. In view of these limitations on direct monetary policy actions as also the fact that inflationary pressures take more than the usual time to surface in conditions of low inflation, central banks are advised to take cognisance of emerging financial imbalances by lengthening their monetary policy horizons beyond the usual two-year framework. In addition, central banks can contribute to financial stability through effective regulation and supervision to ensure that banks are well-capitalised and well-diversified. Encouraging more transparency in accounting and disclosure practices, ensuring integrity of payment and settlement systems and provision of the lender-of-last-resort facility are also needed to maintain financial stability.

9.15 Apart from price stability and financial stability, availability of credit for productive purposes remains an important objective of monetary policy, at least in developing and emerging economies. At the same time, in consonance with reforms in many of these economies, there is a shift away from credit controls and directed credit programmes often at concessional prices towards a regime of credit allocation based on the market-oriented price of credit. A key challenge in this regard is to channel credit to the relatively disadvantaged sections of society.

9.16 Bank credit is important not only because it finances growth, but also is an important channel of monetary policy transmission mechanism. The 'credit channel' of transmission holds even for central banks that rely on interest rates to convey their policy stance and it also augments the effects of the traditional interest rate channel. For this channel to be effective, however, it is critical that banks price various risks appropriately onto their lending rates. While such risk assessment techniques are in place in advanced economies, these remain underdeveloped in emerging market economies due to the lack of adequate and timely information and large transaction costs. Availability of improved information base will enable banks to make informed choice of their risk profiles and lead to efficient pricing of risk. While leading to an efficient allocation of resources, the credit channel also enhances the efficacy of monetary policy signals. Thus, improvements in the credit delivery mechanism are necessary for monetary policy signals to have the expected effect on output and prices.

9.17 Financial innovations have impacted not only upon the objectives of monetary policy but also on the strategies and tactics to conduct monetary policy. With financial innovations imparting a degree of instability to money demand and velocity of money, central banks in many countries have eschewed setting unique intermediate targets or following some fixed rule of monetary policy. There is a growing realisation that given the increasing uncertainties and latent risks in financial markets in recent times, a single model or a limited set of indicators is not a sufficient guide for monetary policy. Instead, an encompassing and integrated set of data is required (Trichet, 2004). Many central banks now follow a

'multiple indicator approach' and monitor a large range of macroeconomic indictors, which carry information about the ultimate objectives. At the same time, as noted above, large movements in monetary and credit aggregates are believed to provide lead information on future financial imbalances. Moreover, in the long-run, inflation is still believed to be a monetary phenomenon. Accordingly, many prominent central banks such as the European Central Bank continue to monitor monetary aggregates even as others have de-emphasised these aggregates.

9.18 With shifts away from monetary targeting regime, short-term interest rates have emerged as operative target/instrument of monetary policy in many economies, both developed and developing. Such central banks manage liquidity to steer monetary conditions in consonance with the overall policy objectives of price stability and growth. Central banks usually forecast market liquidity and then conduct open market operations to impact the interest rate structure to affect the real economy. Furthermore, reflecting the market orientation of monetary policy, direct instruments of monetary management have given way to market-based instruments. Even within the set of indirect instruments, instruments such as cash reserve ratios have been de-emphasised and, in many countries, their use is restricted to stabilise money markets. In order to allow the interplay of market forces, most central banks prefer to prescribe reserve requirements on an average basis and encase interest rates in a corridor, rather than target a particular point. Given the market-orientation of monetary policies, central banks have recognised the need to strengthen their balance sheets in order to be able to meet unforeseen contingencies that may arise from their market operations. If balance sheet of a central bank is not strong enough, it could be constrained from taking the necessary market operations. Strong balance sheets, therefore, increase the credibility of the central banks and hence, stabilise market expectations.

