INDIA'S FINANCIAL SECTOR
AN ASSESSMENT

Volume III

Advisory Panel
on
Financial Stability Assessment and
Stress Testing

Committee on Financial Sector Assessment

March 2009

भारत सरकार
GOVERNMENT OF INDIA

भारतीय रिज़र्व बैंक
RESERVE BANK OF INDIA

This Report was completed in June 2008. However, looking at the global financial developments of late, an attempt has been made to update some relevant portions of the report, particularly Chapter I (Macroeconomic Environment) and Chapter IV (Aspects of Stability and Functioning of Financial Markets).

Sale Price: Rs. 2,000

Volumes I-VI (including one CD)

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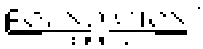

Foundation Books
An Imprint of Cambridge University Press India Pvt. Ltd,
Cambridge House, 4381/4, Ansari Road
Darya Ganj, New Delhi - 110 002
Tel: + 91 11 43543500, Fax: + 91 11 23288534
www.cambridgeindia.org

Published by Dr. Mohua Roy, Director, Monetary Policy Department, Reserve Bank of India, Central Office, Mumbai - 400 001 and printed at Jayant Printery, 352/54, Girgaum Road, Murlidhar Temple Compound, Near Thakurdwar Post Office, Mumbai - 400 002.

Composition of the Advisory Panel on Financial Stability Assessment and Stress Testing

Shri M.B.N.Rao	Chairman and Managing Director Canara Bank	Chairman
Dr. Rajiv B. Lall	Managing Director and Chief Executive Officer Infrastructure Development Finance Company Ltd.	Member
Dr. T.T.Ram Mohan	Professor Indian Institute of Management Ahmedabad	Member
Shri Ravi Mohan	Managing Director and Region Head Standard & Poor's, South Asia	Member
Shri Ashok Soota	Chairman and Managing Director Mind Tree Consulting Ltd.	Member
Shri Pavan Sukhdev	Head of Global Markets Deutsche Bank AG.	Member
Special Invitees		
Shri G.C. Chaturvedi	Joint Secretary (Banking & Insurance) Department of Financial Services Ministry of Finance Government of India	
Dr. K. P. Krishnan	Joint Secretary (Capital Markets) Department of Economic Affairs Ministry of Finance Government of India	
Shri Amitabh Verma	Joint Secretary (Banking Operations) Department of Financial Services Ministry of Finance Government of India	
Shri V.K.Sharma	Executive Director Reserve Bank of India	
Dr. R. Kannan	Member (Actuary) Insurance Regulatory and Development Authority	
Dr. Sanjeevan Kapshe	Officer on Special Duty Securities and Exchange Board of India	

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List of Acronyms

ABS	Asset Backed Securities
ACRC	Agricultural Credit Review Committee
AD	Authorised Dealer
ADR	American Depository Receipt
AFC	Asset Finance Company
AFS	Available for Sale
AGL	Aggregate Gap Limit
AIDIS	All India Debt and Investment Survey
ALD	Aggregate Liability to Depositors
ALM	Asset Liability Management
AMBI	Association of Merchant Bankers of India
AMFI	Association of Mutual Funds of India
ANMI	Association of National Exchange Members of India
ANP	Average of Net Premiums
ATM	Automated Teller Machine
AU	Asset Utilisation
AUM	Assets under Management
BCBS	Basel Committee on Banking Supervision
BCI	Business Confidence Index
BCM	Business Continuity Management
BCP	Business Continuity Plan
BCP	Basel Core Principles
BCSBI	Banking Codes and Standards Board of India
BE	Budget Estimates
BFRS	Board for Financial Regulation and Supervision
BFS	Board for Financial Supervision
BHC	Bank Holding Company
BIS	Bank for International Settlements
BO	Banking Ombudsman
BPLR	Benchmark Prime Lending Rate
BPO	Business Process Outsourcing
BPSS	Board for regulation and supervision of Payment and Settlement Systems
BR Act	Banking Regulation Act
BSE	Bombay Stock Exchange
CA	Current Account
CAB	Change Approval Board
CAC	Capital Account Convertibility
CAGR	Compound Average Growth Rate
CAMELS	Capital adequacy, Asset quality, Management, Earnings, Liquidity and Systems
CASA	Current And Savings Account
CBLO	Collateralised Borrowing and Lending Obligation
CBS	Core Banking Solution/s
CCC	Credit Card Companies
CCF	Contingent Credit Facility
CCIL	Clearing Corporation of India Ltd.
CCP	Central Counter Party
CD	Credit deposit/Certificates of Deposit
CDBMS	Centralised Data Base Management Systems
CDO	Collateralised Debt Obligation
CDS	Credit Default Swap

CDSL	Central Depository Services (India) Ltd.
CEO	Chief Executive Officer
CFCAC	Committee on Fuller Capital Account Convertibility
CFMS	Centralised Funds Management System
CFS	Consolidated Financial Statements
CFSA	Committee on Financial Sector Assessment
CGF	Credit Guarantee Fund
CHF	Swiss Franc
CIB	Credit Information Bureau
CIBIL	Credit Information Bureau (India) Ltd.
CIP	Central Integrated Platform
CIR	Cost Income Ratio
CLO	Collateralised Loan Obligation
CLS	Continuous Linked Settlement
CMBS	Commercial Mortgage-Backed Security
CMD	Chairman and Managing Director
CoR	Certificate of Registration
CP	Commercial Paper
CPC	Cheque Processing Centre
CPI	Consumer Price Index
CPM	Credit Portfolio Management
CPPAPS	Committee on Procedures and Performance Audit of Public Services
CPR	Consolidated Prudential Reports
CPSS	Committee on Payment and Settlement Systems
CRAR	Capital to Risk-weighted Assets Ratio
CRISIL	Credit Rating Information Services of India Ltd.
CRR	Cash Reserve Ratio
CRT	Credit Risk Transfer
CSR	Corporate Social Responsibility
CUG	Closed User Group
CVC	Central Vigilance Commission
DCCB	District Central Cooperative Bank
DFI	Development Financial Institution
DI	Deposit Insurance
DICGC	Deposit Insurance and Credit Guarantee Corporation
DIF	Deposit Insurance Fund
DMA	Direct Marketing Associates/ Agencies
DMO	Debt Management Office
DNS	Deferred Net Settlement
DoE	Duration of Equity
DOS	Denial of Service
DR	Disaster Recovery
DRAT	Debt Recovery Appellate Tribunal
DRR	Designated Reserve Ratio
DRT	Debt Recovery Tribunal
DSA	Direct Selling Association/ Agency
DVP	Delivery versus Payment
EaR	Earnings at Risk
ECB	European Central Bank/External Commercial Borrowing
ECR	Export Credit Refinance
ECS	Electronic Clearing Service
EFT	Electronic Funds Transfer
EL	Equipment Leasing

EME	Emerging Market Economy
ESM	Enterprise Security Management
ESOP	Employees Stock Option Plan
EV	Economic Value
FAO	Food and Agriculture Organisation
FC	Financial Conglomerate/Foreign Currency
FCA	Foreign Currency Asset
FCAC	Fuller Capital Account Convertibility
FCCB	Foreign Currency Convertible Bond
FCNR	Foreign Currency Non Resident
FDI	Foreign Direct Investment
FDIC	Federal Deposit Insurance Corporation
FEDAI	Foreign Exchange Dealers' Association of India
FEMA	Foreign Exchange Management Act
FERA	Foreign Exchange Regulations Act
FFMC	Full Fledged Money Changer
FII	Foreign Institutional Investor
FIMMDA	Fixed Income, Money Market and Derivatives Association of India
FIU-IND	Financial Intelligence Unit-India
FMC	Financial Markets Committee
FPI	Foreign Portfolio Investment
FPSBI	Financial Planning Standards Board of India
FRBM Act	Fiscal Responsibility and Budget Management Act
FSI	Financial Stability Institute
FY	Financial Year
GBC	Gross Bank Credit
GCC	General Credit Card
GCF	Gross Capital Formation
GDP	Gross Domestic Product
GDR	Global Depository Receipt
GE	General Electric
GER	Gross Enrolment Ratio
GoI	Government of India
GP	Gross Premium
G-Secs	Government Securities
HFC	Housing Finance Company
HFT	Held for Trading
HIDS	Host Intrusion Detection System
HLCCFM	High Level Coordination Committee on Financial Markets
HP	Hire Purchase
HR	Human Resource
HTM	Held to Maturity
HUDCO	Housing and Urban Development Corporation
IAIS	International Association of Insurance Supervisors
IAS	International Accounting Standards
IBNR	Incurred But Not Reported
IC	Investment Companies
ICAAP	Internal Capital Adequacy Assessment Process
ICAI	Institute of Chartered Accountants of India
ICOR	Incremental Capital Output Ratio
IDFC	Infrastructure Development Finance Company
IDL	Intra-Day Liquidity

IDS	Intrusion Detection System
IEM	Industrial Entrepreneurs Memoranda
IFCI	Industrial Finance Corporation of India
IFRS	International Financial Reporting Standards
IIBI	Industrial Investment Bank of India
IIFC	India Infrastructure Finance Company
IMF	International Monetary Fund
IMSS	Integrated Market Surveillance System
INFINET	Indian Financial Network
INR	Indian Rupee
IOSCO	International Organisation of Securities Commissions
IPDI	Innovative Perpetual Debt Instrument
IPO	Initial Public Offer
IPS	Intrusion Prevention System
IRAC	Income Recognition and Asset Classification
IRDA	Insurance Regulatory and Development Authority
IRF	Interest Rate Futures
IRFC	Indian Railway Finance Corporation
IRS	Interest Rate Swaps
ISDA	International Swaps and Derivatives Association
IT	Information Technology
IT Act	Information Technology Act
ITC	India Tobacco Company
ITES	Information Technology Enabled Services
JPY	Japanese Yen
KCC	Kisan Credit Card
KYC	Know Your Customer
LAB	Local Area Bank
LAF	Liquidity Adjustment Facility
LC	Loan Companies
LCB	Large and Complex Bank
LCBG	Large and Complex Banking Group
LCDS	Loan Credit Default Swaps
LIBOR	London Interbank Offered Rate
LIC	Life Insurance Corporation of India
LLP	Loan Loss Provision
LLR	Lender of Last Resort
LoC	Line of Credit
LPG	Liquefied Petroleum Gas
LTV	Loan to Value
MBC	Mutual Benefit Company
MBFC	Mutual Benefit Finance Company
MCA	Model Confidentiality Agreement
MFI	Micro Finance Institution
MIBOR	Mumbai Inter-Bank Offer Rate
MICR	Magnetic Ink Character Recognition
MIFOR	Mumbai Inter-Bank Forward Offer Rate
MIS	Management Information System
MNBC	Miscellaneous Non Banking Company
MoU	Memorandum of Understanding
MR	Mathematical Reserves

MRTP Act	Monopolies and Restrictive Trade Practices Act
MSCI	Morgan Stanley Capital International
MSE	Micro and Small Enterprises
MSMED Act	Micro, Small and Medium Enterprises Development Act
MSS	Market Stabilisation Scheme
MTM	Marked to Market
NA	Not Available
NABARD	National Bank for Agriculture and Rural Development
NBFC	Non-Banking Finance Company
NBFC-ND-SI	Non Deposit Taking Systemically Important Non-Banking Finance Company
NBO	National Building Organisation
NCAER	National Council of Applied Economic Research
NCLT	National Company Law Tribunal
NDA	Non-Disclosure Agreement
NDF	Non-Deliverable Forwards
NDP	Net Domestic Product
NDS	Negotiated Dealing System
NDTL	Net Demand and Time Liabilities
NEAT	National Exchange for Automated Trading
NEFT	National Electronic Funds Transfer
NFS	National Financial Switch
NGO	Non Governmental Organisation
NHB	National Housing Bank
NII	Net Interest Income
NIM	Net Interest Margin
NL	Non-Linked
NLNBP	Non-Linked New Business Premium
NLNPNBP	Non-Linked Non-Par New Business Premium
NoF	Net Owned Fund
NP	Net Premium
NPA	Non-Performing Assets
NPL	Non-Performing Loans
NRE	Non Resident External
NRFIP	National Rural Financial Inclusion Plan
NSCCL	National Securities Clearing Corporation Ltd.
NSDL	National Securities Depository Ltd.
NSE	National Stock Exchange
OBS	Off-Balance Sheet
ODC	Office Data Connection
OECD	Organisation for Economic Co-operation and Development
OIS	Overnight Indexed Swap
OMO	Open Market Operation
OPB	Old Private-sector Bank
OTC	Over The Counter
P/E ratio	Price Earnings Ratio
PACS	Primary Agricultural Credit Societies
PCA	Prompt Corrective Action
PCARDB	Primary Cooperative Agriculture and Rural Development Bank
PD	Primary Dealer
PDAI	Primary Dealers Association of India
PDO	Public Debt Office
PFC	Power Finance Corporation
PFI	Public Financial Institution

PFRDA	Pension Fund Regulatory and Development Authority
PLR	Prime Lending Rate
PM	Profit Margin
PMLA	Prevention of Money Laundering Act
PN	Participatory Note
PoS	Point of Sale
PPP	Public Private Partnership
PSB	Public Sector Bank
PV	Present Value
PV01	Present Value Impact of 1 Basis Point Movement in Interest Rate
QIB	Qualified Institutional Buyers
RaRoC	Risk-adjusted Return on Capital
RBI	Reserve Bank of India
RBS	Risk Based Supervision
RC	Reconstruction Company
RCS	Registrar of Cooperative Societies
RE	Revised Estimate
REC	Rural Electrification Corporation
RMBS	Residential Mortgage Backed Securities
RMDS	Reuters Market Data System
RNBC	Residuary Non-Banking Companies
RoA	Return on Assets
RoE	Return on Equity
RRB	Regional Rural Bank
Rs.	Indian Rupees
RTGS	Real Time Gross Settlement
RWA	Risk Weighted Asset
SA	System Administrator
SARFAESI Act	Securitisation And Reconstruction of Financial Assets and Enforcement of Security Interest Act
SBI	State Bank of India
SC	Securitisation Company
SCARDB	State Cooperative Agriculture and Rural Development Bank
SCB	Scheduled Commercial Bank
SCRA	Securities Contracts (Regulation) Act
SD	Standard Deviation
SDDS	Special Data Dissemination Standards
SEBI	Securities and Exchange Board of India
SFC	State Financial Corporation
SGL	Subsidiary General Ledger
SHG	Self Help Group
SIDBI	Small Industries Development Bank of India
SIDC	State Industrial Development Corporation
SIPS	Systemically Important Payment Systems
SIV	Structured Investment Vehicles
SLOC	Source Lines of Code
SLR	Statutory Liquidity Ratio
SME	Small and Medium Enterprise
SPV	Special Purpose Vehicle
SR	Solvency Ratio
SRI	Socially Responsible Investment
SRO	Self Regulatory Organisation
SSI	Small-Scale Industry
SSS	Securities Settlement System

StCB	State Cooperative Bank
STP	Straight Through Processing
SUCB	Scheduled Urban Co-operative Bank
TAFCUB	Task Force for Urban Cooperative Banks
TAG	Technical Advisory Group
TDS	Tax Deduction at Source
TFCI	Tourism Finance Corporation of India
TMR	Total Mathematical Reserves
TRAI	Telecom Regulatory Authority of India
UCB	Urban Cooperative Bank
UK	United Kingdom
US	United States
USD	US Dollar
VaR	Value at Risk
VC	Vice Chairman
VRS	Voluntary Retirement Scheme
WDM	Wholesale Debt Market
WI	When Issued
WMA	Ways and Means Advance
WOS	Wholly Owned Subsidiaries
WPI	Wholesale Price Index

Terms of Reference and Scheme of Report

The Government of India, in consultation with the Reserve Bank of India constituted the Committee on Financial Sector Assessment (CFSA) in September 2006, with a mandate to undertake a comprehensive assessment of the Indian Financial Sector, focusing upon stability and development. The CFSA was chaired by Dr. Rakesh Mohan, Deputy Governor, Reserve Bank of India. The Co-Chairmen at different points in time were Shri Ashok Jha, Dr. D. Subbarao and Shri Ashok Chawla, Secretary, Economic Affairs, Government of India. The Committee also had other officials from the Government of India as its members.

To assist the Committee in the process of assessment, the CFSA constituted four Advisory Panels respectively for the assessment of Financial Stability Assessment and Stress Testing, Financial Regulation and Supervision, Institutions and Market Structure and Transparency Standards. These Panels were assisted by Technical Groups comprising mainly of officials from relevant organisations to provide technical inputs and data support, as appropriate, to the respective Advisory Panels.

Taking into account the legal, regulatory and supervisory architecture in India, it was felt that there was a need for involving and closely associating the major regulatory institutions, *viz.*, Reserve Bank of India (RBI), Securities and Exchange Board of India (SEBI) and Insurance Regulatory and Development Authority (IRDA), in addition to representatives from the Government. Based on the discussion with the regulatory agencies, IRDA instituted its own groups for financial stability assessment and stress testing and financial regulation and supervision, whereas the Reserve Bank and SEBI nominated suitable officials for the Technical Groups. These institutions were also represented in Advisory Panels, constituted by the CFSA, as Special Invitees. In order to leverage the available expertise to the maximum permissible extent, it was also deemed fit to involve, besides the above regulatory authorities, other agencies as relevant to the work.

Advisory Panel on Financial Stability Assessment and Stress Testing

A key analytical component of financial sector assessment was a comprehensive assessment of financial stability and stress testing of the Indian financial sector. The Advisory Panel on Financial Stability Assessment and Stress Testing was constituted to conduct macro-prudential surveillance (including system level stress testing) to assess the soundness and stability of financial system and suggest measures for strengthening the

financial structure and system and its development in a medium-term perspective. The Advisory Panel chaired by Shri M.B.N. Rao comprised of non-official experts as members and officials representing Government and other agencies as special invitees – **Annex A**.

The terms of reference of the Advisory Panel were:

- to conduct an analysis of macro-prudential surveillance and financial stability (including business continuity and disaster recovery) and to assess the impact of potential macroeconomic and institutional factors (both domestic and external) on the soundness (risks and vulnerabilities) and stability of financial systems;
- to analyse relevant data and information and apply techniques and methodologies as relevant to banking, insurance, securities markets and non-banking financial sectors;
- to subject the assessment of stability to stress testing duly taking into account potential impact of macroeconomic and institutional factors and risks on the stability (including business continuity and disaster recovery) indicators, including natural and man-made disasters/catastrophe; and
- based on the assessment, suggest measures for strengthening the financial structure and system and its development in a medium-term perspective.

The Advisory Panel also had the option of co-opting as Special Invitees any other experts as they deemed fit.

Technical Group on Financial Stability Assessment and Stress Testing

A Technical Group comprising of officials drawn from the Government and other agencies who are directly associated with respective areas of work, assisted the Advisory Panel in preparing preliminary assessments and background material which served as inputs to the Advisory Panel's work (Please see **Annex B** for the composition of the Technical Group and terms of reference). Apart from the officials indicated in the **Annex B** the Panel also benefited from the inputs of the officials indicated in **Annex C**. IRDA formed its own Technical Group for assessment of aspects of Stability and Performance of the Insurance Sector - **Annex D**.

Approach and Methodology

Along with the Reserve Bank and SEBI officials, the Technical Group involved officials from CCIL, CRISIL, ICRA, DICGC, ICICI Bank, SBI, NABARD, NHB and IBA in their deliberations. To facilitate analysis of various areas which were covered in the report, the group formed three sub-groups. The first one was for deciding upon the methodology to be adopted for conduct of various system level stress tests and projections. Another sub-group went into identification of issues germane to financial stability. The third sub-group deliberated on the methodology to be adopted for assessment of level of Business Continuity Management in the Indian financial system. Focused discussions were held with some members of other Advisory Panels on HR issues and financial inclusion. The Group also held discussions with various resource persons

within the Reserve Bank in areas of their expertise. The preliminary report of the Technical Group also drew on initial write ups provided by various departments within RBI. Similarly, IRDA in its separate exercise drew resources from Life Insurance Council, Prudential Corporation, Asia, ICICI Prudential Life Insurance Company Ltd, IIM, Bangalore and Genpact. Based on the deliberations of the Technical Groups, the Secretariat to the Committee identified the preliminary set of issues and results which was taken up for discussion by the Advisory Panel.

The Advisory Panel also drew upon various reports published, both in India and elsewhere. A major input for the Report was the Handbook on Financial Sector Assessment, published by the Fund and the World Bank in September 2005. Drawing on the framework for assessment as elucidated in the Handbook, the draft Report has been tailored to suit country-specific realities, taking on board the state of development of the financial system and the maturity of financial institutions and markets. The report also benefited from the issues and recommendations flagged by other Advisory Panels on assessments of standards and codes. Extensive use has been made of off-site supervisory data in building up of various financial soundness indicators and stress testing. The Advisory Panel held a total of nine meetings.

Peer Review

At the request of the CFSA, two international experts **(Annex E)** peer reviewed the draft reports on respective assessments and recommendations. The Advisory Panel considered in depth the comments made by the peer reviewers and modified the report after appropriately incorporating their comments / suggestions. The Panel also had the option to differ with the peer reviewers comments. In the interest of transparency, the comments of the peer reviewers and the stance taken by the Panel thereon are appended to this report.

Scheme of the Report

The report is divided into seven chapters. Chapter I dwells on the macroeconomic environment in the backdrop of current global economic scenario. To the extent that the overall economic situation impinges upon the functioning of institutions, markets and infrastructure, the analysis in this Chapter focuses on potential areas of vulnerabilities which have a bearing on overall stability for sustained growth. It provides an overview of the institutional and financial market environment, bringing out the importance of various financial institutions in the overall financial system as also the relative importance of various financial market segments.

Chapter II assesses the soundness and performance of financial institutions and discusses the emerging issues confronting the financial institutions at the present juncture. It employs various ratios/trend analyses to gauge the performance of financial institutions and benchmarks them with available international best practices, as appropriate. In addition, drawing upon recent events in global financial markets, the analysis also devises a set of liquidity ratios and evaluates the trends. Institutional coverage includes banking sector (commercial banks/Regional Rural Banks/co-operative banks), broader financial sector (NBFCs, DFIs and HFCs) as also the relevant non-financial sectors (corporate and household). Central to the analyses of Chapter II has been the use of stress tests to ascertain the resilience of the concerned institutions. Taking into account the maturity of the financial system and the present financial health of the relevant institutions, stress tests were appropriately designed to focus on the major risk factors.

Chapter III examines the stability and performance of the insurance sector. Subsequent to its opening up to private participation, there has been a rapid growth in this sector. As a consequence, it was deemed

desirable to undertake an initial assessment of the strength and resilience of this sector including a stress test.

Chapter IV examines the stability and functioning of financial markets, including the money market, government securities market, foreign exchange market, equity market and corporate bond market. In addition, it also addresses the stability and developmental issues as germane to the credit market.

Financial infrastructure issues are examined in Chapter V, covering the payment and settlement infrastructure, business continuity and disaster management, the regulatory and supervisory structure, the legal infrastructure, liquidity infrastructure and issues relating to the safety net such as deposit insurance.

Chapter VI focuses on some of the salient developmental issues in the Indian context having a bearing on the equity and efficiency aspects, such as financial inclusion.

The final Chapter VII provides a summary of observations and recommendations.

Annex A

RESERVE BANK OF INDIA
CENTRAL OFFICE,
SHAHID BHAGAT SINGH ROAD,
MUMBAI – 400 001, INDIA

MEMORANDUM

Constitution of Advisory Panel on Financial Stability Assessment and Stress Testing

A Committee on Financial Sector Assessment (CFSA) has been constituted by the Government of India (GOI) in consultation with the Reserve Bank with the objective of undertaking a self-assessment of financial sector stability and development. One of the analytical components of Financial Sector Assessment would encompass a comprehensive assessment of financial stability and stress testing of the Indian financial sector.

2. In this connection the CFSA has decided to constitute an Advisory Panel on Financial Stability Assessment and Stress Testing comprising the following:

Sr. No.	Name	Designation/Institution	
1.	Shri M.B.N.Rao	Chairman and Managing Director, Canara Bank	Chairman
2.	Dr. Rajiv B. Lall	Managing Director and Chief Executive Officer, Infrastructure Development Finance Company Ltd.	Member
3.	Dr. T.T.Ram Mohan	Professor, Indian Institute of Management, Ahmedabad	Member
4.	Shri Ravi Mohan	Managing Director and Region Head, Standard & Poor's, South Asia	Member
5.	Shri Ashok Soota	Chairman and Managing Director, Mind Tree Consulting Ltd.	Member
6.	Shri Pavan Sukhdev	Head of Global Markets, Deutsche Bank AG	Member

3. In addition, the Advisory Panel can utilise the expertise of the following *ex-officio* Special Invitees:

Sr. No.	Name	Designation/Organisation
1.	Shri G. C. Chaturvedi	Joint Secretary (Banking & Insurance), Government of India
2.	Dr. K.P.Krishnan	Joint Secretary (Capital Markets), Government of India
3.	Shri Amitabh Verma	Joint Secretary (Banking Operations), Government of India
4.	Shri V.K.Sharma	Executive Director, Reserve Bank of India
5.	Dr. R. Kannan	Member (Actuary), Insurance Regulatory and Development Authority
6.	Dr. Sanjeevan Kapshe	Officer on Special Duty, Securities and Exchange Board of India

4. The Advisory Panel will have the following terms of reference:

i. to conduct an analysis of macro-prudential surveillance and financial stability (including business continuity and disaster recovery) and to assess the impact of potential macroeconomic and institutional factors (both domestic and external) on the soundness (risks and vulnerabilities) and stability of financial systems;

ii. to analyse relevant data and information and apply techniques and methodologies as relevant to Banking, Insurance, Securities Markets and Non-banking financial sectors;

iii. to subject the assessment of stability to stress testing duly taking into account potential impact of macroeconomic and institutional factors and risks on the stability (including business continuity and disaster recovery) indicators, including natural and man-made disasters/catastrophe; and

iv. based on the assessment, suggest measures for strengthening the financial structure and system and its development in a medium-term perspective.

5. The Advisory Panel would have the option of co-opting as Special Invitees any other experts as they deem fit.

6. The secretarial assistance to the Advisory Panel will be provided by the Reserve Bank of India. The Technical Groups on Financial Stability Assessment and Stress Testing constituted by the Reserve Bank and the Insurance Regulatory and Development Authority (IRDA) at the instance of the Committee have already progressed with the technical work with regard to above terms of reference. The technical notes and background material prepared by these groups would *inter-alia* form the basis for discussion by the Panel and in drafting of the Report.

7. The Advisory Panel will prepare a detailed Report covering the above aspects and the Government of India/ Reserve Bank of India will have the discretion of making the Report public, after a peer review, as they may deem fit.

8. The Advisory Panel is expected to submit its Report in about three months from the date of its first meeting.

(Rakesh Mohan)

Mumbai
August 10, 2007

Deputy Governor and
Chairman of the Committee on Financial Sector Assessment

Annex B

RESERVE BANK OF INDIA
CENTRAL OFFICE,
SHAHID BHAGAT SINGH ROAD,
MUMBAI – 400 001, INDIA

DEPUTY GOVERNOR

MEMORANDUM

Constitution of Technical Group on Financial Stability Assessment and Stress Testing

The Committee on Financial Sector Assessment (CFSA) will undertake a self-assessment of financial sector stability and development. CFSA has decided to constitute a Technical Group on Financial Stability Assessment and Stress Testing comprising the following:

Sr. No.	Name	Designation/Organisation	
1.	Shri C.S. Murthy	Chief General Manager, RBI	Member
2.	Shri P.Krishnamurthy	Chief General Manager, RBI	Member
3.	Shri Prashant Saran	Chief General Manager, RBI	Member
4.	Shri N.S. Vishwanathan	Chief General Manager, RBI	Member
5.	Shri Chandan Sinha	Chief General Manager, RBI	Member
6.	Shri S.Sen	Chief General Manager, RBI	Member
7.	S. Ramann	Chief General Manager, SEBI	Member
8.	Dr A.S Ramasastri	Adviser, RBI	Member
9.	Dr Charan Singh	Director, RBI	Member
10.	Shri K. Kanagasabapathy	Secretary, CFSA	Convener

2. The Group will have the following terms of reference:

(i) to contribute to the work related to analysis of macroprudential surveillance and financial stability to monitor the impact of potential macroeconomic and institutional factors (both domestic and external) on the soundness (risks and vulnerabilities) and stability of financial systems based on the direction/guideline provided by the Advisory Panel; and

(ii) to compile relevant data and information and apply techniques and methodologies as relevant to Banking, Insurance, Securities Markets and Non-banking financial sectors; and

(iii) to subject the assessment of stability (including Business Continuity and Disaster recovery) to stress testing duly taking into account potential impact of macroeconomic and institutional factors and risks on the stability (including Business Continuity and Disaster recovery) indicators, including natural and man-made disasters/ catastrophe; and

(iv) based on the assessment, to suggest measures for strengthening the financial structure and system and its development in a medium-term perspective; and

(v) to provide such inputs for discussion to the Advisory Group on Financial Stability Assessment and Stress testing as needed and participate in their deliberations.

3. The Group would function under the overall guidance of Shri V.K. Sharma, Executive Director, Reserve Bank of India. Shri Anand Sinha, Executive Director, Reserve Bank of India will be a permanent invitee.

4. The Group will also be directed by decisions taken in the Advisory Panel for Financial Stability Assessment and Stress Testing.

5. A list of Special Invitees who could act as resource persons to the Group and whose expertise can be called upon by the Group while preparing inputs for the Advisory Panels is provided in Annex C. The Group may co-opt as special invitees, one or more of the identified officials, or any other officials from RBI, Government or other agencies as they deem appropriate.

6. The Group is expected to complete its task in the minimum possible time which, in any case, would not go beyond four months from the date of its constitution.

(Rakesh Mohan)

Mumbai
March 1, 2007

Chairman

Annex C

List of Officials who Assisted the Advisory Panel

The Panel has also benefited considerably from the inputs provided by following officials from different agencies.

Sr. No.	Name	Areas
1.	Shri Mohandas Pai, Member of the Board and Director-Human Resources, Infosys	HR issues in the Financial Sector
2	Shri Anand Sinha, Executive Director, RBI	Liquidity issues in commercial banks, Stress Testing methodology
3.	Shri S.K. Mitra, Executive Director, NABARD	Stability issues in the rural financial sector
4.	Shri Nachiket Mor, President, ICICI Foundation for Inclusive Growth	Financial Inclusion
5.	Shri H N Sinor, Ex Chief Executive, IBA	Major issues facing commercial banks
6.	Shri Akhilesh Tuteja, ED, KPMG	Business Continuity Management and Payment & Settlement Systems

Further, the Panel also acknowledges the contributions made by the following officials in preparation of the draft reports.

Sr. No.	Name	Designation
1.	Shri G. Padmanabhan	Chief General Manager, RBI
2.	Shri A. P. Hota	Chief General Manager, RBI
3.	Shri A. K. Khound	Chief General Manager, RBI
4.	Shri K.D. Zacharias	Legal Adviser, RBI
5.	Dr Janak Raj	Adviser, RBI
6.	Dr A. M. Pedgaonkar	Chief General Manager, RBI
7.	Shri M.P. Kothari	Chief General Manager, DICGC
8.	Shri R. Ravichandran	Chief General Manager, SEBI
9.	Shri B. B. Mohanty	Chief General Manager, NABARD
10.	Shri R. Nagarajan	Chief General Manager, SBI
11.	Ms. Ritu Anand	Principal Adviser & Chief Economist, IDFC
12.	Shri R. Bhalla	General Manager, NHB
13.	Shri P.R. Ravimohan	General Manager, RBI
14.	Shri E. T. Rajendran	General Manager, RBI
15.	Shri Somnath Chatterjee	Director, RBI
16.	Shri S. Ganesh Kumar	General Manager, RBI
17.	Shri A. S. Meena	General Manager, RBI
18.	Dr Ashok Hegde	Vice President, Mind Tree Consulting Ltd
19.	Smt. Asha P. Kannan	Director, RBI
20.	Shri R. K. Jain	Director, RBI
21.	Shri Anujit Mitra	General Manager, RBI
22.	Shri Rajan Goyal	Director, RBI
23.	Smt. R. Kausaliya	Director, DICGC
24.	Shri Neeraj Gambhir	Former General Manager, ICICI Bank
25.	Shri B. P. Tikekar	Senior Vice President, HDFC
26.	Shri S. Ray	Senior Vice President, CCIL
27.	Shri Ashok Narain	Deputy General Manager, RBI

28.	Shri T. Rabi Shankar	Deputy General Manager, RBI
29.	Shri K. Babuji	Deputy General Manager, RBI
30.	Shri K.R. Krishna Kumar	Deputy General Manager, RBI
31.	Shri Aloke Chatterjee	Deputy General Manager, RBI
32.	Shri Haregour Nayak	Deputy General Manager, RBI
33.	Shri Shayama Chakraborty	Deputy Director, IRDA
34.	Shri R. Chaudhuri	Deputy General Manager, ICICI Bank
35.	Shri V. Konda	Deputy General Manager, ICICI Bank
36.	Shri Rakesh Bansal	Deputy General Manager, ICICI Bank
37.	Shri Sanjay Purao	Deputy General Manager, SEBI
38.	Shri B. Rajendran	Deputy General Manager, SEBI
39.	Shri N. Muthuraman	Former Director, CRISIL
50.	Shri Somasekhar Vemuri	Senior Manager, CRISIL
41.	Shri G. Sankaranarayanan	Former Senior Vice President, IBA
42.	Shri Puneet Pancholy	Assistant General Manager, RBI
43.	Shri D. Sathish Kumar	Assistant General Manager, RBI
44.	Shri Divyaman Srivastava	Assistant General Manager, RBI
45.	Shri Y. Jayakumar	Assistant General Manager, RBI
46.	Shri K. Vijay Kumar	Assistant General Manager, RBI
47.	Shri Navin Nambiar	Assistant General Manager, RBI
48.	Shri N. Suganandh	Assistant General Manager, RBI
49.	Shri Ashok Kumar	Assistant General Manager, RBI
50.	Shri Ashish Verma	Assistant General Manager, RBI
51.	Shri Brij Raj	Assistant General Manager, RBI
52.	Shri D.P. Singh	Assistant Adviser, RBI
53.	Shri Indranil Bhattacharya	Assistant Adviser, RBI
54.	Dr. Pradip Bhuyan	Assistant Adviser, RBI
55.	Shri Unnikrishnan N. K.	Assistant Adviser, RBI
56.	Smt. Anupam Prakash	Assistant Adviser, RBI
57.	Shri Jai Chander	Assistant Adviser, RBI
58.	Shri S. Madhusudhanan	Assistant General Manager, SEBI
59.	Shri Vineet Gupta	Former General Manager, ICRA
60.	Shri Ranjul Goswami	Director, Deutsche Bank
61.	Shri Abhilash A.	Legal Officer, RBI
62.	Shri M. Unnikrishnan	Legal Officer, RBI
63.	Shri Piyush Gupta	Manager, RBI
64.	Shri Aloke Kumar Ghosh	Research Officer, RBI
65.	Ms. Sangita Misra	Research Officer, RBI
66.	Ms. P. B. Rakhi	Research Officer, RBI
67.	Shri Dipankar Mitra	Research Officer, RBI
68.	Shri S. K. Chattopadhyay	Research Officer, RBI
69.	Shri Samir Behera	Research Officer, RBI

Annex D

Technical Group for Aspects of Stability and Performance of Insurance Sector – List of Members

Sr. No.	Name	Designation
1.	Shri S.V. Mony	Secretary General, Life Insurance Council
2.	Shri S. P. Subhedar	Senior Advisor, Prudential Corporation, Asia
3.	Shri N. S. Kannan	Executive Director, ICICI Prudential Life Insurance Company Ltd
4.	Prof R. Vaidyanathan	Professor (Finance), IIM Bangalore
5.	Dr. K. Sriram	Consulting Actuary, Genpact

Annex E

List of Peer Reviewers who Reviewed the Report

Sr. No.	Names of the Peer Reviewers
1.	**Mr. V. Sundararajan,** *Director, and Head of Financial Practice, Centennial Group Holdings, Washington DC and former Deputy Director, Department of Monetary and Capital Markets, International Monetary Fund (IMF).*
2.	**Mr. Andrew Sheng,** *Adjunct Professor, University of Malaya and Tsinghua, Beijing and former Chairman of Securities and Futures Commission, Hong Kong.*

NOTE

This report was completed in June 2008. However, looking at the global financial developments of late, an attempt has been made to update some relevant portions of the report, particularly Chapter I (The Macroeconomic Environment) and Chapter IV (Aspects of Stability and Functioning of Financial Markets).

Chapter I

The Macroeconomic Environment

1.1 Introduction

After a period of robust global growth and favourable economic conditions, global financial markets have entered a turbulent phase because of the subprime crisis which started in mid-2007. Non-performing housing loans, declining global equity prices and the rising cost of default protection on corporate bonds forced some major banks to face significant losses. Alongside, the tightening of banking credit standards in major industrial economies has reinforced worries of an impending credit crunch.

The impact has been compounded by the volatility in international food and oil prices. These effects are expected to impact global economic growth in the current year as well as next.

The adjustment process in the advanced economies is underway and its gradual unfolding has implications for global capital flows, exchange rates and the adjustment of domestic economies. With the growing integration of the Indian economy with global markets, the weight of global factors, along with domestic considerations, has also become important in the formulation of macroeconomic policies and outcomes. There are several positives pointing to sustainable higher growth rate. But, some of the recent global and domestic developments show heightened domestic risks to the short-term outlook of the Indian economy.

Against this background, Chapter I analyses the linkages between macroeconomic performance and financial stability and goes on to summarise the global economic developments. It then provides an overview of the Indian economic scenario including the institutional and financial market environment and identifies certain potential macroeconomic vulnerabilities in the Indian economy at the present juncture.

1.2 Linkages Between Macroeconomic Performance and Financial Stability

Macroeconomic developments and shocks can have an impact on the financial sector. The role of macro-prudential or financial stability analysis has therefore gained importance among central banks, regulatory authorities and international agencies. Various macroeconomic developments such as an increase in inflation due to a spurt in crude oil/commodity prices, a sudden inflow/outflow of capital, a sharp increase in the fiscal deficit, sudden and sharp increases in interest rate/asset prices can adversely affect financial institutions' balance sheets and the financial

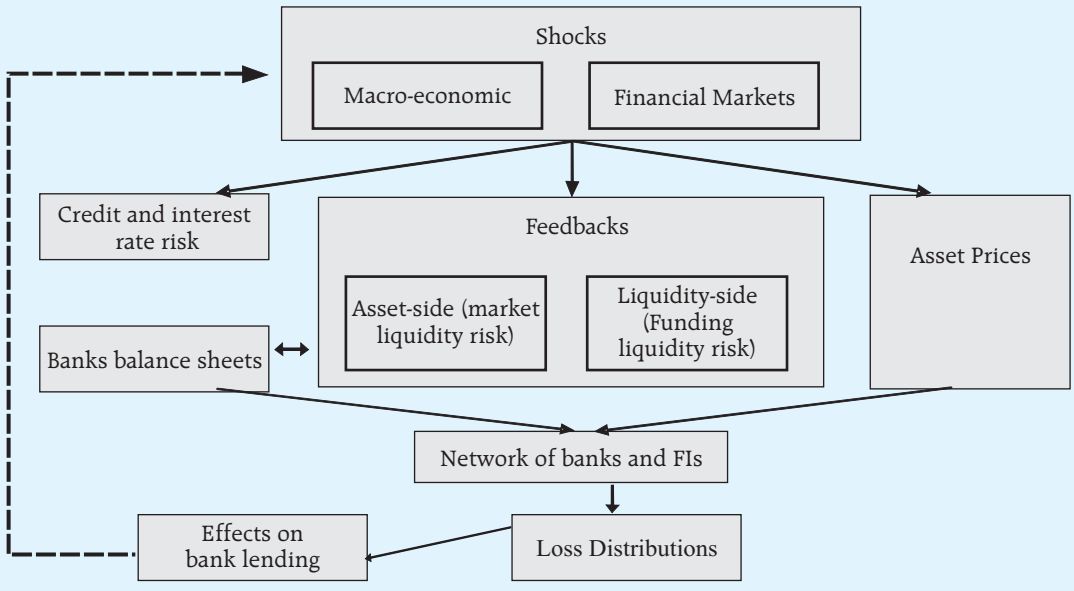
markets. This has implications for financial stability. Macro stress testing has, therefore, assumed significance in recent years.

The linkages between macroeconomic performance and financial stability are schematically presented in Chart 1.1. These shocks can emanate from the real or the financial sector. Such shocks affect the banks' balance sheets through the conventional channels of credit and market risk. They also affect balance sheets through the financial markets and asset prices. Both effects may amplify the first round balance sheet impact, in particular the liquidity and network effects. Taken together, all of these channels then translate into a final impact on balance sheets, as reflected in aggregate loss distribution. This loss distribution, in turn, can then be mapped back into the impact on the economy.

A stable and resilient financial system is therefore vital for achieving sustained growth with low inflation as it can withstand fluctuations resulting from dynamic changes in economic conditions, as well as sudden and substantial increases in uncertainty.

The resilience of the financial system can be tested by subjecting the system to stress scenarios. Since the early 1990's, stress-tests at the level of individual institutions have been widely applied by internationally active banks. In addition to applying such stress tests to the portfolios of individual institutions at the micro level, stress-testing is assuming an increasingly important role in the macro-prudential analysis

Chart 1.1: Macroeconomic Shocks and Financial Stability



Source: Haldane, Andrew; Hall, Simon and Pezzini, Silvia (2007), A New Approach to Assessing Risks to Financial Stability; Financial Stability Paper No. 2; www.bankofengland.co.uk

as well. The main objective of an aggregate stress test is to help public authorities identify those structural vulnerabilities and overall risk exposures that could lead to systemic problems.

For macro stress testing, a distinction is made between the "bottom-up" and "top-down" approaches. Under the former, the response to various shocks in a given scenario is estimated at the portfolio level using highly disaggregated data from individual financial institutions at a point in time. The results of the bottom-up approach can then be aggregated or compared to analyse the sensitivity of the entire sector or group of institutions. This approach has the advantage of making better use of individual portfolio data. However, if individual institutions provide their own estimates, the approach may introduce some inconsistencies about how each institution applies the scenario and produces its numerical estimates.

The top-down approach entails the calculation of the consequences based on a centralised model, normally using aggregated data, for the entire sector as a whole. The advantages of the top-down approach are that these stress tests are relatively easy to implement without burdening the individual institutions. The drawback is that the aggregated data only captures the effects for the sector as a whole, and not the different risk profiles and vulnerabilities of the individual institutions.

An important issue relating to stress testing is the determination of yardsticks to be used when setting the ranges of shock variables. In India, stress testing scenarios often tend to be hypothetical due to the lack of past data on benchmarks. To get a more realistic view, however, there is a need to construct scenarios which are combinations of shock variables. The correlations among such variables would need to be considered when constructing such scenarios.

As in many other countries, macro stress-testing in India is constrained by data availability and absence of a comprehensive macroeconomic model. But, in view of its importance for monetary and financial stability, there is, a need to put in place a macroeconomic stress-testing framework for assessment and surveillance on a regular basis.

The rapid pace of financial innovation of the last few years has brought about a proliferation of new and increasingly sophisticated financial products. It has also, in turn, led to significant institutional changes requiring and creating new and expanded roles in the system. Against this backdrop of increased complexity, financial stability depends on the ability to understand financial markets and to be able to identify, in a timely fashion, the potential consequences of new developments. This requires a great deal of reliance on expertise and judgment, market intelligence and a broad range of financial indicators. Many of these indicators are also measures of financial strength.

1.3 The Global Economy

After four years of continuous strong expansion, global activity has slowed down significantly during 2008. Many advanced economies are experiencing recessionary conditions while growth in emerging market economies is also weakening. The financial crisis that first erupted with the collapse of the US subprime mortgage (Box 1.1) has deepened further and entered a new turbulent phase in September 2008, which has severely affected confidence in global financial institutions and markets. According to the projections released by the International Monetary Fund (IMF) in January 2009 (Table 1.1), global economic activity is estimated to soften from 5.2 per cent in 2007 to 3.4 per cent in 2008 and to 0.5 per cent in 2009 with the downturn led by advanced economies. In advanced economies, output is

Box1.1: The Sub-Prime Crisis

The delinquency rate in the US sub-prime mortgage market began to rise in 2005, but market response to developments began only in mid 2007, when credit spreads suddenly began to widen. The trigger was the revelation of losses by a number of firms and the cascade of rating downgrades for sub-prime mortgage products and some other structured products. By August 2007, growing concerns about counterparty risk and liquidity risk, aided by difficulties in valuing structured products, led to a number of other advanced markets being adversely affected. In particular, there was an effective collapse in the market for Collateralised Debt Obligations (CDOs), which are structured products based, in part, on sub-prime mortgages and a withdrawal from asset-backed commercial paper market, and a sudden drying up of the inter-bank term money market. A high degree of inter-linkages across various markets resulted in swift transmission of the crisis from one segment to other segments.

Two explanations have been advanced for the underlying causes. The first highlights the influences particular to this period. Central to this hypothesis is that the 'originate and distribute' model altered incentives, so that it became less likely to produce 'due diligence' in making loans. Those at the beginning of the sub-prime chain received fees to originate mortgages and were secure in the knowledge that someone else would buy them. Banks at the centre of the securitisation process focused on the profits associated with these instruments, rather than possible threats to their financial soundness and capacity to sustain liquidity. As a result, the quality of mortgage credit declined in the sub-prime area, and much of this credit seems to have ended up being held in highly leveraged positions. Insofar as structured products are concerned, many were highly rated by the concerned rating agencies. In retrospect, it became clear that the ratings were highly sensitive to even minor changes in assumptions about the underlying fundamentals, as well as correlations among defaults and recovery rates. Many investors also did not take on board the fact that ratings were concerned with only credit risk, and high ratings provided no indication of possible major movements in market prices.

The second explanation focuses on the fact that these problems are a manifestation of the unwinding of credit excesses. A continuous worsening of credit standards over the years, in a period of benign interest rates and robust economic growth, eventually culminated in a moment of recognition and recoil.

In terms of possible policy responses, proponents of the first set of arguments contend that the logic of this position leads to the need for central bank liquidity infusions to get markets back on keel. Looking forward, a better understanding of complex financial products and how credit risk transfer techniques reshape downside risks and the greater role of transparency as a cornerstone of modern financial markets assumes importance. Those who focus on credit excesses would emphasise, in addition to the measures enunciated above, the desirability of easing monetary policy, in response to a significant threat to growth.

The current financial turmoil has several important lessons. First, the appropriate role of the monetary authorities and second, the appropriate structure of regulation and supervision. As regards the first, the evidence indicates that the focus of central banks has gradually been narrowing, relative to the more complex responsibilities they have traditionally shouldered. Secondly, there is an increasing trend towards separation of financial regulation and supervision from monetary policy. A view has emerged that problems of information asymmetry might become aggravated in case prudential regulation and supervision are separated from monetary policy, contributing to less than adequate surveillance.

The role of the central bank apart, the sub-prime crisis has thrown up fresh issues and challenges for regulation; the management of risks posed by

securitisation; the role of credit rating agencies; the need for greater transparency in financial markets especially where highly leveraged institutions are concerned; better pricing of risk; the design of incentives in banking; better management and supervision of liquidity risk; and, perhaps, the need for the central bank to bring investment banks as well as non-bank financial entities and other market intermediaries that have the potential to affect the stability of financial system under the ambit of its policy framework and operations.

In the Indian case, the authorities have not favoured the adoption of inflation targeting, owing to several reasons. Secondly, the approach to regulation has been institution and market based, being located within the central bank and other regulators combined with a system of coordinated information sharing and monitoring among them. With joint responsibilities for monetary policy and supervision, this has enabled the authorities to use techniques that are precisely calibrated to emerging issues or problems.

forecast to contract on a full-year basis in 2009, the first such fall in the post-war period. Slowdown has been witnessed in both advanced as well as emerging market economies (EMEs) like Argentina, China, India and Thailand during 2008. All major advanced economies like the

Table 1.1: Output Growth, Inflation and Interest Rates in Select Economies

(per cent)

Region/ Country	Real GDP*				Consumer price Inflation		Short-term interest rate
	2007	2008	2009	2010	2007	2008	Current
1	2	3	4	5	6	7	8
World	**5.2**	**3.4**	**0.5**	**3.0**	**-**	**-**	
Advanced economies	**2.7**	**1.0**	(-2.0)	**1.1**	**2.1**	**3.5**	
Of which							
United States	2.0	1.1	(-1.6)	1.6	4.1	3.8	0.36
Euro Area	2.6	1.0	(-2.0)	0.2	3.2	3.1	2.05
Japan	2.4	(-0.3)	(-2.6)	0.6	0.7	1.4	0.61
Emerging economies	**8.3**	**6.3**	3.3	**5.0**	**6.4**	**9.2**	
Developing Asia	10.6	7.8	5.5	6.9	5.4	7.8	
China	13.0	9.0	6.7	8.0	6.5	5.9	1.34
India**	9.3	7.3	5.1	6.5	5.5	8.2	4.78
South Korea	5.0	4.1	(-2.8)	-	3.9	4.9	2.93
Singapore	7.7	1.9	(-2.9)	-	4.4	6.6	0.56
Thailand	4.8	3.4	(-1.0)	-	4.3	5.5	2.22
Argentina	8.7	5.5	(-1.8)	-	8.5	8.6	15.13
Brazil	5.7	5.8	1.8	3.5	4.5	5.7	12.66
Mexico	3.2	1.8	(-0.3)	2.1	3.8	5.1	7.16
Central and Eastern Europe	**5.4**	**3.2**	**(-0.4)**	**2.5**	**-**	**-**	
Russia	8.1	6.2	(-0.7)	1.3	12.6	14.1	13.00
Turkey	4.6	2.3	0.4	-	8.2	10.5	14.02

Updated from World Economic Outlook – January 28, 2009 and 'The Economist' – February 7, 2009
* : Average annual change, in per cent;
** : for India, wholesale prices;
Note: Interest rate per cent per annum.
Source: IMF World Economic Outlook and the Economist.

Euro area, Japan, the UK and the US are projected to register decelerated growth rates (at times negative growth rates) in 2008 as compared to those during 2007.

The IMF has projected the US economy to grow by 1.1 per cent in 2008 (2.0 per cent in 2007) and contract by 1.6 per cent in 2009. The US economy has been severely impacted by the direct effects of the financial crisis that originated in its subprime mortgage market, though aggressive policy easing by the Federal Reserve, a timely fiscal stimulus package, and a strong export performance on the back of a weakening US dollar have helped to cushion the impact of the financial crisis till the second quarter of 2008. The US economy may contract during the final quarter of 2008 and the first half of 2009, as export momentum moderates and tight financial conditions lead to more problems. The IMF expects the US economy to stabilise by the end of 2009 and then recover gradually. The key factors that will determine short-term outlook include effectiveness of recent Government initiatives to stabilise financial market conditions, the behaviour of US households in the face of rising stress and the depth of housing cycle. The projections envisage a significant slowdown in growth in the Euro area to 1.0 per cent in 2008 from 2.6 per cent in 2007 mainly on account of tightening credit conditions, falling confidence, housing downturns in several economies and the US slowdown. The economy is expected to contract by 2.0 per cent in 2009. The momentum of recession in Japan is projected to accelerate to -2.6 per cent in 2009 (-0.3 per cent in 2008) on account of slowing exports, expected further weakening of domestic demand and slowing down of private investment.