9.19 For monetary policy to remain effective, its operating procedures and instruments will necessitate continuous refinements. Monetary policy actions affect output and prices with long and variable lags. Despite substantial progress, the precise channels of monetary transmission remain a "black-box". Prices are typically quite sluggish - almost unchanged for one year and it can take almost two years for monetary policy to have a noticeable effect on prices, although some evidence suggests that, in the case of emerging economies, the lags may be somewhat shorter. The effectiveness of monetary policy signals depends upon the speed with which the policy rates are transmitted to market rates of interest. Cross-country evidence suggests that this pass-through to interest rates is only partial in the short-term. Although it increases over time, it is still usually less than complete. Finally, monetary authorities in future will have to contend with implications of electronic money on the transmission process. The dominant view is that monetary policy is likely to remain a key instrument of macroeconomic stabilisation *albeit* its effectiveness could be weakened to some extent by the growing use of electronic money.

Monetary Policy in India: The Framework

9.20 Structural reforms in the Indian economy since early 1990s impacted upon the various aspects of monetary policy - its objectives, strategies and tactics. As regards objectives, price stability and ensuring adequate credit to productive sectors of the economy have been the twin objectives of monetary policy since Independence. The relative emphasis between these two objectives depends on the underlying economic conditions and is spelt out from time to time (Reddy, 2002). Although with the introduction of the structural reforms, there has been a shift in the policy from a planned and administered interest rate system to a market-oriented financial system, credit availability remains an important objective of monetary policy in India. In the pre-1990s period, credit allocation and administered pricing certainly ensured a reasonable level of credit flow in the desired direction at the desired price, but at a cost along with inefficiencies as well as distortions (Reddy, 2004a). In such a situation, the cost had to be borne in different ways, including statutory pre-emptions - as high as 63.5 per cent of the incremental deposits of banks in 1992. Policies of liberalisation, deregulation and enabling environment of comfortable liquidity at a reasonable price, however, did not automatically translate into credit flow at reasonable interest rates as banks continued to charge interest rates to various categories of borrowers by their category *per se* - whether agriculture or small scale industry - rather than based on actual assessment of risks for each borrower. The Reserve Bank's endeavour in the past few years has, therefore, been to reduce transaction and information costs so that credit availability to such sectors is available at reasonable interest rates.

9.21 At the same time, with the opening up of the economy since the early 1990s, financial stability has now emerged as a key consideration in the conduct

of monetary policy. Monetary management has now to contend with vicissitudes of capital flows and volatility in exchange rates. Due to large capital flows and, in recent years, surpluses in the current account, the overall balance of payments have recorded persistent growing surpluses since 1993-94 (excepting one year, 1995-96). Such large surpluses have been absorbed by the Reserve Bank in its foreign exchange reserves. Whereas the distinction between short term and long term flows is conceptually clear, in practice, however, it is not always easy to distinguish between the two for operational purposes. Moreover, at any given time, some flows could be of an enduring nature whereas others could be temporary and, hence, reversible. More importantly, what appears to be short-term, could tend to last longer and *vice versa*, imparting a dynamic dimension to judgment about their relative composition (RBI, 2003). In a scenario of uncertainty facing the authorities in determining temporary or permanent nature of inflows, it is prudent to presume that such flows are temporary till such time that they are firmly established to be of a permanent nature.

9.22 Large purchases of foreign exchange by the central bank from the market have an expansionary effect on domestic money supply and, therefore, pose challenges for monetary management. Monetary policy had to manage not only these persistent surpluses but also episodes of volatility in the foreign exchange market. Although capital flows have been largely stable, reflecting a cautious approach to capital account liberalisation, there have been nonetheless a few episodes of volatility in capital flows and exchange rates. As maintaining orderly conditions in the foreign exchange market is an important objective of monetary policy, monetary authorities have to face potential conflicts between the interest rate and exchange rate objectives. The bouts of volatility in exchange rate may necessitate that market conditions are rendered less liquid and interest rates are kept high. This policy has implications for promoting domestic growth but the larger objective of evading the likely potential disruption of domestic activities arising out of exchange rate crisis also needs to be kept in view. Given the imperfections in the foreign exchange market, the exchange rate objective may predominate due to emphasis on avoidance of undue volatility (Reddy, 1999).

9.23 Financial stability concerns arise also due to the move from a Government-dominated financial system to a market oriented one. In the past, the Government domination was imparting too much stability through rigidity and too little efficiency. In this context, enhancing efficiency while at the same time, avoiding instability in the system, has been the challenge for the regulators in India (Reddy, 2004b). Financial stability entails: (a) ensuring uninterrupted financial transactions; (b) maintenance of a level of confidence in the financial system amongst all the participants and stakeholders; and (c) absence of excess volatility that unduly and adversely affects real economic activity. Such financial stability has to be particularly ensured when the financial system is undergoing structural changes to promote efficiency.

9.24 In India, the vulnerability to real sector shocks has the potential to significantly affect financial stability. The major sources of shocks in India are very sharp increases in oil prices and extraordinary monsoon failures with consequent impact on the agricultural sector. Therefore, the weight to financial stability in India is higher than in many other countries (RBI, 2004b).

9.25 Financial integration and innovations have also necessitated refinements in the strategies and tactics of monetary policy in India. In order to meet challenges thrown by financial liberalisation and the growing complexities of monetary management, it was felt that monetary policy based exclusively on a money demand function could lack precision. Accordingly, the Reserve Bank switched from a monetary targeting framework to a multiple indicator approach. Short-term interest rates have emerged as signals of monetary policy stance. A significant shift is the move towards market-based instruments away from direct instruments of monetary management. A key step has been the introduction of a liquidity management framework in which market liquidity is now modulated through a mix of open market (including repo) operations and changes in reserve requirements and standing facilities, reinforced by changes in the policy rates. These arrangements have been quite effective in the recent years in managing liquidity in the system, especially in the context of persistent capital flows. The introduction of the Market Stabilisation Scheme has provided further flexibility to the Reserve Bank in its market operations. With the market orientation of monetary policy, the Reserve Bank, like most other central banks, has initiated several measures to strengthen the integrity of its balance sheet.

9.26 Over the past few years, the process of monetary policy formulation has become relatively more articulate, consultative and participative with external orientation, while the internal work processes have also been re-engineered to focus on technical

analysis, coordination, horizontal management, rapid responses and being market savvy. The stance of monetary policy and the rationale are communicated to the public in a variety of ways, the most important being the monetary policy statements. The communications strategy and provision of timely information at regular intervals have facilitated the conduct of policy in an increasingly market-oriented environment.

Monetary Policy in India: An Assessment

Price Stability

9.27 Looking at the inflation record in India, it has been much better than many developing economies. In the period since mid-1990s, inflation has seen a noticeable reduction from its average of around 8-9 per cent per annum during 1970-97 to less than five per cent in the subsequent period (1997-2004). Structural reforms since the early 1990s coupled with improved monetary-fiscal interface and reforms in the Government securities market enabled better monetary management from the second half of the 1990s onwards. The phasing out of *ad hocs* by March 1997 eliminated automatic monetisation of the fiscal deficit. Introduction of an auction system for Government borrowings at market rates of interest increased the appetite for the Government securities from the commercial banking system and this also reduced the pressure on the Reserve Bank to finance the Government.