The emerging and developing economies have not decoupled from this downturn. Growth projection for developing Asia by the IMF is placed at 7.8 per cent for 2008 as against 10.6 per cent in 2007 as domestic demand, particularly investment and net exports have moderated. Countries with strong trade links with the US and Europe are slowing down markedly. Also, countries relying on bank-related or portfolio flows to finance large current account deficits have been adversely affected by strong risk aversion, deleveraging and the consequent shrinkage in external financing. Nevertheless, growth in emerging Asia during 2008 was led by China and India. GDP in China eased to 9.0 per cent for 2008 (projected to grow at 6.7 per cent in 2009) from 13.0 per cent during 2007 partly due to slowing of exports. The IMF projects India's growth rate to moderate from 9.0 per cent in 2007 to 7.3 per cent in 2008. Upon weakening of investment though private consumption and exports, India's GDP is expected to decelerate further to 5.1 per cent during 2009.

Going forward, financial conditions are likely to remain fragile, constraining global growth prospects. Financial markets are expected to remain under stress throughout 2008 and 2009 though some recovery is expected in 2010. Though the forceful and co-ordinated policy responses in many countries have contained the risks of a systemic financial meltdown, further strong and complementary policy efforts may be needed to rekindle activity. At the same time fiscal stimulus packages

should rely primarily on temporary measures and be formulated within medium-term fiscal frameworks that ensure that the envisaged build-up in fiscal deficits can be reversed as economies recover. There are many reasons to remain concerned about the potential impact on activity of the financial crisis. There are substantial downside risks to the global growth outlook, which relate to two concerns, *viz.*, financial stress could remain very high and credit constraints from deleveraging could be deeper and more protracted than envisaged. This would increase risk of substantial capital flow reversals and disorderly exchange rate depreciation for many emerging market economies. Another downside risk relates to growing risk for deflationary conditions in advanced economies. Additionally, the US housing market deterioration could be deeper and more prolonged than forecast, and the European housing markets could weaken more broadly. Factors that would help in reviving the global economy in late 2009 include expected stabilisation in commodity prices, a turnaround in the US housing sector after finally reaching the bottom and support from continued robust demand in many EMEs despite some cooling of their momentum. Policy makers face the major challenge of stabilising global financial markets, while nursing their economies through a period of slower growth and keeping inflation under control.

Rising inflation, which was a concern for a major part of 2008, has however, eased since September 2008 and is now a declining concern on account of marked decline in food and fuel prices as well as augmentation of downward risks to growth from the intensification of the global financial crisis.

As per the IMF projections, inflation in the advanced economies will decline from 3.5 per cent in 2008 to 0.3 per cent in 2009, before edging up to 0.8 per cent in 2010. For the emerging market and developing economies, the IMF projects the CPI inflation to subside from 9.2 per cent in 2008 to 5.8 per cent 2009, and to 5.0 per cent in 2010.

Global financial markets witnessed generally uncertain conditions since 2008. The turbulence that had erupted in the US sub-prime mortgage market in mid 2007 and gradually deepened towards early 2008, resulted in the inter-bank money markets failing to recover as liquidity demand remained elevated. Spreads between LIBOR rates and overnight index swap rates increased in all three major markets, *viz.*, the US, the UK and the euro area. Central banks continued to work together and also individually to improve liquidity conditions in financial markets. Financial markets deteriorated substantially during the third quarter of 2008 (July-September). Bankruptcy/sell-out/ restructuring became more widespread spreading from mortgage lending institutions to systemically important financial institutions and further to commercial banks. The failure of banks and financial institutions also broadened geographically from the US to many European countries. As a result, funding pressures in the inter-bank money market persisted, equity markets weakened further and counterparty credit risk increased. Central banks continued to take action to enhance the effectiveness of their liquidity facilities. EMEs, which had been relatively resilient in the initial phase of the financial turbulence, witnessed an environment of tightened external funding condition, rising risk and till recently, high inflation led by elevated food and energy prices.

During the last quarter of 2008, short-term interest rates in advanced economies eased considerably, moving broadly in tandem with the policy rates and liquidity conditions. In the US, short-term interest rates continued to decline between October 2008 and December 2008 as a result of reduction in its policy rates and liquidity injections. In the UK, short-term interest rates which increased till September

2008, declined from October 2008 as a consequence of the cuts in the policy rate. Short-term interest rates which increased in the Euro area during the quarter ended September 2008, declined in October 2008 on account of reductions in its refinance rate. In the EMEs, short-term interest rates generally softened in countries such as China, India, Singapore, South Korea, Brazil and Thailand but firmed up in economies like Argentina and Philippines from October 2008.

1.4 India

The impressive performance of the Indian economy in recent years bears testimony to the benefits of the economic reforms undertaken since the early 1990s (Table 1.2). Real GDP growth had averaged 5.2 per cent during 1997-98 to 2002-03. Since 2003-04, there has been a strengthening of the growth momentum. Real GDP growth averaged 8.8 per cent during the five year period ended 2007-08, making it one of the world's fastest growing economies. This is because of a number of factors, including the restructuring measures taken by Indian industry, the overall reduction in domestic interest rates, improved corporate profitability, a benign investment climate, strong global demand and a commitment to a rule based fiscal policy. In the very recent period, growth in Indian economy has seen some moderation on the back of the global financial meltdown. The recent Business Confidence Index (NCAER, October 2008), has fallen to a five-year low of 119.9 reflecting a dent in optimism because of current financial market volatility (Chart 1.2)[1]. The index stood at 154 in January 2008 but has consistently deteriorated since then.

Unlike in East Asia, domestic demand has been the main driver of economic activity in India. The consumption to GDP ratio at nearly two-thirds is one of the highest in Asia. The

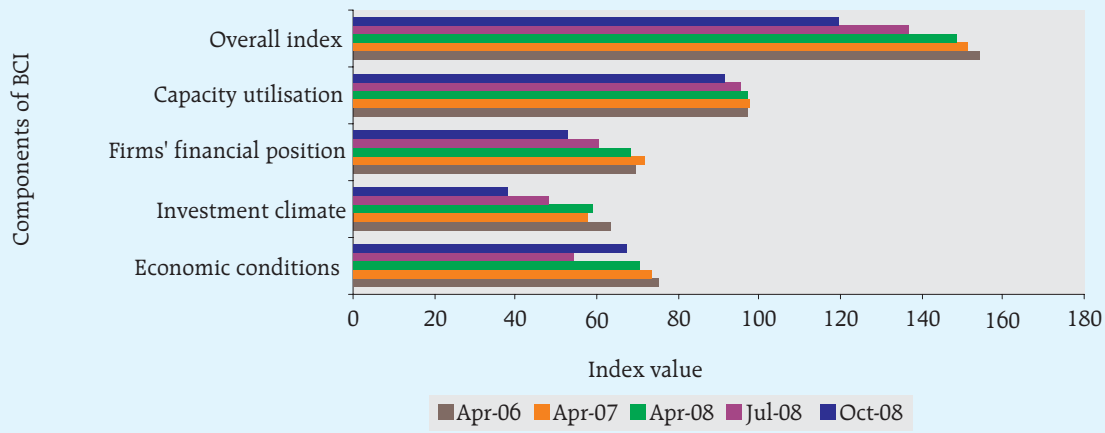
Table 1.2 : Key Macroeconomic Ratios (Per Cent to GDP)

(at Factor cost)	2000-01	2006-07	2007-08
1	2	3	4
Gross Domestic Product (Per cent growth)	4.4	9.6	9.0
Consumption Expenditure	76.3	66.1	65.5
Investment	24.3	35.5	39.0
Savings	23.7	34.3	37.7
Exports	13.2	22.1	21.3
Imports	14.2	25.1	24.4
Balance of Trade	-1.0	-3.0	-3.1
Current Account Deficit	-0.4	-0.9	-1.4
Net inflows by FIIs in the Indian stock market	0.52	0.81	1.54

Source : RBI, CSO

[1] The computation of BCI is based on two indicators each for overall economic environment and business performance. These include: (a) overall assessment of the economy over the next six months; (b) prevailing investment climate; (c) financial position of firms over the next six months; and (d) present rate of capacity utilisation. In essence, the index captures the prospective assessment of the business conditions and the economic environment by the business sector.

Chart 1.2 : Business Confidence Index



Source: NCAER Business Expectation Survey.

corporate sector has responded to increased global competition by improving productivity between 2003-04 to 2006-07. This, in turn, has improved corporate profitability and led to a pick-up in investment rates, from 22.8 per cent of GDP in 2001-02 to 35.9 per cent in 2006-07. The Wholesale Price Index (WPI) inflation was contained, averaging 5.1 per cent over 2000-01 to 2007-08, partly reflecting a very limited pass through of higher oil prices, administrative steps to dampen food price pressures and stable inflation expectations in view of pre-emptive policy measures. Higher food prices, however, have contributed to Consumer Price Index (CPI) inflation, which has hovered around 6 per cent. Mid-2008 also saw a significant increase in WPI resulting in a high rate of inflation touching almost 13 per cent in August 2008 which however has maintained a downward trend since September 2008. The administered price of petroleum products, which were revised upwards in June 2008, was the major driver of the high inflation rate. Prices of freely priced petroleum products had also increased and added to the inflationary pressure. There has however, been a very significant reduction in oil prices in recent months. The administered price of petroleum products have been reduced in January 2009.

In response to global hardening of interest rates and increased inflationary pressure till August 2008, the Reserve Bank had gradually raised policy rates. The reverse repo (borrowing) rate had risen to 6 per cent (since July 2006), while the repo (lending) rate had risen to 9 per cent. The Cash Reserve Ratio (CRR) for the banking system also was raised from 5.25 per cent in December 2006 to 9 per cent effective from August 30, 2008. In response to higher credit growth, the Reserve Bank tightened prudential norms, including increasing provisioning requirements and raising risk-weights in select sectors. Indicators on financial soundness, including stress tests of credit and interest rate risks, suggest that banks' balance sheets and income remain healthy and robust.

However, consequent to the reversal of capital flows which have led to a liquidity shortage in the economy the Reserve Bank has reduced key ratios from October 2008, to facilitate flow of funds in the market. By January 2009 the CRR was reduced to 5.0 per cent, repo rate to 5.5 per cent and reverse repo rate to 4.0 per cent. The banks were also allowed to reduce SLR to 24 per cent (Table 1.3, Chart 1.3).

Merchandise exports has been growing and becoming increasingly broad-based in terms

Table 1.3: Benchmark Policy Rates

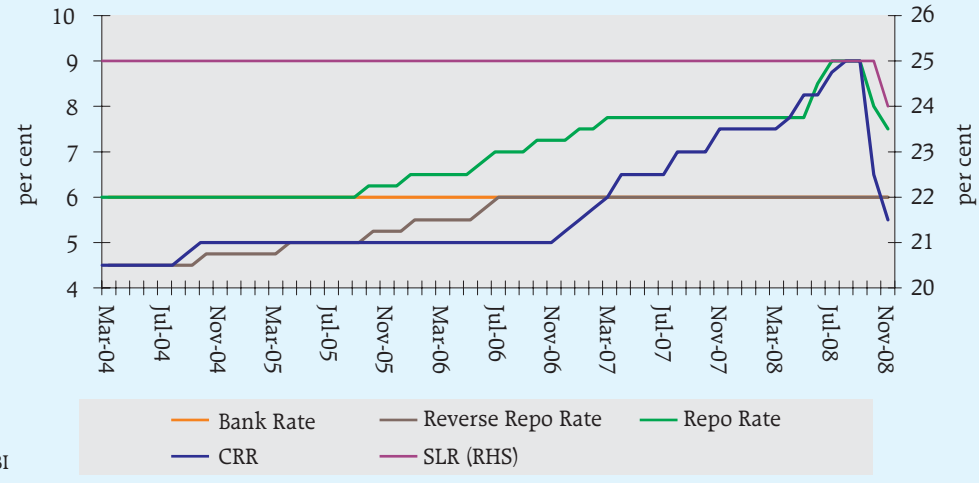
(per cent per annum)

	2000-01*	2003-04*	2006-07*	2007-08*	January 17, 2009
1	2	3	4	5	6
Repo rate$	6.50	6.00	7.75	7.75	5.50
Reverse repo rate$	8.50	4.75	6.00	6.00	4.00
CRR	8.00	5.00	7.50	7.50	5.00
SLR	25.00	25.00	25.00	25.00	24.00

* Position as on March 31.
$ w.e.f October 29, 2004 the nomenclature of repo and reverse repo has been changed as per international usage in terms of which, repo rate represents the rate at which the central bank injects liquidity into the system and the reverse repo rate represents the rate at which it absorbs liquidity.
CRR – Cash Reserve Ratio
SLR – Statutory Liquidity Ratio
Source: RBI

of destinations and composition, reflecting India's growing integration into the global economy. A striking feature of export growth has been the rapid growth in services exports, amounting to USD 87.7 billion in 2007-08. Merchandise exports and imports for quarter ended June 2008 stood at USD 43.7 billion and USD 75.2 billion respectively. Export to GDP ratio has more than doubled to 13.5 per cent in 2007-08 compared to less than 6 per cent in 1990-91. The growth in imports has also been rapid, with the import/GDP ratio being 21.2 per

Chart 1.3 : Movement in Key Policy Rates and Reserve Requirements



Source: RBI

cent in 2007-08. Despite the widening trade deficit, the current account deficit has remained modest, due largely to high levels of private transfers, aggregating USD 42.6 billion in 2007-08 averaging 3.2 per cent of GDP during the last four years. India is the leading remittance receiving country in the world with relative stability of such inflows.

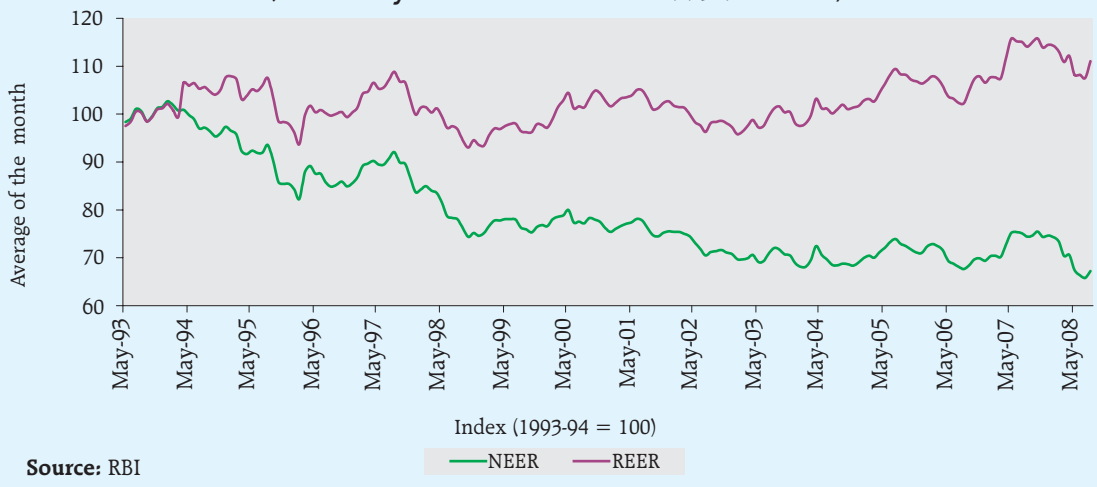
Strong capital inflows have been instrumental in financing the current account deficit. Capital flows (net) jumped from an average of around USD 9.4 billion (2 per cent of GDP) during 2000-03 to around USD 51.8 billion (5.3 per cent of GDP) during 2004-08. Capital flows (net) amounted to USD108.0 billion during 2007-08. In a reversal of a previously observed trend, foreign direct investment (FDI) has outpaced foreign portfolio investment (FPI), in 2008-09. FDI and FPI for the quarter ended June 2008 stood at USD 10 billion and USD (-)4 billion respectively. The positive investment climate, progressive liberalisation of the FDI policy regime, along with rising pace of mergers and acquisitions across diverse sectors, has boosted FDI flows. The reversal in trend in respect of portfolio capital inflows in 2008-09. however, has, impacted the capital market and the foreign exchange markets in India significantly.

Foreign exchange reserves rose to USD 309.7 billion at end March 2008. The increase in reserves has mainly been on account of an increase in foreign currency assets from USD 191.9 billion during end March 2007 to USD 299.2 billion as at end March 2008. However, in the past few months, the foreign exchange reserves, have shown a declining trend, mainly reflecting valuation changes and stood at USD 248.6 billion as on January 30, 2009.

The rupee, exhibiting two-way movements against the US dollar during 2007-08 remained in the broad range of Rs.39.26 - 43.15 per US dollar (RBI Reference Rate). During 2007-08, the real effective exchange rate of the Indian rupee on 6-currency trade-weight based measure reflected an appreciation of 8.1 per cent on an annual average basis (Chart 1.4). The Reserve Bank intervened in the foreign exchange market to contain exchange rate volatility. Net market purchases by the Reserve Bank amounted to USD 78.2 billion during 2007-08 as against USD 26.8 billion in 2006-07. During 2008-09, the Indian rupee generally depreciated. During this period (till end-January 2009), the rupee moved in the range of Rs.39.89 - 50.52 per US dollar.

While financial markets in India have gained depth, liquidity and resilience on account

Chart 1.4: NEER and REER of Indian Rupee (6-currency Trade Based Index: 1993-94 = 100)



Source: RBI

of various measures initiated there has been increased volatility in the markets in 2008-09 – a fall out of the turbulence in the global financial markets which led to a reversal of capital flows.

The fiscal position of the Government since 2004-05 has been shaped by the rule based fiscal correction process. The Central Government has implemented the Fiscal Responsibility and Budget Management (FRBM) Act. Similar legislations have been enacted in 26 States. The improvement in the fiscal position was reflected in the decline in the key deficit indicators of the Central and State Governments in the budget estimates (BE) till 2007-08. During the fiscal year 2007-08 (April 2007-March 2008), the key deficit indicators of the Central Government, *viz.* the revenue deficit and gross fiscal deficit, were lower than those in the previous year. The continued increase in revenue receipts at a higher rate in relation to increase in expenditure had led to improvement in all the deficit indicators during 2007-08 compared to the previous year and 2007-08 (BE).

During the latter half of 2008-09, Government announced various fiscal stimulus measures for the Indian economy, in the backdrop of the global financial crisis. The FRBM targets for 2008-09 and for 2009-10 have been relaxed to provide a demand boost to the economy. This has resulted in revenue deficit for 2008-09 increasing from 1.0 per cent of GDP (BE) to 4.4 per cent of GDP (RE). Similarly, fiscal deficit increased from 2.5 per cent of GDP (BE) to 6.0 per cent of GDP (RE). The Government has announced that it will return to FRBM targets once the economy is restored to its recent trend growth path.

1.5 Potential Areas of Macroeconomic Vulnerability

Macroeconomic conditions in India, in general, improved significantly in the recent years with the economy witnessing a robust growth and inflation, but for some spikes in April-September 2008, remaining at a moderate level. The banking system has become quite resilient. The depth and width of the financial markets also improved. The payment and settlement system became robust and a major source of systemic risk was eliminated with the implementation of RTGS. There are, however, some downside risks to macroeconomic prospects.

1.5.1 Sustaining Growth

Sustaining the present rate of high growth, is a big challenge. Many institutions/ organisations have projected different rates of sustainable growth depending on the method and assumptions adopted. The 11th Plan approach paper had projected that India should achieve 9 per cent growth during the Plan period. The IMF has projected India's growth would be 7.3 per cent for 2008 and 5.1 per cent for 2009.

The Indian economy has never grown at double-digit rates except in 1988-89 which was due to the base effect. Many views have been expressed on the sustainability of India's current growth. There have been several instances in recent history when economies have grown at more than 9 per cent for many years. Japan grew at an annual average of 10.4 per cent between 1960 and 1970. China has grown at above 8 per cent in 14 out of the 19 years since 1987, and at double-digit rates in

recent years. In view of positive features of the Indian economy, the Panel believes that though the growth rate will experience some moderation in the immediate future, a trend of eight per cent plus growth rate is sustainable over the medium-term. This is because;

(a) *Growth is led by both investment and consumption demand:* The changing composition of demand in recent times indicates support to the production capacity to sustain a higher growth rate. During 2007-08 investment and consumption expenditure contributed 39.0 per cent and 65.5 per cent of GDP respectively.

(b) *Upbeat investment climate:* The investment climate in the recent years has been very good. After a decline in 2002, investment activity picked up sharply in terms of Industrial Entrepreneurs Memoranda (IEM) submitted to the Secretariat for Industrial Assistance (SIA), Department of Industrial Policy and Promotion. Besides rising capacity utilisation, there has also been a substantial increase in investment proposals. While there has been a decline in the Business Confidence Index in the recent times, the investment climate from the medium and long term perspectives remain intact.

(c) *Continued upturn in capital goods production:* In the last couple of years, the capital goods sector has been expanding at double-digit rates. This also suggests the continuance of the already upbeat and buoyant investment climate. However, during the current year, so far, the capital goods sector has witnessed moderation which is expected to reverse with the reversal of the current phase in the global economy.

(d) *Record rise in sales and profits in corporate sector:* Since the last quarter of 2003, the Indian corporate sector has recorded a double-digit growth in sales in tune with the buoyant demand conditions prevailing in the economy. There has also been an improvement in corporate profitability. Gross profit to sales of corporates improved from 10.6 per cent during 1997/98 to 2002/03 to 12.7 per cent during 2003/04 to 2006/07. The ratio of profit- after- tax to sales during the same period also increased from 3.6 per cent to 8 per cent. This has translated into a decline in leverage for the corporate sector: the debt equity ratio declined from 67 per cent to 51.4 per cent during the aforementioned period. High internal accruals and lower levels of leverage have put the corporate sector in a good position to sustain growth through investment. However, there has been a moderation in profit in the recent years.

India's high growth had been aided by the buoyant performance of both the manufacturing and the services sectors. However, there is moderation in growth during the current year on account of deceleration in manufacturing and electricity sectors. The services sector continues to record high growth during the first half of 2008-09 albeit some moderation. But, the performance of the agricultural sector is a concern.

While there is a clear need and justification for fiscal expansion to counter the current global and domestic economic downturn, India needs to return to its path of fiscal correction once the current crisis is over. Public debt needs to be brought down and fiscal discipline needs to be maintained to sustain the growth. Investment in social and infrastructure sectors need to be scaled up. The capital market has to be further developed and portfolio flows need to be prudently managed. Above all, institutional reforms have to be strengthened.

At the current juncture the deepening of financial crisis has impacted the macroeconomic

outlook in advanced economies with second round effects across the rest of the world. Consequently monetary policy action against inflation in advanced and emerging economies alike appears to be getting increasingly circumscribed by the more overarching concerns relating to economy and financial system.

1.5.2 Reversing Slowdown in Agriculture

The performance of the agricultural sector is critical for sustaining economic growth. Although the share of agriculture has declined from over half of GDP in 1950s to less than a fifth of GDP by 2006-07, there has not been a concomitant decline in the share of population dependent on agriculture. Over half of the workforce is still dependent on it. As a result, fluctuations in rainfall are magnified through their impact on rural incomes and consumption, and the correlation between agricultural growth and overall GDP growth, has, in fact, strengthened over the reforms period (Table 1.4).

The slowdown in agriculture has been characterised by stagnation in the production of wheat, sugar and pulses. The actual production of foodgrains, on an average, was only 93 per cent of the targets during 2001-07. In the case of pulses and oilseeds, these ratios were much lower. Coupled with this has been another feature: the declining capital formation in agriculture. Gross capital formation (GCF) in agriculture as a proportion to total capital formation has shown a continuous decline, and the share of agriculture in total GCF has declined from 8.6 per cent in 1999-2000 to 5.8 per cent in 2006-07.

Agriculture in India is largely rain - fed. Around 40 per cent of the net - sown area is under irrigation, which leaves the major agricultural season (June-September) dependent on both the timely arrival and widespread dispersion of the South-West monsoon. The high correlation between agricultural growth and rainfall in India (about 0.7 over the period 2000-2007) illustrates the dependence of agricultural growth on rainfall. In the absence of proper irrigation, large parts of the country cannot take advantage of the second agricultural season (October-December).

Table 1.4: Correlations with Agriculture Sector Growth

Item / Period	1951-52 to 2006-07	1970-71 to 2006-07	1991-92 to 2006-07
1	2	3	4
GDP at factor cost	0.552 (0.00)	0.448 (0.00)	0.636 (0.00)
Industrial sector growth	0.293 (0.02)	0.310 (0.06)	0.102 (0.70)
Growth in THTC	0.307 (0.02)	0.314 (0.05)	0.179 (0.50)
Growth in financing *etc.*	0.012 (0.92)	0.040 (0.81)	– 0.274 (0.30)
Growth in public administration *etc.*	– 0.225 (0.09)	– 0.298 (0.07)	0.190 (0.48)

Note : Figures within brackets represent level of significance
THTC: trade, hotels, transport and communications
Source : The Economic Survey 2007-08

In the present context, low growth in the agriculture sector could be a challenge for sustaining economic growth. The agriculture sector has to grow faster than its long-term average growth rate of 2.5 per cent. If it remains in distress, growth can neither be inclusive nor sustainable. The most critical problems are low yields and the inability of the farmers to exploit the advantages of the market. Clearly, the need of the hour is to modernise and diversify the agriculture sector by improving both the forward and backward linkages. These will include better credit delivery, investment in irrigation and rural infrastructure, improved cropping pattern and farming techniques, emphasis on diversification of agricultural activities such as horticulture and livestock and development of food processing industry and cold storage chains across the entire distribution system. The absence of reforms, especially creation of a single market, is also a major issue.

1.5.3 Fiscal Consolidation

Among the other critical challenges is the way forward on fiscal consolidation. High fiscal deficits can crowd out private investment. Depending on how they are financed, fiscal deficits can have an adverse impact through inflation, the interest rate and the exchange rate. Further, revenue and expenditure measures are needed to meet the revenue deficit target under FRBM, which require broadening the tax base, tightening control on state borrowings and improvement in efficiency in expenditure management. In 2008-09, the revenue deficit is budgeted to increase by Rs. 1,88,704 crores[2] as compared to 2007-08(RE) (Table 1.5). However, given the current pressures on the economy in terms of oil prices volatility, rising input costs, increase in current account deficit, coupled with the declared farm loan waivers, the Panel concluded that it would not be possible to contain the fiscal deficit at the budgetary levels for the year 2008-09. While the interim budget for 2009-10 has shown a stoppage, the Government has stated that it will return to FRBM target after the economy restores to its recent trend growth path.

1.5.4 Meeting the Infrastructure Deficit

Among the concerns the businesses in India face are infrastructure, where there are significant gaps. The Eleventh Plan has estimated that for accelerating the GDP growth at 9 per cent per annum during the Plan period, there is a need for accelerating the current level of investment in infrastructure at 5 per cent of GDP during 2006-07 to 9 per cent during the Plan period. Meeting this huge financing requirement appear to be challenging, given the governance structure, policy uncertainty and lack of stricter entry and exit norms prevalent in the country.

(a) Public-Private Partnerships

An investment of roughly USD 500 billion has been projected for physical infrastructure (comprising roads, power, telecom, railways, airports and ports). Of this, roughly USD 150 billion is to be funded by the private sector. The Government therefore has sought to foster a policy and procedural environment to actively

Table 1.5 : Fiscal Deficit (Per Cent to GDP)

	2000-01	2003-04	2007-08	2008-09 (RE)	2009-10 (BE)
1	2	3	4	5	6
Revenue Deficit	4.1	3.6	1.1	(1.0) 4.4	4.0
Gross Fiscal Deficit	5.7	4.5	2.7	(2.5) 6.0	5.5

Source: Government of India/RBI.
Note: Figures in parenthesis pertain to BE for the year.

[2] 1 crore = 100 lakhs = 10 million = 0.01 billion

encourage public-private partnerships (PPP). It has established the India Infrastructure Finance Company Limited (IIFCL) to provide long tenor debt to infrastructure projects and for launching of a scheme for financial support to PPPs in infrastructure. Steps have also been initiated to use foreign exchange reserves for building infrastructure. IIFCL has set up an offshore Special Purpose Vehicle (SPV) entity called IIFC (UK) Ltd. in London to utilise part of foreign exchange reserves for infrastructure development. Reserve Bank has given "in principle" approval to invest upto USD 5 billion in the securities of the SPV and these would be guaranteed by the Government. Additional efforts such as strong and independent sector regulators will reduce regulatory uncertainties for investors. Developing the domestic bond market will facilitate infrastructure finance. The Government has reported giving in-principle approval to 54 Central sector infrastructure projects at a cost of Rs.67,700 crore and approving 23 projects amounting to Rs.27,900 crore for viability gap funding in 2008-09.

The projections for infrastructure finance need to be viewed with a measure of scepticism. Past record suggests that there is tendency to overstate these requirements – in the1990's, the requirement of FDI in infrastructure was estimated at USD 150 billion, without which any acceleration in growth was thought difficult. Only a small fraction of this figure materialised but that did not keep the Indian economy from sprinting ahead in recent years.

It is well-recognised that financing of infrastructure projects is a specialised activity and would continue to be of critical importance in the period ahead. All over the world, infrastructure services have generally been provided by the public sector for a large part of the twentieth century as most of these services have a significant component of public goods in them. It is only of late that private financing of infrastructure has made some headway.

This trend is not without its echo in India where financing infrastructure was till recently a Government activity. However, there has been a paradigm shift in infrastructure funding from the Government to the private sector due mainly to budgetary constraints in making available funds to meet the burgeoning financing requirements. In addition, the emphasis on allocation of budgetary resources to social sectors has also engendered this shift. As a result, the emphasis has shifted towards PPPs and increasingly, it is perceived that commercial entities such as banks could play an important role in this respect. Although the argument is not without its merits, there are significant challenges for the banking sector in funding the growing infrastructure need (Box 1.2). The Government has recently announced that IIFCL will refinance 60 per cent of commercial bank loans for PPP projects in critical sector for which it has been authorised to raise Rs.10,000 crore by March 2009 as well as an additional Rs.30,000 crore if required

(b) Funding

The Planning Commission has estimated the total investments in the infrastructure sector to be to the tune of Rs. 20,56,150 crore during the plan period. While the public sector, including the public corporate sector, would continue to play a dominant role in investment for infrastructure, investment by the private sector, which includes PPP projects, is envisaged

Box 1.2: Challenges of Banking Sector in Funding Infrastructure Needs

Infrastructure projects are characterised by large capital costs and long gestation periods. The assets of these projects are not readily transferable and the services provided are typically non-tradable in nature. In addition, these projects are also susceptible to various market and other non-measured risks. In addition, the nature of financing of these projects necessitates exhaustive due diligence process on the part of funding agencies to ascertain that the project cash flows are adequate to cover the debt service obligations. Therefore, proper risk assessment and adequate risk mitigation mechanisms comprise a *sine qua non* of the process. The complexity of the transaction and large funding requirements necessitates an innovative approach towards financial structuring and the use of an array of financial instruments.

In India, such financing was earlier undertaken by specialised term-lending institutions. Commercial banks rarely undertook equity positions in projects. Infrastructure financing requires the commitment of long-term funds, both as equity and long-term debt. In the past, since the infrastructure sector was predominantly catered to by public investment, the need for developing appropriate financing mechanisms was not acute. As a result, the financial sector was biased towards short and medium-term debt.

A key question is whether the Indian financial system is equipped to intermediate the huge financial resources that are required for investment in infrastructure. Commercial bank lending to infrastructure has expanded very rapidly over the last few years and has become by far the largest source. It now faces serious constraints as banks' balance sheets have a growing concentration of risks which they have not been able to transfer. There are issues of ALM mismatch as the maturity of banks' assets has become longer term while their liabilities have become shorter. Banks will also reach exposure limits to large developers. Moreover, the tenor of the loans is not very long (about half of the concession period of a typical infrastructure project) with a short re-set period. All this points to the need for more diversified sources of long-term finance for infrastructure, including tapping contractual savings. The key lies in the rapid but orderly growth of the corporate bond market.

Being seized of these concerns, the policymakers have made appropriate relaxations for bank lending to infrastructure projects in regard to their exposure and other related norms. The effect of these measures has been an improvement in the credit flow to infrastructure (comprising power, telecom, roads and ports) from less than 3 per cent in 2001 to nearly 8 per cent in 2007.

Over the longer-term, the development of a secondary debt market assumes importance. Of the two major segments, the government debt and the corporate bond market, while the former has exhibited substantial progress, developments in the latter have been less than satisfactory (Chapter IV). The actions required for this purpose are in several areas including, legal, technological, regulatory, risk management *etc.* Other possible sources of finance could be long-term fund providers such as pension, provident and insurance funds, that have the advantage of providing a better maturity match for infrastructure financing. In addition, steps could be undertaken to actively promote cash-flow based securitisation, subject to prudential safeguards. By facilitating unbundling, better allocation and management of project risks, this could enlarge the market by attracting new players. This needs to be supplemented with a well-defined regulatory framework. Such a framework must provide for transparency, clarity of obligations between participants in the infrastructure projects and reduce the layering of approvals to bring about a greater degree of certainty in obtaining them within a definite time frame.

at 30 per cent of the total investment, *i.e.* around Rs. 6,20,000 crore. Of the total requirement the debt financing needs for infrastructure investment during the Eleventh Five-Year Plan is estimated to be Rs. 9,88,035 crore at constant prices. In other words, more than Rs. 2,00,000 crore a year on average would be required at current prices. However, the availability of debt financing for infrastructure during the Eleventh Plan is estimated at Rs. 8,25,539 crore which implies that there is a funding gap of Rs. 1,62,496 crore for the debt component. The required investment in infrastructure would, therefore, be possible only if there is a

substantial expansion in internal generation and extra-budgetary resources of the public sector, in addition to a significant rise in private investment.

This is even more of a challenge given the constraints to growth in each of the sources of debt finance. Commercial bank lending to infrastructure has expanded very rapidly over the last few years and has become by far the largest source. Banks' balance sheets thus have a growing concentration of risk which they have not been able to transfer. There are asset-liability mismatches because the maturity of banks' assets has become longer term while their liabilities have become shorter. NBFCs' lending will also be constrained because their cost of funding is higher. External commercial borrowing, till recently had been reined in due to concerns regarding the monetary expansion effects of capital inflows. The infrastructure sector is particularly hard hit as it has a high domestic expenditure component. And finally, insurance companies are limited by their investment guidelines. Also, the public sector insurance companies tend to be risk- averse, which is manifested in their high investments in government securities and less than mandated in infrastructure and that too mostly in public infrastructure companies.

This points to the urgency for getting additional sources of debt financing for infrastructure investment and private participation/financing. This would require a shift from the bank dominated financing system to a capital-market oriented system for financing infrastructure and housing projects. This calls for pension reforms and allowing pension and insurance companies to invest more in long-term corporate debt. The Panel underscores the need for a deep and liquid corporate bond market for infrastructure finance and for reducing the concentration of risks that are building in the banking system.

1.5.5 Governance Issues

As Table 1.6 demonstrates, governance issues and regulations are among the leading deterrents for doing business in India, leading to a ranking of 120 (out of 178 countries) in the World Bank's Ease of Doing Business 2008 publication. Starting a business in India is significantly time-consuming. Compared to their counterparts in the OECD countries, India's entrepreneurs need to follow twice as many procedures, face about thrice the time delay, and close to fifteen times the cost as a proportion of per capita income. In the area of credit availability, India lags behind not because of creditor rights (which are virtually on par with OECD standards), but because of lack of credit information available from public registries and from private bureaus. Pendency is also an issue in this context. The contract enforcement procedure is deficient as the number of procedures that must be followed and the resulting time delays are about more than three times that of OECD countries and the costs of contract enforcement are over twice as high. Closing a business takes 10 years with a recovery rate of around 11 per cent, one of the worst among countries.

1.5.6 Demographic Dividend

It has been argued that as more and more people join the workforce in India, this will entail greater savings, as it did in other countries in East Asia that developed rapidly. By 2025, the

Table 1.6 : Doing Business - Global Comparisons (2007-08)

Item	India	China	Thailand	Korea	Philippines	Australia	US	Best
1	2	3	4	5	6	7	8	9
Starting a business (no. of days)	30	40	33	17	52	2	6	1 (New Zealand)
Dealing with licenses (no. of days)	224	336	156	34	203	221	40	34 (Korea)
Employing workers (difficulty of firing index)	70	50	0	30	30	10	0	0 (US)*
Registering property (no. of days)	45	29	2	11	33	5	12	2 (Sweden, Saudi Arabia, New Zealand, Thailand)
Getting credit (strength of legal rights index)	8	6	4	7	3	9	8	10 (Hong Kong China, Kenya, Malaysia, Singapore)
Protecting investors (strength of investor protection index)	6	5	7.7	5.3	4	5.7	8.3	10 (New Zealand, Kenya)
Enforcing contracts (days)	1420	406	479	230	842	395	300	150 (Singapore)
Closing a business (years)	10	1.7	2.7	1.5	5.7	1	1.5	0.4 (Ireland)

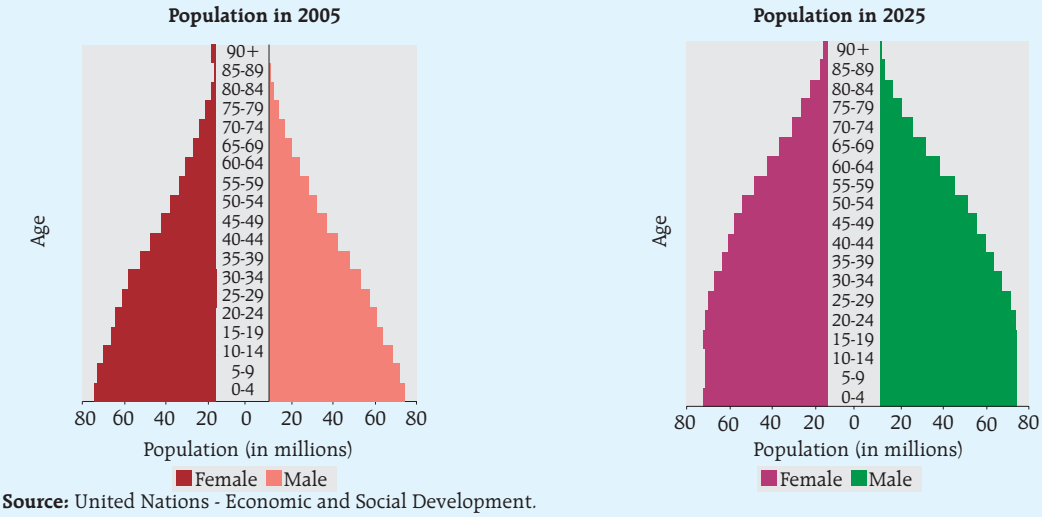
* Hong Kong, China, Singapore, Maldives, Marshall Islands also have the same status
Difficulty of firing index: 0 (zero difficulty) to 100 (highest difficulty)
Strength of legal rights index: 0 (no strength) to 10 (maximum strength)
Strength of investor protection index: 0 (no strength) to 10 (maximum strength)
Source: World Bank *Doing Business Database (2009)*

proportion of working age population (15-59 years), which was roughly 657 million in 2005 increases to 907 million (Chart 1.5). While this will help in sustaining productivity-led growth, there is a need for rapid job creation in the manufacturing sector, particularly in the hinterland states and coastal areas.

The employment elasticity of growth, however, has not been significant. According to the *Economic Survey 2007-08*, employment elasticity of output has declined from 0.41 over the period 1983 to 1993-94 to 0.15 over 1993-94 to 1999-2000. However, during 1999-2000 to 2004-05, it has increased to 0.48 (Rangarajan et al, *Money and Finance, ICRA Bulletin September 2007),* with wide divergences across states. The growth rate of employment in the organised sector has declined over the period 1994-2005 to (–0.31) per cent from 1.2 per cent in the previous ten year period. An overwhelming majority of the labour force continues to work in agriculture. The challenge is to create jobs on a scale needed to successfully absorb excess agricultural labour.

India will have the benefit of having a relatively young population for a considerable period of time in comparison to other emerging and even developed countries (Chart 1.6). But it has to create jobs to take advantage of this. Education and skills are a serious concern. The evidence provides limited room for comfort. Although the gross enrolment ratio (GER), which shows the total enrolment in secondary stage (class IX to XII) as percentage of total population

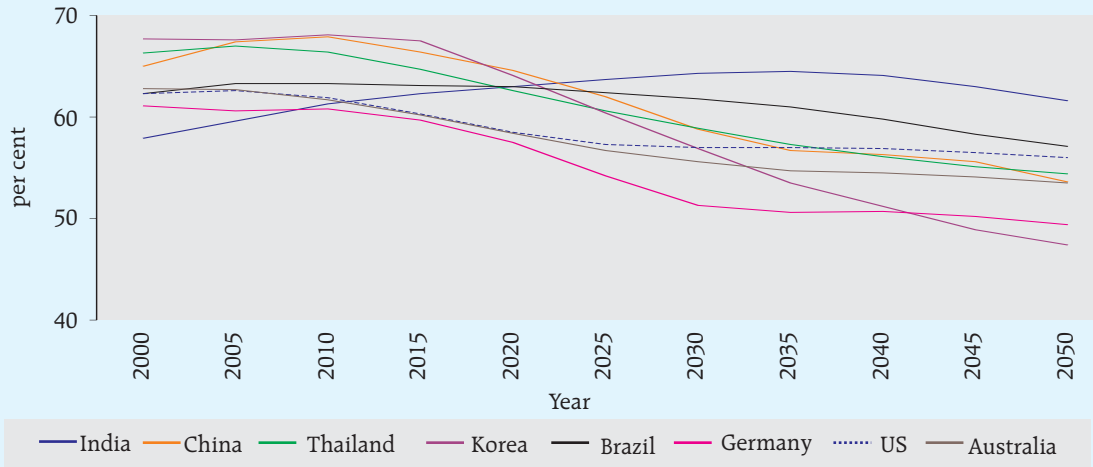
Chart 1.5 : Demographic Transition



Source: United Nations - Economic and Social Development.

in the relevant age group, has improved from 19.3 in 1990-91 to 39.9 in 2004-05, in the secondary (class IX to X *i.e.,* 14-16 years) stage, the all-India figure is 51.7; and as many as 9 (out of 18 states covered) are below this average. At the post-secondary stage the GER for (class XI to XII *i.e.,* 16-18 years) is 27.8 at the all-India level and 8 states are below this number. On the supply side, merely 18 per cent of primary schools have four or more teachers. Industry too has a role in better utilising human resources by investing more in training. IT firms have set an example that other sectors might profitably emulate.

Chart 1.6: Percentage of Working Age Population (Forecast)



Source: United Nations - Economic and Social Development.

1.5.7 Oil Prices

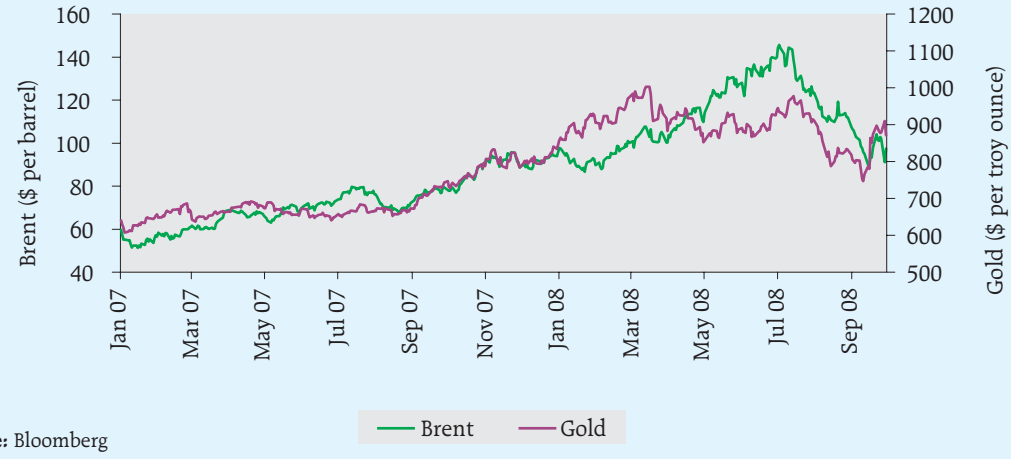
As India is primarily an oil importing country, oil prices are a critical element in the sustainability of the growth and, in some ways the maintenance of financial stability. The increase in crude oil prices in the international markets adversely affects the oil importing countries in terms of output loss, inflationary spirals and adverse balance of payments. The increasing cost of production resulting in adverse terms of trade erodes international competitiveness. It also tends to deteriorate the fiscal balance if the Government absorbs the rise in international oil prices and if the pass-through to domestic consumers is staggered and incomplete. The end result in most of the episodes of oil shock has been a significant loss of output in the short run and general level of welfare in the long run. A recent analysis estimates that a supply-induced doubling of prices would raise inflation rate in emerging Asia by as much as 1.4 percentage points above the baseline (BIS, 2007).

Central banks have to manage the dilemma of the growth-inflation trade-off more acutely during episodes of oil price increase. However, recent history suggests that there has been greater success for central banks in stemming inflationary pressures arising out of oil shocks. This is in contrast to the 1970s and the early 1980s which witnessed severe wage-price spirals and a consequent impact on growth on account of monetary tightening.

Crude Oil Price – Recent Trends

The renewed hardening of international crude prices from an average level of USD 57 per barrel at end 2005 to an average level of USD 73 per barrel by July 2006 resulted in an increase of 6-9 per cent in domestic administered prices of petrol and diesel. Subsequently, in response to easing in international oil prices, domestic petrol and diesel prices were cut twice during November 2006 and February 2007. Thereafter, international crude oil prices rose sharply to reach a historical high of USD 145.3 per barrel by early July 2008, reflecting a tight supply-demand balance, geo-political tensions, supply disruptions in Nigeria, a weakening of the US dollar against major currencies and increased interest from investors and financial market participants- (Chart 1.7). Subsequently, crude oil prices eased, reflecting decline in demand in OECD countries and improved near-term supply prospects in non-OPEC countries. The WTI crude price was hovering at around USD 62 per barrel level at end October 2008. This has declined further in recent times and is around USD 40 per barrel currently.

Chart 1.7 International Commodities



Source: Bloomberg

In India, inflation based on year-on-year variations in the wholesale price index (WPI) increased to 7.7 per cent in 2007-08. A year ago it was 5.9 per cent. There was an increase in the prices of all the three major groups, namely primary articles, fuel and manufactured products. Inflation increased further to 12.9 per cent by August 2, 2008 reflecting pass-through of international crude oil prices to domestic prices (domestic prices of petrol and diesel were raised twice during February and June 2008) as well as elevated levels of prices of iron and steel, basic heavy inorganic chemicals, machinery and machinery tools, oilseeds, sugar, raw cotton and textiles on account of strong demand as well as international commodity price pressures. Subsequently, inflation eased to 10.7 per cent by October 25, 2008 reflecting decline in prices of freely priced petroleum products (in the range of 15-22 per cent) in line with decline in international crude oil prices (by 45 per cent since July 2008) as well as easing in other commodity prices such as oilseeds/edible oils/ oil cakes, raw cotton and cotton textiles following global trends. The inflation, continuing its downward trend, stood at 4.4 per cent as on January 31, 2009 along with the decline in petroleum prices.

1.5.8 Food Prices

Another major concern both domestically and globally has been the sharp rise in food prices. While the global food price index rose on an average by 10.5 per cent in calendar year 2006 and by 15.2 per cent in 2007, it has increased substantially by around 42 per cent in the first half of 2008 compared to the corresponding period of the previous year. According to the Food and Agriculture Organisation (FAO), 37 countries in the world are facing food crisis, 31 of which are in Africa and Asia. This increase in food prices has been on account of various factors such as higher global demand, lower stocks and production and diversion of food grains for bio-fuel production and speculation. The anaemic global growth has resulted in a marked decline in food prices since October 2008, resulting in the easing of inflationary pressures.

However, the increase in food prices in India had during the first half of 2008-09 been only a fraction of that observed in many other countries. In particular, the global prices of wheat and rice almost doubled between January and April 2008, while in India the increase has been far less than a tenth of that. This reflects the long-standing public policy emphasis on food security. Even so, the rise in food prices is a cause for worry. The average annual increase in the Wholesale Price Index (WPI) of food articles was around 7 per cent during 2006 and 2007. It was led by wheat (13 per cent) during 2006, rice (6 per cent) and edible oil (13.1 per cent) and pulses (3.21 per cent)in 2007. However, food price inflation has witnessed increase in 2008. The Wholesale Price Index of food articles up to October 18, 2008 had increased by around 6.5 per cent compared to the 4.6 per cent in the previous year.

As regards prospects for the near future, public policies in regard to food, especially diversion to bio-fuel, cross border trading, subsidies, and replenishment or use of buffer stocks would impact the evolution of prices globally. However, the redeeming feature is that supply response in regard to food grains is possible in a year or two. As per FAO estimates, wheat output is set to achieve a new record in 2008, though against the backdrop of deeply

depleted stocks. Global production of rice in 2008 is expected to be only marginally better than the previous year and hence, some depletion of stocks held may be expected. The global output of edible oil is anticipated to fall by about 3 per cent in the current year and, according to FAO, oil seeds and edible oil prices are expected to remain firm.

As regards India, the abatement of global prices, indications of better domestic supplies and addition to buffer stocks, along with the series of measures already taken by the Government on the supply side are expected to yield results in the months to come. Over the medium-term, however, the National Food Security Mission launched about two years ago should yield positive results.

1.5.9 Managing the Impact of Capital Inflows

Foreign investment flows into India, comprising foreign direct investment (FDI) and foreign portfolio investment (FPI), have risen sharply during the 1990s reflecting the policies to attract non-debt creating flows. Foreign investment flows (net) have increased from negligible levels during 1980s to reach USD 45 billion by 2007-08. As a proportion of FDI flows to developing countries, the FDI flows to India have shown a consistent rise from 2.2 per cent in 2000 to 4.3 per cent in 2007. The share of net FPI flows to India as a proportion of total flows to developing countries remained in the range of 9-25 per cent during 2004 and 2007. Both direct and portfolio investment flows maintained the pace during 2007-08. Foreign direct investment flows into India were 52.1 per cent higher during 2007-08 on the back of positive investment climate, improved growth prospects and initiatives aimed at liberalising the FDI policy and simplifying the procedures.

Portfolio equity flows during 2007-08, were led mainly by steady inflows from foreign institutional investors (FIIs) and ADRs/GDRs. The number of FIIs registered with the SEBI increased from 997 by end March 2007 to 1319 by end March 2008 and 1541 by end June, 2008. Inflows on account of Foreign Institutional Investors (FIIs) increased to USD 20.3 billion during 2007-08 from USD 3.2 billion during 2006-07. Capital inflows through the issuances of American depository receipts (ADRs) / global depository receipts (GDRs) were also substantially higher (USD 8.8 billion) as booming stock markets during the period offered corporates the opportunity to issue equities abroad.