9.28 In this context, it is noteworthy that inflation could be reduced even as the country received unprecedented level of capital flows. A multi-pronged approach has been followed to manage the persistent external flows in order to ensure macroeconomic and financial stability. The key features of the package of measures include: liberalisation of policies in regard to capital account outflows; encouraging pre-payment of external borrowings; alignment of interest rates on non-resident deposits; and greater flexibility in exchange rate. These measures have been supplemented with sterilisation operations to minimise the inflationary impact of capital flows and to ensure domestic financial stability. The expansionary effect emanating from massive capital flows to India was effectively sterilised through a variety of instruments including open market sales of Government bonds and operations under the Liquidity Adjustment Facility (LAF). Operations involving sterilisation are undertaken in the context of a policy response which has to be viewed as a package encompassing the Government's borrowing programme, exchange rate policy, level of reserves, interest rate policy along with considerations related to domestic liquidity, financial market conditions as a whole, and degree of openness of the economy. Notwithstanding the large scale of sterilisation operations, interest rates in India have softened across the spectrum.

9.29 Judicious use of innovations such as Market Stabilisation Scheme was resorted to manage liquidity conditions consistent with the objective of price stability. Thus, notwithstanding the unprecedented order of external capital flows, monetary management was effective in ensuring a reduction in inflation and keeping it broadly stable. Adequate foreign exchange reserves and stocks of foodgrains have provided increased comfort in meeting supply shocks and thereby stabilising inflation expectations. The degree of credibility that the Reserve Bank has earned over time is in itself likely to be an effective instrument of monetary policy in meeting the challenges of the future (Jadhav, 2003). The success with achieving and maintaining low inflation in India since mid-1990s has led to a number of positive developments (Reddy, 2004d). First, there is virtually a national consensus that high inflation is not good and that it should be brought down. Second, inflation expectations have come down and, consequently, inflation tolerance has also come down.

9.30 In the context of monetary management in an open economy, the Indian experience with exchange rates has highlighted the need for developing countries to allow greater flexibility in exchange rates but the authorities should also have the capacity to intervene in foreign exchange markets in view of herd behaviour in capital flows. With progressive opening of the emerging markets to financial flows, capital flows are playing an increased role in exchange rate determination and often reflected in higher exchange rate volatility. Against this background, India's exchange rate policy of focusing on managing volatility with no fixed rate target while allowing the underlying demand and supply conditions to determine the exchange rate movements over a period in an orderly way has stood the test of time. A key lesson of the Indian approach is that flexibility and pragmatism are required in the management of exchange rate in developing countries, rather than adherence to strict theoretical rules.

9.31 For the majority of developing countries which continue to depend on export performance as a key

to the health of the balance of payments, exchange rate volatility has had significant real effects in terms of fluctuations in employment and output and the distribution of activity between tradables and non-tradables. In the final analysis, the heightened exchange rate volatility of the era of capital flows has had adverse implications for all countries except the reserve currency economies. The latter have been experiencing exchange rate movements which are not in alignment with their macro imbalances and the danger of persisting currency misalignments looms large over all non-reserve currency economies (Mohan, 2004a). Of late, even for major reserve currency economies, the recent sharp swings in exchange rates have been considered "unwelcome" .

Credit Availability

9.32 Availability of credit for the productive sectors of the economy, as noted before, remains a key objective of monetary policy in India. Efforts by the Reserve Bank in this direction over the recent years to improve credit delivery mechanism have had a positive effect on credit flow to various sectors of the economy. Credit flow to the agricultural sector has recovered sharply in the last 3-4 years and outstanding credit to agriculture in relation to its sectoral GDP has also indicated an upward trend. Micro-finance has emerged as an important source of channelling credit to the weakest sections of the society. Credit flow to industrial sector by banks has also been maintained. The increase in disbursement of housing finance is heartening as housing construction has strong backward and forward linkages.

9.33 Along with efforts to improve the quantum of credit, the Reserve Bank has taken initiatives to impart a greater degree of flexibility and transparency to the interest rate structure in the economy. Although rigidities in the financial system have blunted the pass-through from short-term policy rates to the lending rates of the banks, there is some evidence of an improvement in the pass-through in recent years. A series of initiatives such as encouraging banks to offer flexible interest rates on deposits and the introduction of Benchmark Prime Lending Rates have imparted greater transparency to the interest structure and has also led to a reduction in their lending rates. Initiatives in the past few years to improve recovery of loans have led to a significant reduction in non-performing loans (NPLs) of banks. Lower NPLs have also been one factor that enabled banks to reduce their lending rates. Concomitantly, this has enabled a moderation in real lending rates for borrowers over time. This is expected to have a positive effect on investment demand in the economy.