Gross inward FDI inflows increased to USD 34.9 billion in 2007-08 from USD 23.0 billion in the previous year. The classification of flows under FDI includes sizeable investments from private equity funds and venture capital funds. On the one hand, figures for FDI do not provide adequate information on technology transfer, and linkages with the parent firms are relatively absent. Private equity and venture capital may bring in capital and, to a lesser extent, improved management. But private equity and venture capital also have lower time horizons than classical firm FDI and hence constitute less stable flows.

In 2008-09 however there has been a reversal of capital flows. In the current financial year, net FII outflows have been to the tune of USD 11.9 billion (up to January 9, 2009). There has also been a concomitant depreciation in USD/Rupee exchange rate and a decline in stock market indices. The Reserve Bank's intervention to ensure stable conditions in foreign exchange market had resulted in some liquidity shortage which had to be tackled through expansionary monetary and accommodating fiscal initiatives. Management of foreign exchange movements could change course due to any abrupt changes in sentiments or global liquidity conditions. Strategic management of the capital account warrants preparedness for all situations.

The benefits of capital account liberalisation are well known. In India there is a broad consensus that it is desirable but should be gradual, well sequenced and undertaken in

conjunction with several other measures at the micro and macro level. While the Panel supports a general policy stance that encourages more capital account flows, liberalisation could be used strategically to help the evolution of the financial markets in alignment with concomitant improvements in macro-economic management. Among the more important of these are fiscal consolidations, further strengthening the banking system, diversifying financial intermediation through both banks and non-banks, and developing as well as regulating financial markets in a sound manner.

1.6 Institutional and Financial Market Environment

The financial system in India comprising financial institutions, markets, instruments and services is characterised by two major segments – a growing organised sector and a traditional informal sector. Financial intermediation in the organised sector is conducted by a large number of financial institutions (banking and non-banking) like commercial banks, cooperative banks, regional rural banks and development banks. Non-banking financial institutions include finance and leasing companies and other institutions like the insurance companies, mutual funds, provident funds, post office banks *etc.*

The financial sector was heavily regulated till the early 1990s. But since then it has become market-oriented and opened up to private players. The reforms have aimed at enhancing productivity and efficiency of the financial sector, improving the transparency of operations, and ensuring that it is resilient and capable of withstanding stress due to domestic or external shocks. Interest rates have been gradually and mostly liberalised. Financial savings have grown steadily in line with liberalisation of the financial sector, reflecting high domestic savings (34.8 per cent of GDP in 2006-07 as per Economic Survey 2007-08).

The predominance of Government ownership of banks, combined with continued directed credit allocations and administered interest rates in certain segments, while auguring well for financial stability and fulfilment of social targets, could constrain the manoeuvrability of operations. The requirements in the form of SLR and CRR also pre-empt a significant part of resources, besides constraining the free pricing of assets. Competition in the banking sector has nevertheless improved due to the emergence of private players and greater private shareholding in public sector banks. The insurance sector has also been opened up to private competition. The regulatory and supervisory apparatus has been restructured, strengthened and augmented with the formation of new regulatory authorities. The size of the capital market has significantly expanded in recent years in terms of market capitalisation and the number and assets under management of mutual funds. Financial markets, in general have thus acquired greater depth and vibrancy.

1.6.1 Financial Institutions

Table 1.7 presents the broad structure of the Indian financial system in terms of number and assets base of financial institutions. As some

Table 1.7: Structure of Indian Financial Institutions

(As at end-March 2008)

Institution	No of institutions	Total assets (Rs crore)	Per cent
1	2	3	4
Financial Sector (I to III)	**3,815**	**74,75,310**	**100.0**
The Banking Sector (I + II)	**3,062**	**50,00,821**	**66.9**
I. Commercial banks	**173**	**44,50,681**	**59.5**
Scheduled commercial banks	169	44,50,027	59.5
Public sector banks	28	30,22,237	40.4
State Bank group	8	10,11,169	13.5
Nationalised banks	19	18,80,374	25.2
Other public sector banks	1	1,30,694	1.7
Private sector banks	23	9,40,150	12.6
Old private banks	15	1,94,555	2.6
New private banks	8	7,45,595	10.0
Foreign banks	28	3,64,099	4.9
Regional Rural Banks	91	1,23,541	1.7
Non-scheduled commercial banks (Local area banks)	4	654	0.01
II. Cooperative banks	**2,889**	**5,50,140**	**7.4**
(a) Urban co-operative banks	1,770	1,79,421	2.4
Scheduled	53	79,318	1.1
Non-scheduled	1,717	1,00,103	1.3
(b) Rural co-operative banks	1,119	3,70,719	5.0
Short-term structure	402	3,24,609	4.3
State co-operative banks (StCBs)*	31	85,756	1.1
District central co-operative banks (DCCBs)*	371	1,58,894	2.1
Primary Agriculture Credit Societies (PACS) @	..	79,959	1.1
Long-term structure	717	46,110	0.6
SCARDBs	20	24,336	0.3
PCARDBs	697	21,774	0.3
III. The Broader Financial Sector	**753**	**24,74,489**	**33.1**
III.1 Development Finance Institutions**	**4**	**1,77,765**	**2.4**
III.2 State Financial Corporations#	**18**	**12,,841**	**0.2**
III.3 Insurance institutions	**37**	**10,39,704**	**13.9**
Life insurance	18	9,07,280	12.1
Public	1	7,98,685	10.7
Private	17	1,08,595	1.5
Non-life insurance	19	1,32,424	1.8
GIC (re-insurer)	1	36,013	0.5
Public	4	79,208	1.1
Private	12	12,237	0.2
Others &%	2	4,966	0.07
III.4 Other Institutions***	**1**	**25,744**	**0.3**
III.5 Non-banking Financial Companies##	**565**	**6,79,927**	**9.1**
NBFC (Deposit-taking)	335	70,292	0.9
NBFCs (non deposit-taking)	176	4,08,705	5.5
RNBC	2	24,452	0.3
Primary Dealers	9	10,882	0.1
Housing Finance companies	43	1,65,596	2.2
III.6 Mutual Funds	**101**	**5,38,508**	**7.2**
Bank-sponsored	2	81,229	1.1
Institution-sponsored	2	14,337	0.2
Private	97	4,42,942	5.9
Indian	27	1,66,104	2.2
Foreign	7	31,168	0.4
Joint ventures (pre-dominantly Indian)	33	1,65,790	2.2
Joint ventures (pre-dominantly foreign)	30	79,880	1.1

* : Data for rural co-operative banks pertain to end March 2007.
@ : 97,224 Primary Agricultural Credit Societies (PACS) with loans outstanding of Rs.58,600 crore at end March 2007
** : Comprising NABARD, NHB, SIDBI and EXIM Bank.
*** : Pertains to DICGC (Deposit insurance fund)
# : Total assets pertain to end March 2007.
: Pertains to reporting NBFCs
Source: RBI, SEBI, IRDA and Association of Mutual Funds of India (AMFI) documents

financial assets (equities, bonds) are held by private individuals and non-financial corporates, they have not been made a part of Table 1.7. Post office deposits have also not been included. Therefore the total assets of financial institutions may not fully reflect the total size of the financial system as a whole.

Banks are the most important of the financial intermediaries, accounting for nearly 67 per cent of total assets and commercial banks dominate the sector, comprising around three-fifths of the financial 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. The share of some other segments, particularly the development finance institutions, has gradually declined as a result of restructuring and rationalisation. Some major institutions have since amalgamated themselves into commercial banks.

A large network of regional rural banks (RRBs) and co-operative banks (rural and urban) serves small borrowers, primarily in rural and semi-urban areas as also smaller towns. RRBs were established under an Act of Parliament to improve credit delivery in rural areas with the Central Government, State Governments and sponsor public sector banks all taking holdings in them. Subsequent to the restructuring process in RRBs, their numbers have dwindled and stood at 90 at end March 2008 down from 196 at end March 1991. Co-operative banks cater to the credit needs of specific communities or groups of people in a region and comprise both rural and urban entities.

Development finance institutions at the national level are mostly government owned and have been the traditional providers of long-term project loans. Accounting for approximately 2.4 per cent of total assets, these institutions raise funds in the capital markets and through retail sales of savings instruments. Over the past few years, these institutions have been gradually rationalised, two of them having been amalgamated into banks. Some others have become NBFCs.

Of the state level institutions, the State Financial Corporations registered under the State Financial Corporations Act, 1951 purvey credit to industries/sectors in different states and account for about 0.2 per cent of total assets[3].

Insurance sector has been open to private participation since 2000, though public sector insurance institutions dominate, both in the life as well as non-life segment. The insurance institutions account for roughly 14 per cent of sectoral assets, with the share of private insurance companies, currently 1.7 per cent of financial sector assets, gradually increasing. The

[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 and enjoy less stringent compliance and regulatory norms. In addition, at the state-level, there exists the North Eastern Development Finance Corporation (NEDFi) 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. Besides, the State Industrial Development Corporations (SIDCs), registered under the Companies Act, 1956 also provide credit to industries at the state level.

share of other institutions of about 0.3 per cent is from the Deposit Insurance and Credit Guarantee Corporation (DICGC), a wholly owned subsidiary of the Reserve Bank providing insurance for depositors of commercial and co-operative banks.

NBFCs provide a wide range of services and account for roughly 9.1 per cent of financial sector assets. Deposit taking NBFCs witnessed a rapid growth in the mid 1990s, but consequent to the introduction of new norms for their registration and functioning, their growth has slowed down. The NBFC (non deposit taking) segment has emerged as the dominant component of the NBFC segment in recent times. While NBFCs offer some bank like services, many of them do not have the benefit of low cost deposit funds. Since regulatory and prudential norms differ between the banking and NBFC sectors and the flexibility and range of activities that NBFCs could undertake, the NBFC structure could have some advantages over banks, resulting in them being used, *inter alia*, by banks as a delivery vehicle for arbitrage opportunities.

Primary Dealers (PDs) are active players in the government securities market. There are nine PDs accounting for roughly 0.1 per cent of assets.

With the development of the securities market, the activities of the mutual funds are on the rise. As at end March 2008, there were 101 mutual funds accounting for 7.2 per cent of the assets of the financial institutions.

1.6.2 Financial Markets

India's financial markets were relatively underdeveloped and dormant till the mid 1980s because of tight regulation and administrative restrictions. Financial sector reforms, introduced as part of overall economic reforms in the early 1990s, have brought about a sea change in the functioning of these markets. Reforms have encompassed all segments – money, credit, government securities, foreign exchange, equity and to a lesser extent, the corporate debt market. The emphasis has been on deregulation and liberalisation, strengthening transparency and price discovery, easing of restrictions on flow of transactions, lowering transactions costs and enhancing liquidity.

While deregulation, globalisation and liberalisation have engendered several benefits, they also pose several risks to financial stability. Financial markets are often governed by herd behaviour and excessive competition. In recognition of the possible destabilising factors, India has been following a gradualist approach in liberalising its financial markets with appropriate prudential safeguards being put in place that take into account the impact of reforms across institutions and markets. Excessive fluctuations and volatility in financial markets can mask the underlying value and give rise to confusing signals, hindering efficient price discovery. Accordingly, policy efforts have also aimed at ensuring orderly conditions in financial markets. Enhancing competitive efficiency, while at the same time avoiding instability in the system, has been a continuous challenge in implementing liberalisation measures.

In this context, it is useful to understand the increase in the secondary market activities of various segments of the financial markets in India (Table 1.8). With the transformation of the call money market into a pure inter-bank market, the turnover has declined significantly and money market activity has migrated to other overnight collateralised market segments such as market repo and collateralised borrowing and lending obligations (CBLO). The turnover in the term money market segment, however, continues to remain low.

Measures undertaken to develop the government securities market since the early 1990s have contributed to a significant growth in the market. The continuous improvement in market infrastructure has also resulted in

Table 1.8: Relative Importance of Various Financial Market Segments

No.	Market	Volume of transactions (Rs. crore)	
		2000-01	2007-08
1	2	3	4
A	Money	1,02,37,680	3,32,30,400
B	Government securities	6,98,146	56,27,396
C	Foreign exchange	63,35,816	4,95,27,392
D	Equities	23,39,542	51,29,894
E	Corporate bonds	14,486	96,119

1. For A, it is the aggregate of average daily turnover in call money market, market repo (outside LAF), CBLO and term money market has been multiplied by the yearly number of working days (taken to be 240 days).
2. For B, it represents the secondary market transactions in the respective markets.
3. For C, it is the total annual turnover in foreign exchange market, expressed in INR crore by multiplying the relevant numbers by average INR-USD exchange rates.
4. For D it represents the aggregate turnover at BSE and NSE (spot segment).
5. For E data is aggregation of transactions in trading and reporting platforms.

Source: RBI/SEBI

enhanced depth, liquidity and efficiency in the foreign exchange market, resulting in increased turnover. But the corporate bond market remains a laggard. The functioning of the stock exchanges has witnessed significant developments after the initiation of reforms in the 1990s. Several regulatory measures have aided this development.

As indicated in Table 1.9, market capitalisation (BSE) at end-March 2008 was Rs. 51,38,015 crore, equal to 109.0 per cent of GDP, which showed significant increase from Rs 5,71,553 crore equal to 27.2 per cent of GDP for end March 2001. Similarly the outstanding government securities at Rs. 13, 32,435 crore remained significant as at March 31, 2008 accounting for 28.3 per cent of GDP. The share of the CPs and CDs as a per cent of GDP continues to be negligible.

The credit market, with commercial banks as the predominant segment, has been the major source of meeting the financing requirements of the economy. Such credit is mainly in the form of bank loans. The development of marketable credit instruments is at a nascent stage. Total loans outstanding by credit institutions increased at a compound rate of nearly 16 per cent during the 1990s and by more than 17 per cent per annum in the current decade. As a percentage of GDP, loans outstanding increased from roughly 24 per cent in March 2001 to 50 per cent in March 2008.

1.7 Concluding Remarks

In spite of the current blips, the evidence indicates that the economy has moved firmly to a higher growth trajectory. The change in trend growth also means that the economy needs to prepare itself to meet ongoing challenges. The key to maintaining high growth with reasonable price stability lies in rapid capacity additions through investments, productivity improvements, removal of infrastructure bottlenecks and ameliorating the skill shortages. While monetary policy will continue to play a critical role in maintaining price stability, the sustainability of high growth with moderate inflation will depend critically on bolstering investment and improving the effectiveness of government intervention in

Table 1.9: Select Financial Instruments and Credit (Outstanding to GDP Ratio)

(Amount in Rs crore; Ratios in per cent)

Instruments	Outstanding		As ratio of GDP	
	Mar-01	Mar-08	Mar-01	Mar-08
1	2	3	4	5
Government Securities	4,53,668	13,32,435	21.6	28.3
CPs	5,846	32,592	0.3	0.7
CDs	771	1,47,792	0.1	3.1
Equity (mkt cap)*	5,71,553	51,38,015	27.2	109.0
Credit Outstanding**	5,11,434	23,61,914	24.3	50.1

* Only pertains to BSE.
** Food credit + Non-food credit
Source: RBI

critical areas such as agriculture, education and health in the quest for more inclusive growth.

As a result of manifold policy initiatives, financial institutions have transited from an erstwhile administered regime to a system dominated by market determined interest and exchange rates and migration from direct and quantitative to price-based instruments of monetary policy. These developments, by improving the depth and liquidity of financial markets, have contributed to better price discovery, enabling greater efficiency of resource use. However, further expansion and sophistication of the financial sector have posed new challenges to regulation and supervision, particularly of the banking system. The existing regulatory and supervisory structures also need to be addressed from the standpoint of gaps, overlaps and conflicts of interest. The regulatory and governance regimes also need some rationalisation.

Chapter II

Aspects of Stability and Performance of Financial Institutions

2.1 Introduction

Banks are central to the Indian financial hierarchy. They are also an integral part of the payment system. This chapter examines the stability and performance of financial institutions. Accordingly, the discussion examines the performance issues germane to commercial banks (Section 2.2), regional rural banks (Section 2.3) and co-operative banks (Section 2.4), both urban and rural. The broader financial sector is then discussed (Section 2.5), encompassing *inter alia*, non-banking finance companies (NBFCs), development finance institutions (DFIs), housing finance companies (HFCs) as also the non-financial (corporate and household) sectors. The penultimate section (Section 2.6) discusses some key concerns in the concerned sectors, *viz.,* commercial banks, the co-operative banking segment and non-banking financial companies. The final section (Section 2.7) gathers the concluding remarks.[4]

2.2 Commercial Banks

2.2.1 Cross-country Perspective

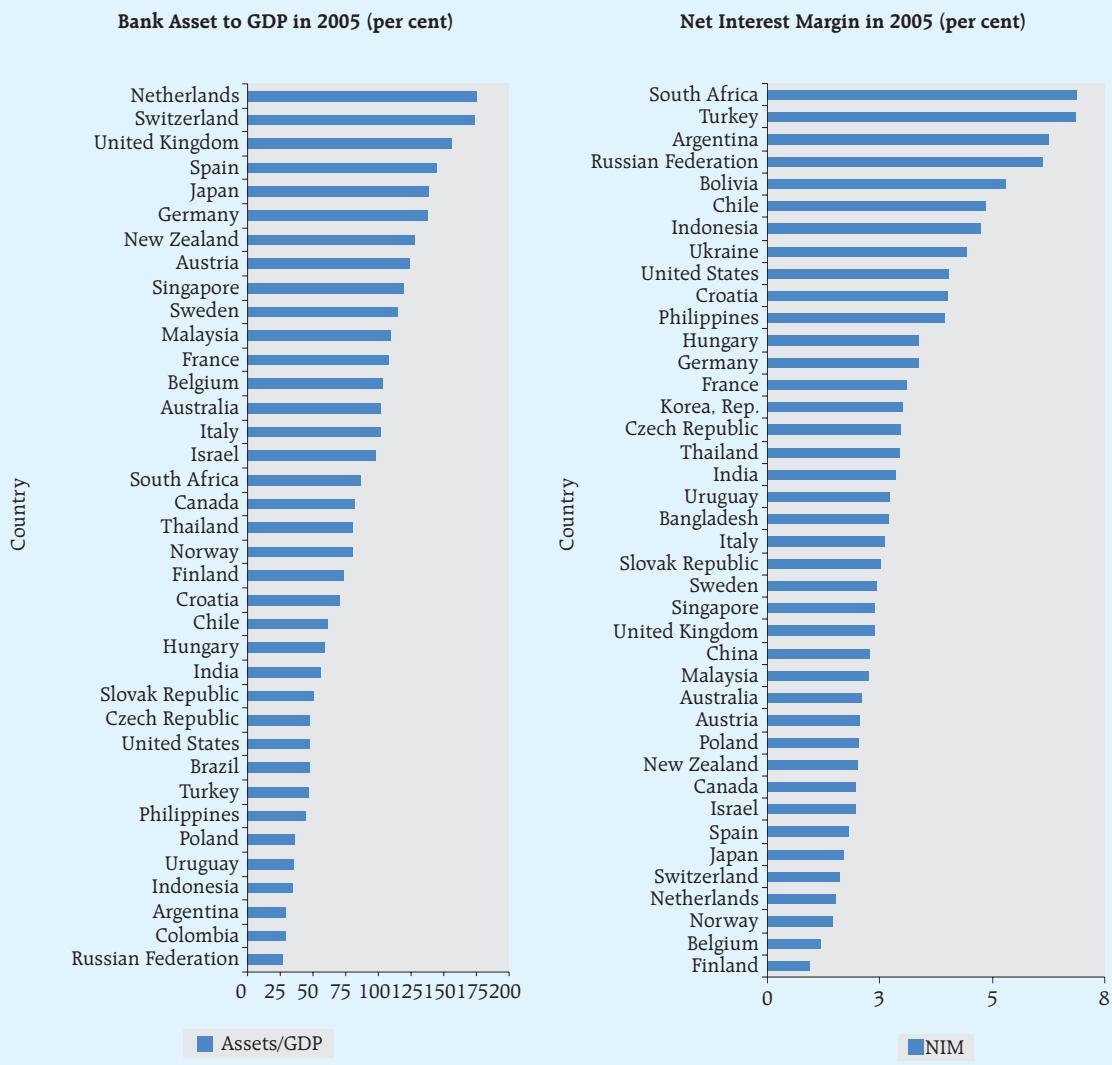
A comparative position of the commercial banking sector on the eve of reforms and that as at end March 2008 is presented in the Table 2.1. Some relevant financial ratios and indicators as also comparable cross-country information are summarised in the table.

Several features stand out. First, there has been a significant increase in the number of listed banks and the assets of listed banks comprise 85 per cent of total commercial banking assets. No bank was listed at the inception of reforms. Second, both deposits and credit have improved markedly, leading to significant financial deepening. The bank asset to GDP ratio has increased significantly (Table 2.1). These numbers would have been even higher if the co-operative and regional rural banks had been taken into account. But these ratios are nevertheless lower than international benchmarks as the bank asset to GDP ratio was in excess of 100 per cent in 15 countries (Chart 2.1). Third, there has been a marked improvement in profitability, comparable to international levels (Table 2.1). Fourth, the costs of financial intermediation have dwindled over the years. Though globally, at the median, these costs are 2.67 per cent, but for India, they were just above the median level (Chart 2.1) in 2005.[5]

[4] The stability and performance aspects of the insurance sector are covered separately in Chapter III. The data used for analysis is mostly sourced from regulatory returns and may be marginally different from that available in various issues of the Report on Trend and Progress of Banking in India.

[5] The costs of financial intermediation are defined as the accounting value of banks' net interest revenue as a share of its interest bearing (total earning) assets

Chart 2.1: Bank Assets and Net Interest Margin - 2005

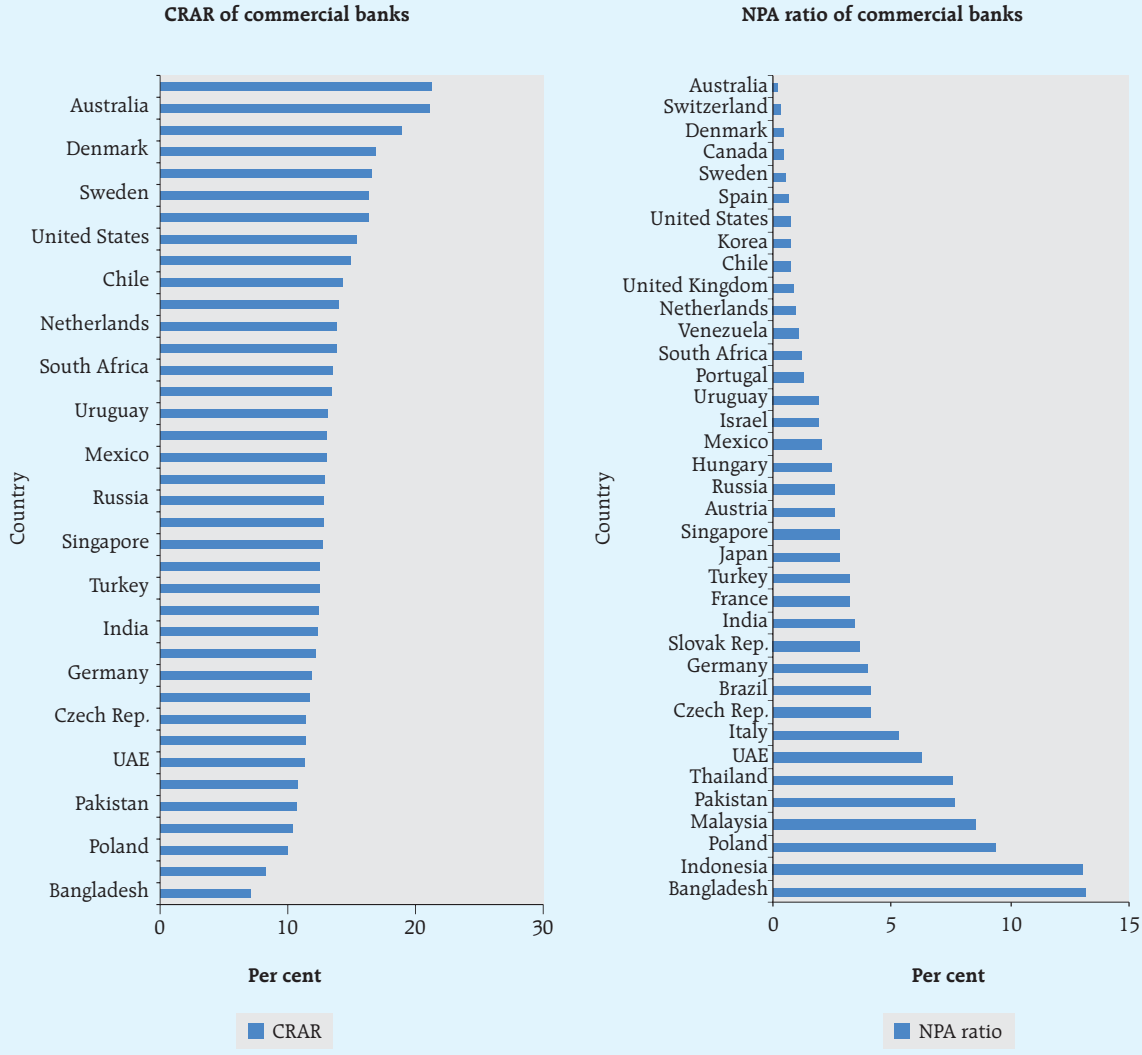


Source : IMF (Global Financial Stability Report)

Fifth, even in terms of prudential parameters, India is at the middle of the scale (Chart 2.2).