9.34 The flow of credit to the various sectors of the economy could be improved further if banks can contain their operating costs and further improve the loan recovery. Operating costs of banks in India remain higher than major economies (Reddy, 2004e). Indian banks have done a remarkable job in containment of NPLs considering the overhang issues and overall difficult environment. It is noteworthy that NPLs have come down, despite a shift to 90-days norm. These efforts need to be pursued further. This will help banks to reduce their lending rates which will provide a further impetus to investment demand in the economy.

9.35 A number of issues would need to be addressed in order to further improve credit flow to the various sectors so as to finance productive activities. A key challenge is to design a market-oriented framework of affirmative action in channelling credit to the relatively disadvantaged sections of the society. With regard to the agricultural sector, there is a need for legal and institutional changes relating to governance, regulation and functioning of rural cooperative structure and Regional Rural Banks (RRBs). The changes warranted in cooperatives as well as RRBs involve deep commitment of State Governments and have significant bearing on political economy. Second, in view of overhang problems of non-performing loans and erosion of deposits in both cooperatives and RRBs, restructuring and recapitalisation by the Government becomes important. The current acceleration in credit-delivery can be sustained in the medium term, if such fiscal support from States and Centre is firmly put in place soon to revive or reorganise rural cooperative structure and RRBs. Third, there is a need to foster an appropriate credit culture to make enhanced rural credit a lasting phenomenon. Fourth, a comprehensive public policy on risk-management in agriculture is required as not only a means of relief for distressed farmers but as an ingredient for more efficient commercialised agriculture (Reddy, 2004f). Furthermore, banks in India - so far geared to financing of traditional crops like cereals - will have to be prepared to meet the changing requirements of commercialising agriculture (Mohan, 2004e).

9.36 Turning to financing of the industrial sector, the ability of commercial banks to meet the long-term fund requirements is hampered on two grounds: first, the relatively shorter maturity of their deposits and

second, banks already hold large volumes of Government paper, usually of long tenors, which may not be very liquid (Mohan, 2004b). The envisaged reduction of fiscal deficits under the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 is expected to provide banks greater manoeuvrability in extending additional long-term credit to the industry. An active corporate bond market in the country will also meet the long-term financing requirements. Although several pre-conditions for the evolution of a successful corporate debt market are now in place, other requirements such as an enhanced public disclosure and effective bankruptcy laws are still awaited. Funding from equity markets hinges upon the continued expansion of the mutual fund industry and channelling of a part of contractual savings to equity markets.

9.37 As regards flow of credit to small-scale industry, banking institutions need to improve their credit assessment capabilities so that they can distinguish adequately between good and bad credit. Small-scale must not be equated with high risk (Mohan, 2002). Recent initiatives such as developing a system of proper credit records would reduce information and transaction costs. Empirical evidence shows that wider availability of credit histories greatly expands the flow of credit as potential borrowers are no longer tied to their local lenders. With mechanisms such as credit histories in place, financiers can also move away from lending only against collateral or on the basis of prior contacts. This permits a greater degree of financing without collaterals (Rajan and Zingales, 2003).

9.38 Finally, structural reforms during the 1990s, *inter alia*, attempted to enhance the credit flow to the private sector through reductions in statutory pre-emptions. However, despite this reduction, banks continued to prefer to invest in Government securities for a variety of reasons like weak demand, excess capital flows and risk aversion. The large holdings of Government securities by banks in the face of comfortable liquidity yielded certain benefits. First, the large trading profits emanating from the rally in Government securities enabled them to boost their profits and make higher provisions. Second, excessive lending in a lacklustre industrial climate might have engendered 'adverse selection' of borrowers. A heartening development in this respect is the significant increase in non-food credit by banks during the current fiscal year. Nonetheless, scheduled commercial banks' investments in SLR securities remain well-above the stipulated 25 per cent. Furthermore, with the upturn of the interest rate cycle, there could be an adverse impact on banks' profitability. There is, therefore, a need by banks to undertake appropriate risk assessments and trade-offs while allocating resources between credit to the commercial sector and investments in Government securities.

Financial Stability

9.39 A noteworthy achievement has been the maintenance of financial stability in the country, even as the economy has been progressively liberalised from the early 1990s. This can be attributed to success achieved in ensuring reasonable price stability in the economy on the one hand and prudent policies in regard to financial and external sector management on the other hand. Prudential norms have been gradually brought on par with international standards and best practices, including graduating towards Basel II, with suitable country specific adaptations. India's approach to financial sector reforms has served the country well, in terms of aiding growth, avoiding crises, enhancing efficiency and imparting resilience to the system. The development of financial markets has been, by and large, healthy. The basic features of the Indian approach are gradualism; co-ordination with other economic policies; pragmatism rather than ideology; giving due weight to contextual relevance; consultative processes; dynamism and good sequencing so as to be able to meet the emerging domestic and international challenges. In the banking system, diversified ownership of public sector banks has been promoted over the years and the performance of their listed stocks in the face of intense competition indicates improvements in the system. Since the initiation of reforms, financial health as well as efficiency of the banking sector has improved (Reddy, 2004c). From the vantage point of 2004, one of the successes of the Indian financial sector reform has been the maintenance of financial stability and avoidance of any major financial crisis during the reform period - a period that has been turbulent for the financial sector in most emerging market countries (Mohan, 2004c).

9.40 At the same time, several challenges such as encouraging ratings of issuers, assessing the level of additional capital requirement by banks, capital requirement for operational risk and addressing the systemic risk posed by large conglomerates would all need to be satisfactorily addressed before the transition to Basel II can occur (Udeshi, 2004). There also remains scope for improvements in the

operational efficiency of the banking sector. Moreover, despite the decline in the stock of NPLs in the banking system, these remain high compared to international standards. The improved institutional and legal arrangements accompanied by concomitant strengthening of risk management practices by banks are likely to keep incremental NPLs low. Enforcement of creditors rights will need continuous strengthening. The legal provisions and practice in bankruptcy of the real sector are still inadequate and need further reform (Mohan, 2004c).

9.41 The cost of funds of the banking sector would be a key determinant of its sustained profitability in the years ahead. Diversification into fee-based activities coupled with prudent asset liability management holds the key to future profitability. Governance issues in private banks have lately received considerable attention, more so in view of the recent draft guidelines issued in this regard by the Reserve Bank. The issues of size and governance are extremely important from the viewpoint of financial stability. The draft policy is in consonance of treating banks as special with the objective of setting upfront a roadmap in a transparent manner for existing investors to align their policies and potential investors to make informed decisions. The intention of the draft policy is to ensure adequate capital and consolidation in the banking industry with the regulator being aware of the intention of existing and potential shareholders (Mohan, 2004d).

9.42 Although the housing sector provides a relatively safe destination for bank credit on account of relatively low default rates, banks need to be on alert against an unbridled growth of housing finance and should take due precaution in the matter of interest rates, margin, reset period and documentation. Moreover, during periods of sharp increases in housing and other retail credit, risk containment measures are desirable. Illustratively, as a temporary countercyclical measure, the Reserve Bank, in October 2004, increased the risk weight from 50 per cent to 75 per cent in the case of housing loans and from 100 per cent to 125 per cent in the case of consumer credit.