Efforts are being made towards the adoption of international benchmarks as appropriate to Indian conditions, improving management practices and corporate governance and upgrading technological infrastructure. While certain changes in the legal infrastructure are yet to be effected, the developments so far have been gradually bringing the Indian financial system closer to global standards. But although the banking

Chart 2.2: CRAR and NPA Ratio of Commercial Banks - 2006



Source : IMF (Global Financial Stability Report)

system has made significant headway, there is still some distance to go before it can truly come up to international standards. The analysis therefore examines the strengths and vulnerabilities of the banking system at the present juncture, focusing, in particular on the areas where progress has been less than adequate so as to draw lessons for further development.

The bank asset to GDP ratio for commercial and co-operative banks in 2008 stood at 103.4 per cent, with deposits and loans, as percentages of GDP, being 78.5 per cent and 58.6 per cent, respectively (Table 2.2). These ratios are generally within the range of those observed for OECD countries and ranks at the higher end of the scale when compared with countries in East Asia and Pacific region. The major exception is the loan-to-GDP ratio, which suggests less than adequate penetration of credit in India. With loan growth running at over 20 per cent which is higher than the nominal GDP growth, this ratio too should rise sharply in the coming years.

Table 2.1: Commercial Banks – Then and Now

No.	Indicators	March 1991	March 2000	March 2006	March 2008
1	2	3	4	5	6
I.	***Size* (Numbers)**				
	Number of commercial banks(a)	272	297	222	174
	Number of bank offices in India	60,570	65,412	69,471	76,518
	Of which:				
	Rural and semi-urban branches	46,115	47,141	46,135	48,985
	Population per bank office ('000s)	14	15	16	15
	Deposits (Rs. crore)	2,01,200	8,51,593	21,09,049	33,20,054
	Per capita deposits (Rs.)	2,368	8,498	19,276	23,468
	Credit (Rs. crore)	1,219	4,54,069	15,07,077	24,77,039
	Per capita credit (Rs.)	1,434	4,531	13,774	17,355
	Total bank asset (Rs. crore) ^	3,20,345	11,05,464	27,85,863	43,26,486
	Assets of listed banks (Rs. crore)	..	5,87,800	23,74,044	36,59,866
	Assets of listed banks/ Total bank asset (per cent) ^	..	51	85	85
	Bank concentration (assets of 3 largest banks/ commercial bank assets) ^	0.4	0.3	0.3	0.3
	Bank asset/GDP (per cent)(b) ^	56.2	56.6	77.8	92.0
II.	***Performance* (in per cent) ^**				
	Profitability (Net profit/Asset)	0.23	0.66	0.88	1.0
	Cost of Intermediation (Net interest margin)	3.31 (c)	2.73	2.81	2.3
	Administrative and staff costs (Operating expense/Asset)	2.60 (c)	2.49	2.13	1.8
	Soundness (Capital adequacy ratio – CRAR)	10.4*	11.1	12.3	13.0
	Fragility (Non-performing loan ratio – NPA)	23.2 ** (for 1992-93)	14.0** (12.7 – for Sch. Comm. banks)	3.7** (3.3 - for Sch. comm. banks)	2.3** (2.4 – for Sch. comm. Banks)
	Provisions/NPAs	..	..	58.9	56.1
III.	***International Comparisons (d)***				
2006	RoA {min, max}	79 countries		{0.2, 4.3}	
2006	CRAR {min, max}	75 countries		{7.1, 34.9}	
2006	NPA {min, max}	79 countries		{0.2, 24.7}	
2006	Provisions/NPA {min, max}	60 countries		{23.1, 229.1}	
2005	Net interest margin {min, max}	83 countries		{0.61, 14.23}	
2005	Bank concentration {min, max}	95 countries		{0.30, 1.00}	
2005	Bank deposits/ GDP {min, max}	96 countries		{0.6, 334}	
2005	Bank credit/ GDP {min, max}	96 countries		{7.2, 202}	

(a) including RRBs
(b) GDP at current market prices
(c) for 1991-92
* for 1996-97
** for public sector banks only
(d) includes Latin America, Emerging and Western Europe, Asia and Middle East and Central Asia
^ Excluding RRBs
Figures reported in the table might not match with those reported elsewhere in the text owing to differences in data sources
Source: RBI, IMF (Global Financial Stability Report) and World Bank (Financial Structure Database)

Table 2.2: Indicators of Financial Depth – 2008				
Country/Region	**Bank asset /GDP (March 2008)**	**Deposits/GDP (March 2008)**	**Loans/GDP (March 2008)**	**Bank assets/(bank + central bank assets) (March 2008)**
1	2	3	4	5
India	103.4 [95.8]	78.5 [73.4]	58.6 [54.1]	84.0 [84.9]
OECD [range]*	[48.2, 202.9]	[44.6, 334.1]	[46.1, 202.4]	[86.8, 99.9]
East Asia & Pacific [range]*	[8.2, 109.7]	[0.5, 93.5]	[7.9, 102.9]	[24.6 , 99.7]

Note : Bank asset for India is the aggregate of commercial and co-operative banks (Urban co-operative banks, State co-operative banks and District Central co-operative banks) for March 2008. Figures within parentheses pertain to March 2007.
Central bank assets = Reserve Money
* for December 2005

Source: RBI and World Bank (Financial Structure Database)

The approach of the Reserve Bank towards prudential norms has been of gradual convergence with international best practices, tailored to country-specific considerations. In order to assess the level of adherence to international best practices in respect of regulation and supervision of commercial banks, an assessment of their adherence to the Basel Core Principles (BCP) was undertaken as a part of this exercise.

BCPs lay down a framework of institutional arrangements (*i.e.* policies, processes, powers and infrastructure) that provide a foundation to help in promoting and assessing financial stability. Financial stability depends upon risk management practices, macroeconomic conditions, market regulation and supervision, the quality of financial institution management and its supervision, *etc.* While BCP compliance may not be a sufficient condition for financial stability, a reasonable observance of the principles can be taken as a necessary pre-condition.

Despite improvements in supervision and risk management, the level of compliance to the BCPs appears to have declined. This apparent anomaly may be viewed in the light of revision of BCPs themselves, a change in assessment methodology and a different assessor. It suggests that commercial banks are currently compliant/largely compliant in respect of 18 of the 25 Principles[6] which is lower than the last assessment in 2001 when India was found compliant/largely compliant with 23 out of the 25 principles[7]. Partial/non-compliance is mainly in the areas of risk management and home-host country co-ordination in information sharing. Erstwhile observed areas of weaknesses, *e.g.* in country risk, have since been addressed. Consolidated accounting for banks has also been introduced along with a pilot system of risk-based supervision for intensified monitoring of vulnerabilities.

A scheme of Prompt Corrective Action has been in effect since December 2002 to undertake 'structured' and 'discretionary' action against banks exhibiting weaknesses in respect of financial and prudential parameters. At the macro level, a half-yearly review based on macro-prudential and financial soundness indicators is being undertaken to assess the health of individual institutions and financial system soundness. The findings arising thereof are disseminated through various Reports.

[6] For details please see the report of the Advisory Panel on Financial Regulation and Supervision
[7] The lower level of compliance is due to the revision of Basel Core Principles in 2006. The earlier assessment was based on Basel Core Principles 1999 while the current assessment is based on Basel Core Principles 2006.

Table 2.3: Bank Group-wise Relative Business Size of Commercial Banks

(share in per cent)

Bank Group	Assets			Deposits			Advances			Employees		
	Mar-01	Mar-07	Mar-08	Mar-01	Mar-07	Mar-08	Mar-01	Mar-07	Mar-08	Mar-01	Mar-07	Mar-08
1	2	3	4	5	6	7	8	9	10	11	12	13
Public Sector Banks	79.5	70.4	69.8	81.4	73.9	73.9	78.9	72.7	72.6	91.1	81.9	78.4
Old Private Banks	6.5	4.6	4.5	7.0	5.1	5.2	7.2	4.7	4.8	NA	5.5	5.4
New Private Banks	6.1	16.9	17.2	6.0	15.3	15.3	5.7	16.2	16.4	NA	9.3	12.9
Foreign Banks	7.9	8.0	8.4	5.6	5.6	5.8	8.2	6.4	6.5	1.6	3.2	3.3

NA – Data not available

Source : RBI

2.2.2 Ownership

The banking sector is dominated by public sector banks (PSBs) which accounted for about 70 per cent of commercial banking assets and over 78 per cent of employees at end March 2008 (Table 2.3). In 2000-01, they accounted for nearly 80 per cent of banking assets and roughly four-fifths of deposits and advances. In other words, there has been a decline of roughly one percentage point per annum for loans and even higher for deposits for PSBs, matched largely by an increase in the same for the new private banks[8].

In the wake of envisaged Basel II norms, there is an ongoing debate whether this process should be accelerated through a divestment of Central Government shareholding in PSBs. In case PSBs are corporatised while keeping their "public sector character" intact, the implications will be as follows:

- So long as the shareholding of the Government is not reduced to less than 51 per cent of the total capital of any bank, the bank will remain a government company within the meaning of Section 617 of the Companies Act. In case, however, the Government shareholding becomes less than 51 per cent, the banks will not remain a government company, but if the dominant shareholding, even if below 51 per cent, remains with the Government, then for all practical purposes, Government will continue to be in a position of control. However, such a step would have implications in respect of placing banks' balance sheets before the Parliament and jurisdiction of central vigilance commission (CVC) over the banks.
- The directors of the company will be elected by shareholders, but as long as the Government continues to be a shareholder, Government / Reserve Bank could exercise its powers for appointing the directors, as per the requirements of the Banking Regulation (BR) Act.

[8] The business profile of public sector banks in India are somewhat different from other banking groups driven by regulatory and other considerations; hence comparisons of bank-group wise figures here and elsewhere in this report need to take this aspect on board.

- Since Section 30 (1A) of the BR Act will apply to the corporatised banks, the appointment of the auditors will continue as is being done at present.
- Such banks will be able to raise capital as per the provisions of the Companies Act/ BR Act without prior permission from the Government and the Government could choose to divest its shareholding.

The predominant Government ownership of commercial banks helps in ensuring systemic stability as state-owned banks enjoy an implicit sovereign guarantee. The possible adverse consequences, insofar as Government ownership causes regulatory forbearance that lead to larger fiscal costs over the medium-term have been often debated. The fiscal cost to the exchequer in respect of recapitalisation of PSBs has been minimal. The recapitalisation by the Government on a cumulative basis up to 2002-03, taking into account the capital returned by banks has amounted to approximately Rs.22,000 crore or around one per cent of GDP (2002-03).

The Reserve Bank has shown a preference for merging weak banks with healthy PSBs to exploit synergies. Active Government support has been forthcoming in facilitating such mergers and has been important in protecting systemic stability and the interest of small depositors. The Panel therefore feels that, PSBs have an important role to play in fostering stability in the financial system.

PSBs have also shown improvements in efficiency. The goal of promoting efficiency will be better served if steps are taken to improve the incentive structure so as to foster greater innovation, customer orientation and diversification of their income stream. The development of risk management skills in respect of PSBs is *a sine qua non.* Given the current incentive structure of PSBs there is a possibility of losing staff to the higher paying private financial institutions.[9]

It is the Panel's view that there is a need to augment the capital base of PSBs over the next five to seven years so that they do not face a capital impediment for credit extension. With the listing of PSBs, government ownership in them has been diluted over time and, in case of several banks, it is marginally above the stipulated threshold of 51 per cent. There is a perception that PSBs' access to the markets for further equity has become a challenging proposition because of the Government's decision thus far not to dilute its ownership to lower than 51 per cent. According to a capital-projection analysis attempted by the Panel, (Section 2.2.4.(c)), this would apply to 19 (of the 20 nationalised[10]) banks by 2012-13 in the worst-case scenario.

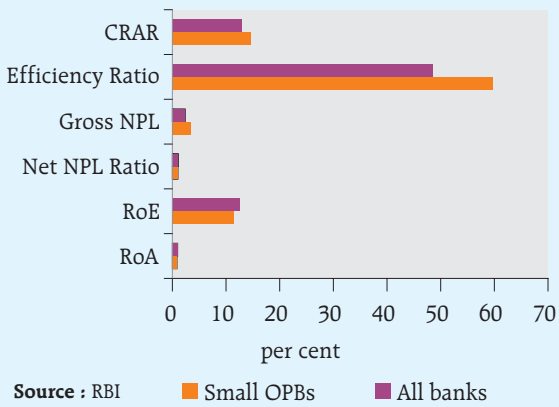
The objective of financial intermediation has changed over the years. More efficiency and productivity in operations with emphasis on disclosure and accountability is now required. This can be achieved through diversification of ownership, leading to greater public participation, and through competition. As a major step towards enhancing competition, foreign direct investment in private sector banks is allowed up to 74 per cent, subject to conformity with the prescribed guidelines.

Private sector banks comprise of two distinct categories; the professionally managed new private sector banks which are the fastest growing segment among commercial banks and the old private sector banks, comprising 5.0 per cent of the total business as on March 31, 2008, which are typically smaller banks catering mainly to a specific geographic location and are a vulnerable part of the commercial banks with less than satisfactory financial performance and poor governance. An analysis of the key financial indicators of the smaller old private sector banks

[9] Ref Section 2.6.1(i) ibid.
[10] Including IDBI Bank Ltd.

Box 2.1: Vulnerability of Small Old Private Sector Banks

Small Old Private Sector Banks vs All Banks



Source : RBI

The small old private sector banks (OPBs), with aggregate asset size of less than Rs.6,000 crore as on March 31, 2008, continue to be the weak link in the commercial banking sector. Although there has been some improvement in the key financial ratios of these banks, partly due to amalgamation/ merger of some of the banks, in most cases they remained considerably adverse compared to the system as a whole. The level of capitalisation (CRAR) of small OPBs at 14.6 per cent was, however, higher than the system average of 13.0 per cent. The gross and net NPL ratios for small OPBs stood at 3.4 per cent and 1.1 per cent, respectively, while the corresponding figures for the entire system were 2.4 per cent and 1.1 per cent, respectively. Also, while the profitability (ROA) at the system level was 1.0 per cent, that for the small OPBs was only 0.9 per cent. The cost income (efficiency) ratio of these banks, at 59.7 per cent, was considerably higher as compared to the system figure of 48.6 per cent, which reflected their relative inefficiency.

is given in Box 2.1. However, given that these banks comprise a small portion of banking assets, it is not a systemic concern. Recognising the growing importance of private sector banks, the Reserve Bank, in addition to encouraging the diversification of ownership, has stressed on the need for fit and proper guidelines for the board, management and important shareholders.

Currently, foreign banks have a three track presence in the Indian financial sector: in terms of asset share, equity stake in Indian banks and FII investment in Indian banks. Foreign banks play a small but increasingly important and innovative role. At the end of March 2008, as many as 28 foreign banks were operating in India through branches. These banks account for more than 8 per cent of total commercial banking sector assets. As for foreign ownership of Indian banks, total foreign ownership in a private sector bank cannot exceed 74 per cent of the paid-up capital. In state-owned banks, however, the Foreign Direct Investment (FDI) limit is 20 per cent. In non-distressed banks, foreign banks cannot hold more than 5 per cent equity, in general.

Consistent with the policy of increasing financial globalisation, existing guidelines on FDI in the banking sector were revised in March 2004. In 2005, a roadmap for foreign banks in India was announced. In the first phase (2005-2009), foreign banks were allowed to establish a wholly-owned subsidiary or to convert their existing operations into a subsidiary. In addition, the limit of FDI in private sector banks was raised from 49 per cent to 74 per cent.

The roadmap also included guidelines on ownership and governance in private sector

Box 2.2: Ownership Structure of Banks

Public Sector Banks

Public sector banks are statute-based banks. They are regulated by their respective statutes of Parliament in addition to some important provisions of Banking Regulation Act, 1949 as enunciated in Section 51 thereof. Primarily, public sector banks constitutes the following -

(i) **State Bank of India** regulated by State Bank of India Act, 1955.

(ii) **Subsidiary Banks of State Bank of India** regulated by State Bank of India (Subsidiary banks) Act, 1959.

(iii) **Nationalised Banks** regulated by Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970 & 1980.

As per the provisions of their respective statutes, the Central Government is mandated to hold a minimum percentage of shareholding which is 51% in case of nationalised banks and 55% in case of the State Bank of India. In case of the subsidiary banks, the shareholding of the State Bank of India can not go below the minimum of 51% of the total shareholding in those banks. Foreign investment in any form cannot exceed 20% of the total paid-up capital of the PSBs. The PSBs are permitted to divest their holdings subject to minimum holding by Central Government as stated above.

The Board consists of whole-time directors {Chairman / EDs / MDs (in case of SBI & its subsidiary banks)}, Government nominee directors, Reserve Bank's nominee director, workmen and non-workmen directors and elected directors. Number of elected director depends upon the percentage of public shareholding in the banks. In case of nationalised banks and subsidiary banks, it can be maximum of three if the percentage of shareholding is more than 32% whereas in case of State Bank of India, it can be four if the public shareholding is more than 25%. The director to be nominated by the Reserve Bank will be a person possessing necessary experience and expertise in regulation or supervision of commercial banks instead of an officer of the Reserve Bank of India[11].

Private Sector Banks

The broad principles underlying the framework of policy relating to ownership and governance of private sector banks are:

(i) ultimate ownership and control of private sector banks is well diversified.

(ii) Important shareholders (*i.e.*, shareholding of 5 per cent and above) are 'fit and proper', as laid down in the guidelines on acknowledgement for allotment and transfer of shares.

(iii) The director nominated by the Reserve Bank and the CEO who manage the affairs of the bank are 'fit and proper' as indicated in the Reserve Bank guidelines and observe sound corporate governance principles.

The objective is to ensure that no single entity or group of related entities has shareholding or control, directly or indirectly, in any bank in excess of 10 per cent of the paid up capital of the private sector bank. Any higher level of acquisition will be with the prior approval of Reserve Bank. Where ownership is that of a corporate entity, the objective will be to ensure that no single individual/entity has ownership and control in excess of 10 per cent of that entity. Banks (including foreign banks having branch presence in India)/FIs should not acquire any fresh stake in a bank's equity shares, if by such acquisition, the investing bank's/FI's holding exceeds 5 per cent of the investee bank's equity capital. The present policy requires the Reserve Bank's acknowledgement for acquisition/transfer of shares of 5 per cent and more of a private sector bank. In case of restructuring of problem/weak banks or in the interest of consolidation in the banking sector, the Reserve Bank may permit a higher level of shareholding, including by a bank.

The aggregate foreign investment in private banks from all sources (FDI, FII, NRI) cannot exceed 74 per cent. At all times, at least 26 per cent of the paid-up capital of the private sector banks will have to be held by resident Indians. Currently there is a limit of 10 per cent for individual FII investment with the aggregate limit for all FIIs restricted to 24 per cent which can be raised to 49 per cent with the approval of board/general body. Similarly, there is a limit of 5 per cent for individual NRI portfolio investment with the aggregate limit for all NRIs restricted to 10 per cent which can be raised to 24 per cent with the approval of Board/General Body.

The capital requirement of existing private sector banks should be on par with the entry capital

[11] Amendment to SBI Act, 1955 incorporating the changes has not yet been passed.

requirement for new private sector banks which is initially Rs.200 crore, with a commitment to increase to Rs.300 crore within three years.

Foreign Banks

Foreign banks are required to bring an assigned capital of USD 25 million up front at the time of opening the first branch in India. In case of foreign banks the aggregate foreign investment from all sources was allowed up to a maximum of 74 per cent of the paid-up capital of the bank while the resident Indian holding of the capital was to be at least 26 per cent. It was also provided that foreign banks may operate in India through only one of the three channels, namely (i) branch/es (ii) a wholly owned subsidiary or (iii) a subsidiary with an aggregate foreign investment up to a maximum of 74 per cent in a private bank.

The Reserve Bank had in February 2005 in consultation with the Government of India released the road map for presence of foreign banks in India. The roadmap was divided into two phases. During the first phase, between March 2005 and March 2009, foreign banks would be permitted to establish presence by way of setting up a wholly owned banking subsidiary (WOS) or conversion of the existing branches into a WOS. The aforesaid guidelines cover, *inter alia*, the eligibility criteria of the applicant foreign banks such as ownership pattern, financial soundness, supervisory rating and the international ranking. The WOS will have a minimum capital requirement of Rs.300 crore and is required to maintain a capital adequacy ratio of 10 per cent or as may be prescribed from time to time on a continuous basis, from the commencement of its operations. The WOS will be treated on par with the existing branches of foreign banks for branch expansion with flexibility to go beyond the existing WTO commitments of 12 branches in a year and preference for branch expansion in under-banked areas. During this phase, permission for acquisition of share holding in Indian private sector banks by eligible foreign banks will be limited to banks identified by the Reserve Bank for restructuring. The Reserve Bank may, if it is satisfied that such investment by the foreign bank concerned will be in the long-term interest of all the stakeholders in the investee bank, permit such acquisition. Where such acquisition is by a foreign bank having presence in India, a maximum period of six months will be given for conforming to the 'one form of presence' concept.

The second phase will commence in April 2009 after a review of the experience gained and after due consultation with all the stakeholders in the banking sector. The review would examine issues concerning extension of national treatment to WOS, dilution of stake and permitting mergers / acquisitions of any private sector banks in India by a foreign bank in the second phase.

The parent foreign bank will continue to hold 100 per cent equity in the Indian subsidiary for a minimum prescribed period of operation. The composition of the Board of directors should, *inter alia*, meet the following requirements:

* Not less than 50 per cent of the directors should be Indian nationals resident in India.
* Not less than 50 per cent of the Directors should be non-executive directors.

Source : Reserve Bank of India

banks. In the first phase till 2009, foreign banks would only be allowed in a phased manner to acquire up to 74 per cent ownership in distressed private sector banks identified by the Reserve Bank for restructuring. In other private sector banks, no bank can have a stake in excess of 5 per cent.

The second phase commences in April 2009 after a review of the experience gained and after due consultation with the stakeholders in the banking sector. This review examines issues concerning the extension of national treatment to wholly-owned subsidiaries, dilutions of stakes and permitting mergers/acquisitions of

private sector banks in India. An amendment to the BR Act, 1949 has also been proposed to allow for the voting rights of banks to reflect their ownership level, eliminating the current 10 per cent cap.

The Panel is of the view that this has the potential of changing the ownership structure of the Indian financial sector and also raises challenges for improving risk management skills and attendant capacity-building issues for PSBs. The regulation of the operations of large global banks needs to recognise the fact that their Indian operations form only a small proportion of global operations and key decisions relating to risks are taken abroad while the impact is felt locally. The Panel notes that the general preference for economic reforms in India has been 'gradualism'. In keeping with this approach, the regulators are moving towards the future being financial risk-oriented and guided by disclosure norms and capital requirements. The ramifications of global banks' operations need to be carefully examined and their implications fully assessed. From this standpoint, the Panel endorses the Reserve Bank view on the roadmap for foreign banks and reiterates that developing appropriate risk management skills for domestic banks remains a *sine qua non* at the present juncture.

2.2.3 Competition, Concentration and Efficiency

The growing pressures of competition have led to a gradual decline in the share of public sector banks in total commercial bank assets. The evidence of competitive pressure is supported from the low Herfindahl concentration index (Table 2.4)[12]. While the low Herfindahl index indicates low concentration and that the situation theoretically is conducive for mergers, the gains from such consolidation need to be clearly understood.

An analysis of the top five banks reveals that though their financial ratios were marginally poorer when compared to the system average in March 2008, (Box 2.3: Financial soundness of large banks) they were healthy in absolute terms.

An examination of bank productivity ratios reveal that compared to developed markets, banks in India are overstaffed and their productivity levels lower (Table 2.5). Available data suggests that bank assets per employee were USD18.5 million for the UK and USD 15 million for the Euro economies in 2004. Bank assets per employee of commercial banks were Rs.4.5 crore (approximately USD 1.13 million) in 2008[13].

Table 2.4: Asset Concentration Ratios of Banks – Comparative Position

Country	CR3	CR5	Herfindahl Index
1	2	3	4
India	0.31	0.39	536
UK	0.26	0.35	493
US	0.12	0.19	157
Germany	0.19	0.27	283
France	0.36	0.51	682
Spain	0.51	0.59	1188
EU 25		0.40	570

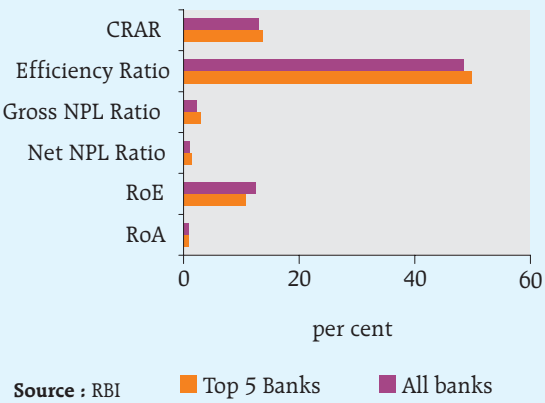
Note: 1. Cross country data for 2004
2. Data for India pertain to end-March 2008
Source: RBI, EU Banking Structure (ECB, October 2005), IMF Working Paper (07/26)

[12] Herfindahl index (HHI) is defined as the sum of squares of market shares and ranges between 0 and 10,000. In practice, markets in which HHI is below 1000 are considered as "loosely concentrated", between 1001 and 1800 as "moderately concentrated" and above 1800 as "highly concentrated".

[13] Assuming USD1=INR 40

Box 2.3: Financial Soundness of Large Banks

Top Five Banks (Assets) vs. All Banks



Source : RBI

The soundness of large banks is critical to soundness of the financial system. CRAR of the 5 largest banks (by asset size) was 13.7 per cent in March 2008. This was higher than the average CRAR of the banking system of 13.0 per cent. Net NPA of the five largest banks was 1.5 per cent in March 2008 compared to 1.1 per cent for the system. RoA of the 5 largest banks at 1.0 per cent was similar to the system average. The cost-income (efficiency) ratio of the five largest banks was 49.8 per cent as compared to 48.9 per cent of the system as a whole. To summarise, the key financial ratios of these five largest banks were marginally poorer when compared to the system as a whole.