9.43 Risk management of banks has gained credence in recent times. It is important for banks to look ahead at the expansion of the credit portfolio in a healthy way, particularly in the background of higher industrial growth, new plans of corporate expansion and higher levels of infrastructure financing. In this context, adopting an integrated risk management approach based on risk models suited to their risk appetite, business philosophy and expansion strategy is a *sine qua non* for the banking sector (Udeshi, 2004).

9.44 As the financial sector matures and becomes more complex, the process of deregulation would need to continue, but in such a manner that all types of financial institutions are strengthened and financial stability of the overall system is safeguarded. As deregulation gathers force, the emphasis on regulatory practice has to shift from micro-management to macro-regulation. In order to achieve these regulatory objectives, corporate governance within financial institutions would need to be strengthened, and internal systems would need to be developed to ensure this shift in regulatory practice (RBI, 2004a).

Concluding Observations

9.45 To conclude, structural reforms initiated in the Indian economy in the early 1990s had a significant impact on the conduct of monetary policy in terms of its objectives, strategies and tactics. Financial as well as external liberalisation has increased integration of the Indian economy with the rest of the world. This has benefits for the economy but also throws challenges for policy authorities. External demand conditions, sharp swings in capital flows and volatile exchange rates have to be factored in the process of monetary policy formulation. As it is, monetary policy operates in an uncertain environment. These uncertainties are exacerbated in an environment of greater trade and financial integration, warranting close monitoring. First, apart from price stability and credit availability, financial stability has gradually emerged as a key consideration in the conduct of monetary policy. Second, the instruments and operating procedures of monetary policy had to be constantly refined to meet the challenges thrown up by the vicissitudes of capital flows and a market-determined exchange rate.

9.46 In order to meet their price and financial stability objectives, central banks are constantly required to operate in various segments of financial markets to ensure orderly conditions. While in the long-run these objectives reinforce each other, monetary policy is faced with various trade-offs in the short-run. Given the random nature of the shocks impacting the economy, central banks are increasingly acting as shock absorbers. In order to manage these shocks effectively, a constant innovation is required by central banks in terms of instruments and operating

procedures while strengthening their balance sheets. Illustratively, in India, existing arrangements to modulate liquidity had to be supplemented with innovations such as Market Stabilisation Scheme.

9.47 Unlike in the case of trade integration where benefits to all countries are demonstrable, in case of financial integration, a "threshold" is important for a country to get full benefits. A judgmental view needs to be taken whether and when a country has reached the "threshold" and the financial integration should be approached cautiously with a plausible road map by answering questions in a country-specific context and institutional features. India has been adhering to a cautious and calibrated approach in reforms so far and there is merit in adopting a 'road map approach' building on the strengths that have already been developed (Reddy, 2004c).

9.48 An assessment of monetary management since early 1990s shows that monetary policy has been reasonably successful in meeting its key objectives. Price stability through low and stable inflation has been maintained since the second half of the 1990s. More importantly, this regime of low and stable inflation has, in turn, stabilised inflation expectations and inflation tolerance in the economy has come down. It is, therefore, critical that inflation expectations are kept low. Second, flow of credit to productive sectors has been maintained in the last 3-4 years. Recent efforts to reduce information and transaction costs as well as to impart greater flexibility to the interest rate structure of the banks are expected to further improve availability of credit to the various sectors. Third, financial stability has been ensured in contrast to the experience of many developing and emerging economies.

9.49 While assessing the conduct of monetary policy in recent years, one needs to take cognisance of the fact that the Indian economy witnessed a large number of shocks, both global and domestic. These shocks included a series of financial crises in Asia, Brazil and Russia besides September 11 terrorist attacks in the US, border tensions, sanctions imposed in the aftermath of nuclear tests, political uncertainties and changes in the Government. Monetary policy in India had to be fine tuned to manage all these shocks. Viewed in this light, the success in maintaining price and financial stability is all the more credible.