In the Indian context, there are large differences in productivity across ownership groups. Partly because of their large retail and consumer accounts base, PSBs have roughly three-times as many employees relative to their assets and roughly two-times in respect of loans and deposits (and even higher for net interest income) as foreign banks (Table 2.6). Private domestic banks are less productive and more overstaffed than foreign banks, but more productive (in terms of loans) and less overstaffed than public sector banks. This divergence across ownership groups indicates the significant potential gains available through productivity improvements by increasing competition.

Table 2.5: Bank Assets Per Employee

Country	Bank assets per employee
1	2
India	USD 1.13 million
United Kingdom	USD 18.5 million
Euro economies	USD 15 .0 million

Source : RBI and IMF

One of the main reasons for the low employee productivity in PSBs could be the lower mechanisation of work processes with the attendant cost implications. Also, higher employee productivity of banks could be due to significant outsourcing activities. In order to take a more holistic view, cost income (efficiency) ratios[14] for each banking group were calculated. It was seen that the ratios displayed greater convergence across bank groups.

2.2.4 Assessment of Financial Soundness Indicators

A significant strengthening of prudential supervision along with the gamut of measures undertaken over the years has significantly improved the health of the sector. Since the beginning of reforms in the early 1990s,

[14] Cost income Ratio = Non-interest expenses/ (Total income –Interest expenses)

Table 2.6: Bank Productivity in India – 2007 & 2008

(Rs. in crore)

Bank Group	Asset Per Employee		Net Interest Income Per Employee		Gross Advances Per Employee		Deposits Per Employee		Cost Income Ratio (per cent)	
	Mar-07	Mar-08	Mar-07	Mar-08	Mar-07	Mar-08	Mar-07	Mar-08	Mar-07	Mar-08
1	2	3	4	5	6	7	8	9	10	11
Commercial Banks	3.9	4.5	0.1	0.1	2.1	2.6	2.9	3.5	51.2	48.9
Public Sector	3.2	4.0	0.1	0.1	1.9	2.4	2.6	3.3	51.5	48.9
Old Private	3.3	4.0	0.1	0.1	1.9	2.3	2.8	3.4	49.3	47.4
New Private	6.6	5.8	0.2	0.1	3.6	3.1	4.9	4.3	55.1	54.0
Foreign	9.8	12.1	0.4	0.5	4.5	5.4	5.3	6.4	45.1	42.9

Source: RBI

financial performance, especially of PSBs, has gradually improved. This section analyses the financial soundness indicators of the commercial banks in India to assess the strengths and vulnerabilities in the sector and also benchmarks it against similar indicators across countries.

2.2.4. (a) Stress Testing

Ideally, stress scenarios are required to be linked to a macroeconomic framework. The qualitative response models employ econometric techniques to estimate the relationship between the macroeconomic variables and the prudential variables to be used for financial stress-testing. Studies using a multinomial regression approach suggest that the financial sector problems are associated with the following macroeconomic variables:

- Real interest rates
- Output growth
- Domestic credit growth
- Real exchange rate
- Inflation rate

However to establish the exact extent of the impact of changes in these variables on the variables to be stressed, further empirical analysis has to be undertaken. It is in this context that the Reserve Bank formed an internal group on financial stability/ vulnerability indicators. When the group initiated the model building work, it found that time series data was not available for several variables.

Therefore, to start with, the group identified a manageable set of core indicators required for econometric model building. A central database is also being built. This core set of indicators is being used by the group for the monitoring and preparation of reports on financial soundness indicators on a regular basis. It is expected that the necessary time series would be in place in about two years, when it would be possible to develop models for having early warning signals and a set of variables that can be used for stress testing.

In the absence of adequate data to link macroeconomic scenarios with financial soundness indicators and also the lack of any 'stress events' in the Indian financial system for the last 15 years[15], the current assessment has used single factor sensitivity analysis to assess the resilience of the financial system to exceptional but plausible events. In formulating the quantum of shocks, the Panel has applied "judicial" criteria on "selected" indicators based on its experience of the Indian financial system.

[15] The position continued till August 2008. The global financial meltdown has impacted the Indian economy in September 2008 and there has been a reversal of capital inflows. This had led to some stress situations in the financial markets, particularly in the equity and foreign exchange markets.

Based on the supervisory data, individual banks' positions have been stressed by applying shocks in respect of a single key variable which is then related to an important financial soundness indicator (FSI) - typically the regulatory capital adequacy ratio. The same analysis is carried out for the system as a whole by aggregating individual bank balance sheets.

Various data limitations like unavailability of adequate time series data for several variables, lack of econometric models, unavailability of data relating to leakages in the form of inter-bank contagion (including NBFCs) and systemic level netting out *etc.,* have constrained a multiple-factor, scenario-based analysis. The Panel suggests that the off-site monitoring and surveillance mechanism of the Reserve Bank thus needs to be augmented to include collection of data necessary to monitor financial stability.

A comprehensive stress testing exercise, based on well articulated scenarios that correspond to a combination of macroeconomic and sectoral shocks should be feasible once data becomes available. For example, the specified stress scenarios can be applied to individual portfolios of institutions in order to estimate their impact on the balance sheets and income statements, and these institution by institution results can then be analysed using various statistical methods. An alternative approach would be to apply the scenarios on the aggregated balance sheet for a group or sub group of institutions. This would require estimation of econometric relationships between key financial soundness indicators and key macro economic and sectoral variables using historical regressions of aggregate data or panel regressions.

Once adequate data is available, systematic analysis of the relationship between FSIs for non-financial corporations (and household sector) and corresponding FSIs for banking sector and between FSIs and macro variables, so that the FSIs can be projected based on projected developments in non-financial sectors, could be attempted. Such forward looking analysis of FSIs is needed, because current levels of FSIs are lagging or at best contemporaneous indicators of financial health. Also, stress test results themselves can be viewed as financial soundness indicators. Thus, results of some standard stress tests (*e.g.* specific increase in benchmark interest rate, or a change in exchange rate, or shift in volatility *etc.*) may be monitored periodically to capture any balance sheet deterioration over time, while carrying out scenario analysis and scenario based stress testing in order to capture current developments.

In the above context, the Panel recommends that the existing informal vulnerability group be crystallised into an inter-disciplinary Financial Stability Unit (comprising members drawn from research, statistics, supervisory and market operations background) which could periodically monitor systemic vulnerabilities. The responsibilities of the unit could broadly be to:

- Conduct macro prudential surveillance of the financial system.
- Prepare a periodic financial stability report.
- Develop a data base in co-ordination with the supervisory wing for collection of key data in respect of variables which could impact financial stability.

- Develop a time series of a core set of financial soundness indicators.
- Conduct systemic stress tests based on plausible scenarios to assess resilience.
- Development of models for assessing financial stability.

2.2.4 (b) Capital Adequacy

The Capital-to-Risk-Weighted Assets Ratio (CRAR) of scheduled commercial banks (SCBs) had witnessed a sharp increase and stood at 13.0 per cent at end March 2008 against the regulatory requirement of 9 per cent with the tier-I capital ratio at 9.1 per cent (Table 2.7, 2.8). Though the level appears to be comfortable at present, there is a requirement of additional capital to sustain credit growth, and the impending full implementation of Basel II norms which would require an additional capital charge for operational risk[16]. Recognising the need for additional capital, the Reserve Bank has attempted to enhance banks' capital raising options by permitting them to raise capital through instruments such as innovative perpetual debt instruments (IPDI), debt capital instruments, perpetual non-cumulative preference shares and redeemable cumulative preference shares. The IPDIs have already gained in popularity and several banks have augmented their tier-I capital through this route.

Chart 2.3 details the movement of systemic capital adequacy over 2001-2008.

The ratio of net NPAs to capital, which is reflective of the vulnerability in banks' balance sheets, declined from 52 per cent at end March 2001 to 7.6 per cent by end March 2008.

Table 2.7: Soundness Indicators of the Banking Sector

(Ratios in per cent)

	Capital adequacy ratio			Tier I Capital Ratio			Non-performing assets net of provisions/ Capital			Capital/Asset		
Year	March 05	March 06	March 07	March 05	March 06	March 07	March 05	March 06	March 07	March 05	March 06	March 07
1	2	3	4	5	6	7	8	9	10	11	12	13
Public sector	12.9	12.2	12.4	8.0	9.1	8.0	16.9	12.5	11.3	5.9	6.1	6.0
Old private	12.5	11.7	12.1	8.9	9.4	9.7	23.9	14.6	8.7	5.9	6.2	6.4
New private	11.8	12.6	12.0	8.1	8.8	7.6	10.3	5.3	8.1	7.6	8.4	7.1
Foreign	14.0	13.0	12.4	11.1	11.2	10.7	3.5	3.3	2.8	12.0	11.8	11.8
Commercial banks	12.8	12.3	12.3	8.4	9.3	8.3	14.6	10.2	9.4	6.6	6.9	6.7
Emerging Markets												
Brazil	17.9	18.9	18.5	..	..	..	-7.5	..	..	9.8	9.9	9.4
Mexico	14.5	16.3	16.1	13.4	15.2	..	-10.5	-10.6	..	11.5	13.2	..
Korea	13.0	12.8	13.0	..	..	..	6.5	4.9	..	9.3	9.2	9.5
South Africa	12.7	12.3	12.7	8.9	9.0	8.9	..	..	..	7.9	7.8	..
Developed												
US	12.9	13.0	13.0	10.6	10.5	10.2	-2.8	..	..	10.3	10.5	10.6
UK	12.8	12.9	..	..	..	..	..	..	..	9.1	8.9	..
Japan	12.2	13.1	..	..	..	..	..	..	..	4.9	5.3	..
Canada	12.9	12.5	12.4	10.2	7.6	9.8	..	..	..	4.4	5.7	5.6
Australia	10.4	10.4	10.4	7.6	10.5	7.5	2.3	..	..	5.2	4.9	4.9

Source: RBI, IMF (GFSR) and Financial Soundness Indicators (FSI) database

[16] Basel II norms have been made applicable to foreign banks operating in India and Indian banks with foreign presence from March 31, 2008. Basel II norms would be made applicable to remaining 36 banks accounting for around one thirds of the banking system assets only from March 2009.

Table 2.8 : Soundness Indicators of the Banking Sector - March 2008

(per cent)

Bank Group	Capital adequacy ratio	Tier I Capital Ratio	Non-performing loans net of provisions/ Capital	Capital/Asset
1	2	3	4	5
Public Sector	12.5	7.9	9.6	6.5
Old Private Sector	14.1	11.8	4.8	7.9
New Private Sector	14.4	10.8	6.5	11.1
Foreign	13.1	11.3	2.5	13.5
Commercial Banks	13.0	9.1	7.6	7.9

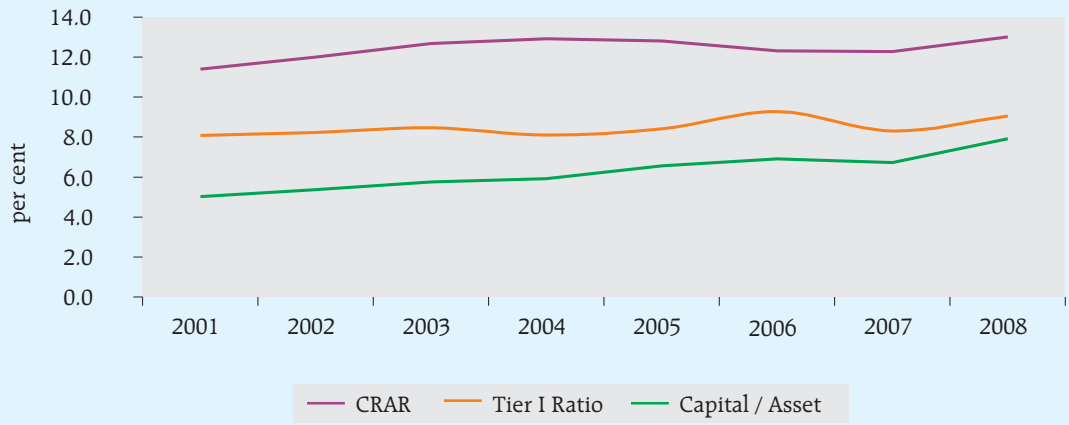
Source : RBI

The un-weighted capital ratio that is, the ratio of capital and reserves to total assets *i.e.* the extent to which assets are funded by their own funds, has increased for banks between 2002 and 2008. Illustratively, from 2002 onwards, the ratio of capital-plus-reserves to total assets has recorded a rise from 5.5 per cent to over 7.9 per cent. In other words the growth of capital has been consistently outpacing asset growth in the recent past. This implies that the leverage which is the inverse of capital to asset ratio in the banking sector has reduced over time.

2.2.4 (c) Capital Requirement

Notwithstanding their improved performance, Indian banks continue to face challenges. Thus while minimum regulatory capital requirements covering credit and market risk continue to be relevant and an integral part of the three pillar approach under Basel II, the emphasis on an internal capital adequacy assessment process and the provision for capital allocation for operational risk mean that the banking system will now face enhanced capital needs, especially those intending to integrate

Chart 2.3 : Trend in CRAR and Capital Ratio



Source : RBI

with international markets. In order to enable a smooth transition towards Basel II, which came into effect in India from March 2008, banks have been provided with additional options for raising capital.

In the past, PSBs had relied on the Government for capital augmentation. However, with a gradual reduction of government holdings, most of them have approached the capital market for raising resources within the stipulations of majority government shareholding. But a stage has now been reached where further capital augmentation in some of these banks will not be possible unless the government shareholding reduces below the stipulated minimum, or the Government is able to meet matching contributions as needed. Given the growth momentum of the economy, banks will have to intermediate a larger quantum of funds. The lending portfolio of banks is therefore expected to witness a manifold increase in the near future. Concomitantly, with capital requirements expected to become more risk-sensitive, especially with the envisaged introduction of Basel II, capital requirement per unit of risk asset too could undergo an increase.

An attempt was therefore made to ascertain the capital requirements of nationalised banks (including IDBI Ltd.) up to 2012-13. In the case of nationalised banks, assuming a capital adequacy ratio of 12 per cent (the excess three per cent over regulatory minimum is expected to take care of the Pillar II capital requirements) and a growth in RWAs of 30 per cent (a worst case scenario keeping in view fluctuations/downturn in future business cycles and its impact on credit off-take as well as introduction/use of credit transfer instruments) up to 2012-13, it is estimated that the Government is required to contribute Rs.49,552 crore to 19 of the 20 banks to maintain their share at a minimum of 51 per cent of the share capital of nationalised bank. This analysis supposes that all possible avenues of raising additional capital in the form of IPDI, preference shares, tier II bonds and plough back of income are considered before the estimated equity infusion to be made by the Government is arrived at. (Annex 2.1: Projected capital requirements of nationalised banks).

Table 2.9 provides the details of number of banks and the amount of capital contribution required from the Government, on the assumptions of 20 per cent, 25 per cent and 30 per cent growth in RWA.

It is observed that even with an assumed lower growth rate of RWA at 25 per cent over six years beginning April 2007, the Government's contribution to nationalised banks capital requirement would still be a significant Rs.16,321 crore. As many as 15 banks', *i.e.* 75 per cent of the nationalised banks would be requiring capital. If the projection is carried further, the Government contribution to these banks would increase at an increasing rate. However, the requirement for capital would reduce to Rs 2,134 crore at an assumed annual increase of 20 per cent in RWA from Rs 49,552 crore at 30 per cent RWA.

The Panel therefore is of the view that, given the current policy scenario, selective relaxation should be granted to banks where the

Table 2.9: Summary of Capital Projections for Nationalised Banks

Growth assumption in RWA No. of banks requiring capital	20 per cent	25 per cent	30 per cent
1	2	3	4
In 2011-12	4 (903)	11 (6,886)	18 (26,583)
In 2012-13	7 (2,134)	15 (16,321)	19 (49,552)

Note: Figures in brackets indicate the required Government's contribution in Rs. crore

government ownership is at the borderline of 51 per cent and the extent of dilution should be decided on a case-by-case basis. This could be effected by making amendments to enabling legal provisions, so as to facilitate the process of selective relaxation to be granted to banks in this regard.

Several other possibilities in parallel could also be explored:

- *Perpetual non-cumulative preference shares without voting rights*: These shares will not have fixed maturity and thus be perpetual in nature. Issuance of these shares will not have any impact on the Government's stake in the bank. This however will require the development of an active secondary market.[17]
- *Perpetual preference shares in foreign currency*: At present, though banks can technically issue perpetual preference shares which can comprise up to 40 per cent of the tier I capital, there is limited appetite for such instruments in the domestic market. In this regard, the regulatory norms for participation by insurance companies subscribing to these instruments need to be clarified. The current regulations do not also allow issue of this instrument in foreign currency. Allowing this instrument in foreign currency in the meanwhile can significantly boost the capital raising ability of banks, especially PSBs, without any dilution in government holding.
- *Issue of golden shares*: Another possible way to address the issue could be through the issuance of *golden shares*. With the issue of such a share, the Government can relinquish majority ownership in PSBs, but still retain majority control over them.
- *Stock split*: Increasing the number of shares through a stock split could enable the raising of equity capital.
- *Dividend stocks*: The Government could issue bonds to banks in lieu of the dividend amount. The banks would then be in a position to retain this and shore up their capital.
- *Rights issue*: The Government should also examine the possibility of permitting banks to take the rights issue route for shoring up the capital base.

2.2.4 (d) Capital Augmenting Measures

Recapitalisation of PSBs/RRBs was started in 1993-94 to enable nationalised banks to meet the prescribed CRAR and the gap created by the application of prudential accounting norms. Over the years, the total capital contributed by the Government amounted to approximately Rs.22,000 crore on a cumulative basis which is only about one per cent of GDP (2002-03).

Internationally, the impact on the exchequer of recapitalisation has often been quite large. According to an estimate from 40 episodes of banking crises across countries, Governments spent on an average 12.8 per cent of national GDP to clean up their financial systems (Honohan and Klingebiel, 2000 and 2001). The percentage was even higher (14.3 per cent) in developing countries. Hoelscher and Quintyn (2003) provide an estimate of

[17] Although issuance of these shares has been permitted by RBI, at present, they cannot be issued by private sector banks till the relevant amendments to the Banking Regulation Act are passed by Parliament.

Table 2.10 Select Banking Crises and Fiscal Cost

Country	Year of Crisis	Fiscal cost (% of GDP)
1	2	3
Argentina (I)	1980	55.1
Argentina (II)	1995	0.5
Australia	1989	1.9
Brazil	1994	13.2
Bulgaria	1996	13.0
Chile	1981	41.2
France	1994	0.7
Indonesia (I)	1992	3.8
Indonesia (II)	1997	50.0
Malaysia (I)	1985	4.7
Malaysia (II)	1997	16.4
New Zealand	1997	1.0
Thailand (I)	1983	2.0
Thailand (II)	1997	32.8
Philippines (I)	1983	13.2
Philippines (II)	1998	0.5
USA	1981	3.2

Source: Honohan, P. and Klingebiel, D. (2003).

comparable fiscal costs across countries of various banking crises during 1980 - 2003. These costs have varied sharply, ranging from small amounts (close to zero) in France and New Zealand to 50 per cent or more in Indonesia and Argentina. The fiscal cost of banking crises in select countries is given in Table 2.10.

In the above context, the cost incurred by India for recapitalising the PSBs is low and there does not appear to be any regulatory forbearance which has resulted in any significant increase in fiscal costs. The last few years of strong performance has also enabled PSBs to return substantial amount of capital to the Government and the outstanding amount of recapitalisation has declined significantly.

Legislative amendments have also been made to allow PSBs to raise capital from the market not exceeding 49 per cent of their equity. This has strengthened the capital base of PSBs. (Box 2.4: Capital augmenting measures).

2.2.4 (e) Solvency of the Banking System

A commonly employed indicator of banking soundness is the Z-score. A higher Z-score implies a lower probability of insolvency risk. Under this model, risk is measured as the

Box 2.4: Capital Augmenting Measures of Public Sector Banks

Over the period beginning 1984-85, the Government injected capital for strengthening the equity base of nationalised banks. There appears 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) covering the period post 1995 wherein Government, as the owner of banks, had to improve their capital position to the stipulated levels. This also included several years when no capital injection was provided to the nationalised banks. Several such banks, which were recapitalised in phase II, have since returned substantial amount of capital back to the Government. The total recapitalisation till end-March 2006 aggregated to around Rs.22,000 crore, amounting to approximately one per cent of GDP (2002-03). The Union Budget 2006-07 proposed the winding up of the Special Securities through their conversion from non-tradable into tradable, SLR Government of India dated securities.

Around the same time, measures were undertaken to broaden the banks' capital base. The Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970 and 1980 and the State Bank of India Act, 1955 were amended to allow banks to raise capital not exceeding 49 per cent[18] of their equity. Equity sales in the market aggregating around Rs.19,600 crore have been made by the PSBs, with several banks approaching the market more than once. Over the period 1993-2007, as many as 22 PSBs have accessed the capital market; their extent of divestment presently ranges from 23.2 - 48.9 per cent.

Source : Government of India/Reserve Bank of India

[18] In the case of SBI, Government shareholding cannot come down below 55 per cent at present.

number of standard deviations an institution's earnings must drop below its expected value before equity capital is depleted. The Z-score can be summarised as $Z \equiv (k+\mu)/ó$ where k is the equity capital as percentage of assets, μ is the average after-tax return percent on assets and ó is the standard deviation of the after-tax return on assets[19]. Based on this identity, an attempt has been made to assess the trend in solvency of the domestically incorporated Indian commercial banks. The foreign commercial banks operating in India have been left out of the analysis as these entities operate only as branches and as such their capital requirements are met by their foreign parents incorporated abroad and are subject to separate regulatory guidelines. The Z-score for domestic banks for the period 1997 to 2008 are provided in Table 2.11. The scores show an improvement in solvency over time.

2.2.4 (f) Asset Quality

The ratio of gross NPA to total loans, which was 11.4 per cent for scheduled commercial banks at end March 2001 saw a marked decline to 2.5 per cent at end March 2008 (Chart 2.4). The improvement in asset quality is observed across bank groups (Tables 2.12, 2.13). This sizeable decline can be attributed to three major factors.

First, there has been significant increase in write-offs by taking advantage of the increased treasury income (till 2004) in a falling interest rate environment. Second, improved credit risk management practices adopted by banks have resulted in lower asset slippage. Also, taking advantage of legal reforms, the recovery performance of the banking sector has also improved markedly, particularly during the last few years. The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act 2002 for enforcement of security interest without intervention of the courts has also given negotiating power to banks. Some significant recoveries have since been effected under the SARFAESI Act, 2002 (Rs.4,429 crore in 2007-08)

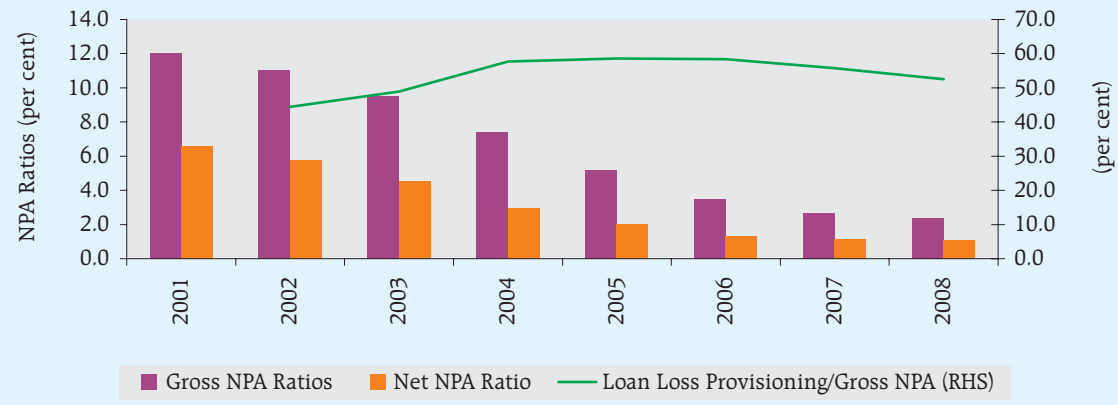
Table 2.11: Z-score for Domestic Commercial Banks: 1997-2008

Period	Z-score	Equity/Asset (k)	RoA (μ)	Standard deviation of RoA (per cent) (ó)
1	2	3	4	5
1997 - 2006	10.2	5.7	0.83	0.64
1998 - 2007	11.5	5.8	0.85	0.58
1999 - 2008	13.2	6.3	0.86	0.54

Source: Computed from RBI data

[19] Let $\mu \equiv$ expected earnings (RoA to asset), ó ≡ standard deviation and k ≡ capital to asset. Then Z-score≡$(k+\mu)/ó$ is the number of standard deviation below the mean earnings that just wipes out capital. Under standard economic theory, a firm trades off between higher expected earnings and lower variation in earnings along its μ -ó efficient frontier, as well as choosing its capital k. Although this framework has its limits, it is useful to think of the contributions to risk in terms of factors that affect expected earnings (returns), the variation in earnings, capital and the institution's trade-off along the efficient risk-return frontier.

Chart 2.4: Asset Quality of Commercial Banks



Source : RBI

and other accompanying measures (Rs.3,196 crore in 2007-08).[20] As at end June 2008, the book value of assets acquired by securitisation companies and reconstruction companies amounted to Rs.41,414 crore.