9.50 It needs to be noted that financial stability is also subject to interest rate cycles. Accordingly, the Reserve Bank has been sensitising the market participants for these turns in cycles and they have also been advised to hedge their exposures. Market participants are also being encouraged to gradually gain means of coping with market-orientation. Market infrastructure, technology and institutions have been promoted and strengthened. These measures have added to the effectiveness of monetary policy.

9.51 In the context of price stability objective, an issue of debate is as to whether it should be the sole overriding objective of monetary policy in India. A number of factors such as intermittent supply shocks, absence of fully integrated financial markets and dominance of fiscal policy constrain the adoption of price stability as the sole objective. To overcome issues posed by supply shocks, core measures of inflation are often recommended as a target of inflation. In developing countries, a measure of core inflation excluding food items – which can account for more than half of the weight in the index – may not be very meaningful (Jalan, 2002), although from the viewpoint of formulation of monetary policy, it is the underlying inflation or core inflation that is important. While there is a growing consensus on the acceptable rate of inflation, this needs to be better articulated, formalised, and perhaps converted in due course into a mandate from the Government to the Reserve Bank and, in the process to all economic agents (Reddy, 1999). An explicit numerical target is good for anchoring inflation but it comes at a cost. If the explicit inflation target cannot be achieved it weakens the credibility of the central bank. Thus it may not be appropriate to formulate monetary policy based on a simplistic inflation target or a single point inflexible point target as argued by many. Rules can only be viewed as thoughtful adjuncts of policy but cannot be a substitute for risk paradigms. Ultimately, a central bank has to judge the outcome of the policy choices it makes and also take account of and anticipate market expectations, which have become increasingly important for the attainment of desirable outcomes (Mohan, 2004a).

9.52 As the international experience indicates, a prudent fiscal policy remains the single largest pre-requisite for monetary stability. Reforms in the monetary-fiscal interface during the 1990s have been a key factor that imparted greater flexibility to monetary policy. These reforms have taken a significant step forward with the enactment of the Fiscal Responsibility and Budget Management Act, 2003. Strict adherence to these fiscal rules in letter and spirit will help to stabilise inflation expectations and, in turn, keep inflation low and stable in the country while gradually providing increasing flexibility to the Reserve Bank.

9.53 Fiscal discipline creates enabling conditions for monetary and financial stability. Monetary policy will have, however, still to grapple with uncertainty in the environment it operates. Incoming economic data - crucial for the conduct of monetary policy - provide, at best, incomplete coverage of economic activity; are subject to substantial sampling errors; become available with only a lag; and, are subject to substantial revisions (Bernanke, 2004). Despite substantial empirical research, there is still no unanimity on the channels through which monetary policy affects output and prices. Lags with which monetary policy works remain uncertain and can vary from one business cycle to another. Therefore, policymakers are unable to predict with great confidence how - and how quickly - their own actions are likely to affect the economy. Divergent movements in alternative indicators of inflation in the short-run - for instance, between wholesale and consumer prices in India, as at the present juncture - pose further challenges for the monetary authority in gauging underlying inflationary conditions in the economy. In addition to these uncertainties, short-term risks to monetary management emerge from global macroeconomic imbalances and the associated possibility of disruptive currency adjustments. In the medium to long-term, evolving demographic patterns and the electronic money revolution will add to uncertainties of the transmission mechanism. In the context of these uncertainties, a risk-management approach involving a judgement about the probabilities, costs and benefits of the various possible outcomes has been recommended for the conduct of monetary policy (Greenspan, 2004).

9.54 Uncertainty about how economies operate and about monetary policy itself is, however, no excuse for not pursuing price stability. While year-to-year inflation may vary depending upon the intensity of supply shocks, monetary policy can stabilise inflation expectations at low levels. An environment of sustained low and stable inflation is conducive for financial savings, with beneficial impact on investment in the economy and for sustained growth and employment. Price stability is all the more important for an economy like India, with a large proportion of poor population that has no hedges against inflation.

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