Net NPAs also witnessed significant declines, driven by reduction in gross NPAs and appropriate provisioning. The net effect of these improvements has been reflected in a rise in banks' coverage ratios (ratio of capital and

Table 2.12: Asset Quality of Commercial Banks

(per cent)

Bank Group	Gross NPA/Loans			Provisioning/NPA		
Year	March 05	March 06	March 07	March 05	March 06	March 07
1	2	3	4	5	6	7
Public Sector	5.5	3.6	2.7	60.4	61.9	56.8
Old Private	6.0	4.4	3.1	52.4	62.6	66.0
New Private	3.6	1.7	1.9	47.9	54.8	49.1
Foreign	2.8	1.9	1.8	54.1	44.9	51.1
Commercial Banks	5.2	3.3	2.5	58.6	60.7	56.1
Emerging Markets						
Brazil	4.2	4.1	4.0	151.8	152.8	153.0
Mexico	1.8	2.1	2.2	232.1	207.4	194.7
Korea	1.2	0.8	0.8	131.4	175.2	177.7
South Africa	1.5	1.2	1.1	64.3	..	..
Developed						
US	0.7	0.8	0.8	155.0	137.2	129.9
UK	1.0	0.9	..	56.1	..	..
Japan	2.9	2.5	..	31.4	30.3	..
Canada	0.5	0.4	..	49.3	55.3	..
Australia	0.2	0.2	0.2	203.0	204.5	..

Source: RBI and IMF (GFSR)

[20] These included recoveries under Debt Recovery Tribunal (Rs.3,020 crore) and recoveries under Lok Adalats (Rs.176 crore).

Table 2.13 : Asset Quality - end March 2008		
Bank Group	**Gross NPA / Loans**	**Provisions / Gross NPAs**
1	2	3
Public Sector	2.3	51.9
Old Private Sector	2.3	68.8
New Private Sector	2.9	51.4
Foreign	0.9	51.2
Commercial Banks	2.4	52.5

Source: RBI

reserves net of net NPAs scaled by assets) (Table 2.14).[21] Coverage ratios of commercial banks, which was less than 2.4 per cent at end March 2001 increased three-fold to 7.3 per cent at end March 2008; the increase being witnessed across banks group.

The evidence on asset slippage of banks over the past few years provides apparently limited cause for concern (Table 2.15)[22]. Illustratively, asset slippage in 2008 was consistently lower across all bank groups, except for foreign banks where it increased marginally in 2007-08. In the event of an economic downturn however, these could rapidly manifest in an increased burden of NPAs in the banks' balance sheets.

In spite of several legal reforms, the rights of Indian banks in the event of a loan default remain ambiguous. While the laws are reasonably adequate, the procedures are time-consuming and amenable to repeated stay orders which result in the erosion of rights of creditors. Also, the improvement in asset quality could, at least partially, be attributed to the benign economic scenario prevalent in the last five years (till 2007-08) and could be impacted

Table 2.14. Banks' Coverage Ratios					
					Figures in per cent
At end-March	**Commercial Banks**	**Public Sector Banks**	**Old Private Banks**	**New Private Banks**	**Foreign Banks**
1	2	3	4	5	6
2001	2.4	1.7	2.1	4.5	8.0
2007	6.1	5.3	5.9	6.4	11.4
2008	7.3	5.9	7.5	10.2	13.1

Source: Computed from RBI data

[21] The coverage ratio allows for simultaneous monitoring of two important elements, *viz.*, (i) level of non-performing assets and (ii) equity capital, adverse movements in which have been found to precede most cases of banking crises. Focusing on this ratio for identifying weakness of a bank is quite advantageous as it allows differentiation between banks which may have the same level of NPAs but different levels of equity capital and loan reserves. It thus gives due credit to the banks that have higher capital funds and have followed a more prudent policy of provisioning for their NPAs.

[22] Asset slippage is defined as: NPAs at end of year - NPAs at beginning of year + recoveries due to upgradation, compromise/write-offs + actual recoveries

Table 2.15: Asset Slippage Across Bank Groups

End-March	Public Sector Banks	Old Private Banks	New Private Banks	Foreign Banks	Commercial Banks
1	2	3	4	5	6
2004	3.1	2.9	3.4	2.5	3.1
2005	2.3	2.1	3.3	1.8	2.3
2006	1.9	1.7	1.7	1.5	1.8
2007	1.7	1.7	2.0	1.5	1.8
2008	1.6	1.3	2.0	2.1	1.7

Note : Figures in per cent and expressed as ratios to gross advances at the beginning of the year.
Source: RBI

in the event of an economic downturn. Higher interest rates could also impact asset quality adversely.

(I) Asset Quality of Retail Assets

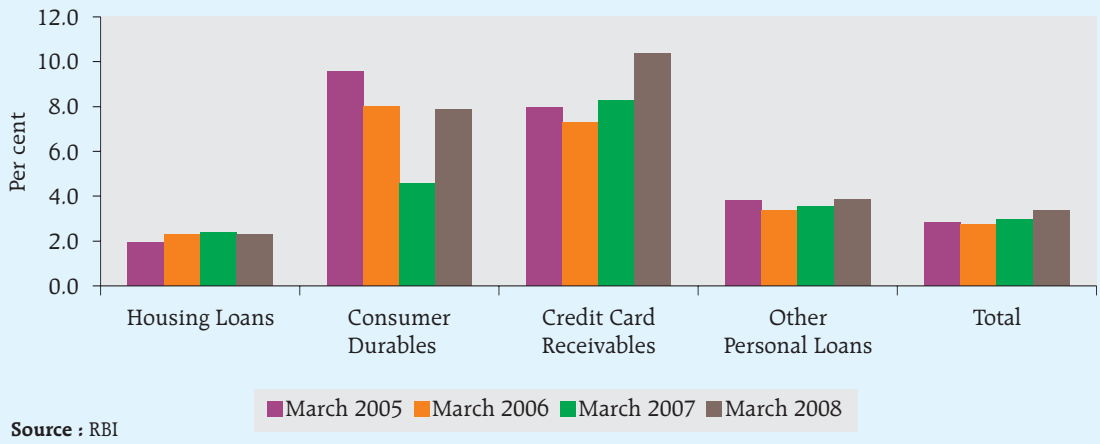
There has been a marginal uptrend in the impaired loans in banks' retail portfolio (Chart 2.5). This has been especially marked for consumer durables and credit card receivables, where impaired credit as percentage of outstanding amount has been higher than the overall ratio for this segment. Also, a significant portion of other personal loans, credit card receivables, consumer durables, are uncollateralised. But the real vulnerability lies in housing loans where there may be an increase in NPAs owing to inadequate risk assessment, sudden increase in Loan-to-Value (LTV) ratio due to fall in housing prices and increased delinquency. Though the default rate on housing loans in India is among the lowest in the world, the balance of evidence points to the need to exercise better credit discipline by banks in retail loan administration.

(II) Stress Tests of Credit Risk

To ascertain the resilience of banks, stress tests of credit portfolio by increasing both NPA levels (for entire portfolio as well as specific sector) and provisioning requirement were undertaken. The resulting estimates were related to bank capital. The analysis was carried out both at the aggregate level as well as at the individual bank level based on supervisory data as at end March 2007 and end March 2008 under three scenarios.

Along with increased provisioning norms for standard, sub-standard and doubtful/loss assets,

Chart 2.5: Impaired Loan to Outstanding Loan (Category-wise) in Retail Portfolio



Source : RBI

the first scenario assumes a 25 per cent increase in NPAs (an alternative scenario assumes a 50 per cent increase in NPAs). The shock imparted in the second scenario amounts to the maximum asset slippage experienced by banks since 2001. The third scenario assumes a 50 per cent increase in delinquent loans in the retail segment.

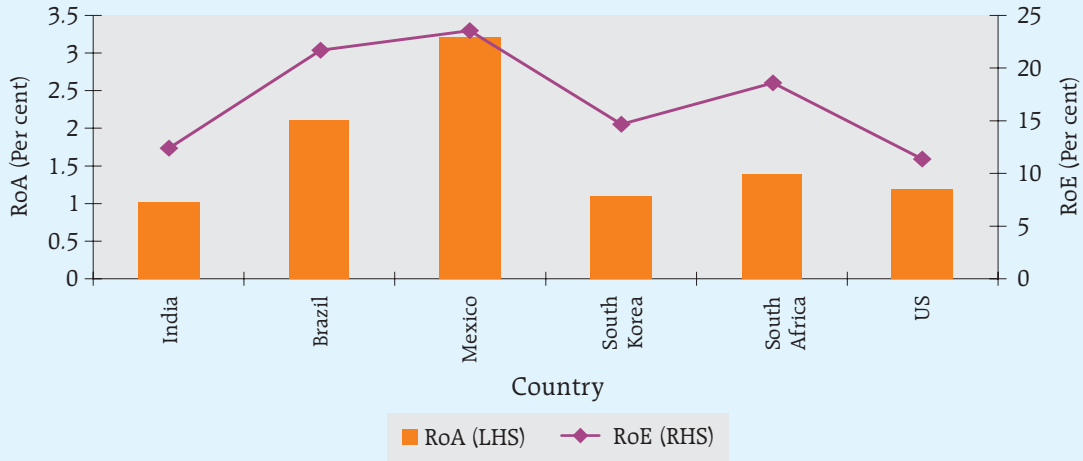
The findings indicated that the likely impact of credit default on banks' capital position was relatively muted. Under the worst-case scenario (scenario-II), the overall capital adequacy of the commercial banking sector declined to 11.6 per cent in March 2008. As many as 15 banks accounting for roughly 14.7 per cent of commercial banking sector assets at end March 2008 would not be able to meet minimum regulatory capital requirements. The corresponding figures for end March 2007 were 14 banks and 10.2 per cent, respectively (Annex 2.2: Credit Risk Stress Test - Scenarios and Results).

Combining these results with earlier observations, the Panel believes that although credit risk concerns are low at present, there is a need for closure and continuous monitoring in order to avoid any unforeseen possibilities of significant asset quality deterioration over the medium term. This gains particular importance as the current slowdown in economic growth could result in the NPA ratios going up by the end of the financial year 2008-09.

2.2.4. (g) Earnings and Profitability Indicators

The returns on equity (RoE) levels of Indian banks are comparable to those prevailing internationally (Chart 2.6)[23]. Operating expenses have been mostly contained. The interest margins are broadly comparable to those prevailing internationally. But provisioning expenses are on the higher side as compared to developed economies. The pre-tax profits of Indian banks are also comparable to international ones (Table 2.16).

Chart 2.6 : RoA and RoE - Cross Country Comparisons



Source : IMF/ RBI

[23] Figures for India pertain to 2007-08. For all other countries figures pertain to 2007. Figures for South Korea pertain to 2006.

Table 2.16: Earnings and Profitability Indicators of Commercial Banks

(Ratios in per cent)

Bank Group	Operating Expenses			Provisioning expenses			Net interest Income			Pre-tax profit		
	2004-05	2005-06	2006-07	2004-05	2005-06	2006-07	2004-05	2005-06	2006-07	2004-05	2005-06	2006-07
1	2	3	4	5	6	7	8	9	10	11	12	13
Commercial Banks	2.1	2.1	1.9	1.3	1.1	1.0	2.8	2.8	2.7	1.2	1.2	1.3
Public sector	2.1	2.1	1.8	1.3	1.1	0.9	2.9	2.9	2.7	1.1	1.1	1.2
Private sector	2.0	2.1	2.1	1.0	0.8	1.0	2.3	2.4	2.5	1.1	1.2	1.1
Old private	2.0	2.1	1.9	1.4	0.9	1.2	2.7	2.8	2.8	0.4	0.9	1.1
New private	2.1	2.1	2.1	0.8	0.8	1.0	2.2	2.3	2.3	1.5	1.3	1.1
Foreign	2.9	2.9	2.8	1.7	1.8	1.8	3.3	3.6	3.7	2.2	2.6	2.8
Country												
Australia	2.2	1.6	1.6	0.2	0.1	0.1	2.1	1.7	2.0	1.5	1.4	1.6
Germany	1.4	1.2	1.2	0.2	0.1	0.1	0.7	0.6	0.7	0.1	0.4	0.5
France	1.5	1.9	1.4	0.1	0.1	0.1	0.9	0.8	0.8	0.7	0.7	0.9
Netherlands	1.5	1.3	1.5	0.1	0.1	0.1	1.3	1.1	1.1	0.5	0.6	0.6
Japan	1.7	1.3	1.4	0.6	0.1	0.1	1.0	0.9	1.0	0.3	0.7	0.9
UK	1.7	1.6	1.7	0.2	0.2	0.3	1.2	1.1	1.1	1.0	0.9	1.0
US	3.5	3.3	3.1	0.2	0.2	0.2	2.8	2.7	2.5	1.8	1.9	1.8

Note : As per cent to total asset for India and as per cent to total average assets for other countries. Cross-country figures are for 2004, 2005 and 2006, respectively. Number of reporting varies markedly in cross-country numbers.

Source: RBI and BIS.

Table 2.17 depicts the earnings and profitability indicators for 2007–08.

The return on asset (RoA) has improved over the last few years, to reach one per cent of total assets in 2007-08. Among bank groups, RoE is highest for public sector and foreign banks and comparatively lower for Indian private sector banks (Table 2.18). The RoE compares favourably with the 2000-01 numbers, although there has been a significant decline from its 2003-04 peak of 19.3 per cent, which was a result of high treasury profits arising out of a benign interest rate regime. Owing to rapid credit expansion and some upward pressure on interest rates since 2004, there has been an increase in net interest income (NII) which has

Table 2.17 : Earnings and Profitability Indicators of Commercial Banks – 2007-08

(Ratios in per cent)

Bank Group	Operating Expenses	Provisioning Expenses	Net Interest Income	Pre-tax Profit
1	2	3	4	5
Commercial Banks	1.8	1.0	2.4	1.4
Public Sector	1.6	0.8	2.2	1.2
New Private Sector	2.5	1.2	2.4	1.3
Old Private Sector	1.7	0.8	2.4	1.5
Foreign	2.8	2.0	3.8	3.2

Note : Per cent to total assets.

Source : RBI

Table 2. 18 : Return on Assets (Return on Equity) for Bank Groups

(Figures in per cent)

Year	Public sector	Private sector	Old private	New private	Foreign	Commercial banks
1	2	3	4	5	6	7
2000-2001	0.42 (8.8)	0.70 (12.8)	0.59 (11.3)	0.81 (14.3)	0.93 (11.1)	0.49 (9.7)
2003-2004	1.12 (20.9)	0.95 (16.3)	1.20 (19.6)	0.83 (14.6)	1.65 (15.4)	1.13 (19.3)
2004-2005	0.87 (14.6)	0.83 (11.9)	0.33 (5.5)	1.05 (14.0)	1.29 (10.8)	0.89 (13.6)
2005-2006	0.82 (13.3)	0.87 (10.9)	0.58 (9.6)	0.97 (11.4)	1.54 (12.9)	0.88 (12.7)
2006-2007	0.85 (13.6)	0.87 (11.6)	0.70 (10.9)	0.91 (11.8)	1.65 (14.0)	0.90 (13.2)
2007-2008	0.89(13.7)	0.99(9.6)	1.02(12.9)	0.98(8.9)	1.81(13.5)	0.99(12.5)

Note : Figures in parentheses indicate Return on Equity (RoE)
Source: RBI

helped retain RoE and RoA at a relatively high level (till 2006-07). The increase in NII is further buttressed by replacement of low-yielding excess SLR with retail loans fetching relatively higher rates of return (Table 2.19), though there has been some fall in NII in 2007-08. While the bottom-line of SCBs witnessed a perceptible improvement, the net interest margin (NIM) of banks showing a declining trend though it has generally remained on the higher side.

Although interest income has generally remained the mainstay for banks, the diversification of banks' portfolio has resulted in rising share of non-interest income, especially for new private sector and foreign banks. While share of fee income for public and old private sector banks has trended at around six per cent and five per cent respectively; of total income new private and especially foreign banks generate nearly 15 per cent of their income from fee-based sources (Table 2.19). Treasury income, which constituted an important income component of banks in an era of benign interest rates, has since tapered off. Generating innovative ways of increasing fee income by diversifying income sources remains an ongoing challenge for public and old private sector banks. Driven to a large extent by the decline in treasury income, the burden of banks has increased significantly across bank groups from 2003-04 levels. (Table 2.20).[24]

The containment of operating expenses along with the improvements in total income, has led to a moderation in the cost-income ratio (CIR) which stood at less than 50 per cent at end March 2008 (Table 2.21; Chart 2.7). Across bank groups, the ratio hovered around 43-54 per cent in 2007-08, being the highest for new private banks, owing to their relatively higher operating expenses. NIMs witnessed a decline, reflecting higher efficiency and competitive pressures. But the interest expense ratio has increased in recent years due to the stickiness of deposit rates.

[24] The burden reflects the extent to which non-interest expenses are recovered through non interest income and is computed as non interest income less non interest expense scaled by total assets. A higher ratio indicates lower appropriation of non interest income to meet non interest expenses and therefore lower burden.

Table 2.19: Sources of Income of Banks

(Percentage of total income)

Year (April-March)	Public sector	Old private	New private	Foreign	Commercial Banks
1	2	3	4	5	6
A: Net interest income					
2000-2001	28.1	22.6	21.4	30.6	27.6
2003-2004	31.7	26.3	22.0	36.1	30.5
2004-2005	35.9	34.1	29.0	39.3	35.2
2005-2006	36.1	35.0	28.2	40.6	35.2
2006-2007	34.7	34.5	27.6	41.7	34.1
2007-2008	26.7	28.1	23.7	39.5	27.4
B: Fee income					
2000-2001	6.3	5.3	6.8	10.6	6.7
2003-2004	5.6	4.5	8.6	12.8	6.4
2004-2005	6.1	5.3	13.9	16.8	7.8
2005-2006	6.3	5.3	15.5	15.3	8.3
2006-2007	6.6	5.4	13.8	15.4	8.6
2007-2008	6.1	4.9	12.8	15.3	8.2
C: Treasury income (Profit/loss on securities trading)					
2000-2001	2.4	2.3	3.0	2.9	2.4
2003-2004	11.3	12.7	9.4	4.1	10.6
2004-2005	5.9	1.7	2.2	-4.4	4.5
2005-2006	2.9	1.5	2.8	-3.3	2.3
2006-2007	1.0	1.5	0.1	-3.7	0.5
2007-2008	2.9	2.0	3.3	0.4	2.7

Source: RBI

The interest expense ratio (defined as interest expense as percentage to total income) declined from 54.3 per cent for commercial banks in 2002-03 to 47.6 per cent in 2005-06 and has thereafter seen an increase to 55.9 per cent in 2007-08. On the other hand, non interest expense ratio saw an increase from 22.1 per cent in 2002-03 to 27.0 per cent in 2005-06 and thereafter decreased to 21.6 per cent in 2007-08, primarily due to a decline in ratio of wages to total income (from 13.8 per cent in 2002-03 to 11.1 per cent in 2007-08). Increase in provident fund and pension liabilities coupled with increased expenditure due to technology upgradation could put some pressure on operating expenses in the future.

An analysis of the dynamics underlying the profit augmentation process of banks

Table 2.20 : Burden of Bank Groups

(per cent)

Bank Group	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	2	3	4	5	6	7
Commerical banks	-0.36	-0.17	-0.66	-0.78	-0.81	-0.41
Public sector banks	-0.60	-0.28	-0.73	-0.94	-0.94	-0.51
Old private banks	0.25	0.12	-1.00	-1.16	-0.90	-0.57
New private banks	0.65	0.11	-0.31	-0.15	-0.50	-0.21
Foreign banks	-0.15	0.20	-0.33	-0.19	-0.28	0.05

Source: RBI

Table 2.21: Cost - Income Ratio and Interest Expense Ratio of Bank Groups

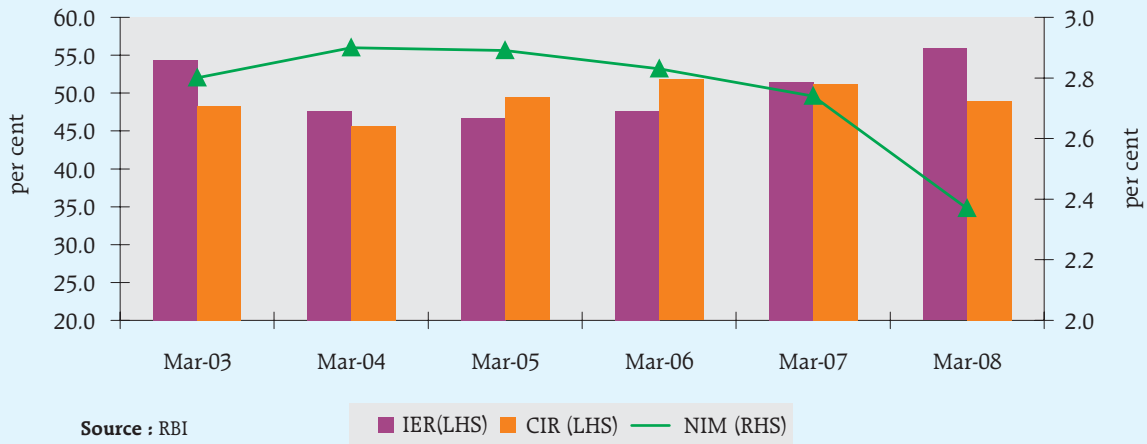
(per cent)

Parameter / Bank Group	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	2	3	4	5	6	7
A: Cost income ratio						
Scheduled commercial banks	48.3	45.6	49.4	51.8	51.2	48.9
Public sector	49.3	45.1	48.5	52.3	51.5	48.9
Old private	43.4	42.8	53.8	58.3	49.3	47.4
New private	46.0	50.2	52.6	50.2	55.1	54.0
Foreign	46.6	46.2	49.4	47.8	45.1	42.9
B: Interest expense ratio						
Scheduled commercial banks	54.3	47.7	46.7	47.6	51.4	55.9
Public sector	54.4	47.8	47.5	49.3	53.9	60.2
Old private	55.8	51.8	53.9	53.2	53.9	59.2
New private	60.1	53.4	47.5	46.8	52.0	53.3
Foreign	42.2	32.9	30.9	29.5	30.5	30.4

Source: RBI

indicates that[25] while the profit margins have increased, asset utilisation (AU) has witnessed a decline between 2000 and 2008 (Table 2.22). This implies that banks could maintain RoA at around 0.9 - 1 per cent in the recent past, primarily because of better profit

Chart 2.7 : Interest Expense Ratios & NIM of Commercial Banks



Source : RBI

[25] This follows from the relationship:

$$RoA = \frac{Net\ profit}{Asset} \equiv \frac{Net\ profit}{Total\ income} * \frac{Total\ income}{Asset}$$

The first term on the RHS is profit margin (PM) and the second term is asset utilisation (AU).

Table 2.22 Dynamics of Profit Augmentation for Bank Groups

(per cent)

	Public sector		Old private		New private		Foreign		Commerical banks	
	PM	AU	PM	AU	PM	AU	PM	AU	PM	AU
1	2	3	4	5	6	7	8	9	10	11
2000-2001	3.9	10.2	5.6	10.8	8.6	9.5	8.1	11.9	4.7	10.4
2003-2004	11.9	9.6	12.5	9.6	9.4	8.8	17.2	9.5	12.0	9.5
2004-2005	10.4	8.3	4.0	7.9	14.0	7.6	15.4	8.4	10.9	8.2
2005-2006	10.2	8.0	7.7	7.8	12.3	7.8	17.8	8.6	10.9	8.0
2006-2007	10.6	7.8	8.5	8.2	9.8	8.6	18.4	8.9	11.1	8.0
2007-2008	10.8	8.2	11.8	8.6	9.9	9.9	18.9	9.6	11.5	8.6

Source: RBI

margins. The profit margins depend, *inter alia* on level of provisions and contingencies, which depends on the efficacy of risk management practices. In recent years, PM has improved on account of lower loan loss provisioning requirements and lower depreciation on investments due to transfer of significant portion of banks' investment portfolio to the held to maturity (HTM) category. Banks' ability to influence interest costs is limited. Asset quality could become a cause for concern going forward, and the benign loan loss provisioning scenario may not continue. This will strain profit margins. Given the declining yields on deployment of funds as reflected by dwindling asset utilisation, banks have to adopt better and more sophisticated risk management techniques for balance sheet management to maintain their existing RoA levels.

2.2.4 (h) Liquidity Risk Management

The rapidly increasing loan book of the banks is clearly reflected in a decline in the ratio of liquid assets to total assets. At a time when the economy is in a higher growth trajectory, it is imperative that banks simultaneously stress on low-cost deposit mobilisation and eschew excessive recourse to borrowed funds to avoid potential asset-liability maturity mismatches.

Liquidity demands can emanate from the asset as well as the liability sides of balance sheet. On the asset side, liquidity risk may arise due to the unbridled growth of illiquid on-balance sheet items or due to the crystallisation of off-balance sheet items in the asset book. On the liability side, banks can face challenges in refinancing debts, particularly those with overwhelming dependence on wholesale deposits and short-term borrowings to fund asset growth. Given the magnitude of the turmoil currently experienced in the global financial markets, the Panel feels that liquidity risk management needs to be accorded priority. The Panel carried out an analysis of liquidity from three angles: the traditional asset liability mismatch, an analysis of select liquidity ratios and scenario analyses of liquidity.

(I) Asset Liability Management

With an increase in banks' exposure to real estate, infrastructure and other long-term loans, banks' asset liability maturity mismatches need to be monitored closely. An analysis of asset-liability profile of banks reveals the following:

- Since March 2001, there has been a steady rise in the proportion of deposits maturing up to one year. These increased from 33.2 per cent in March 2001 to 43.6 per cent in March 2008.
- Loans maturing between three to five years increased from 7.6 per cent of total loans in March 2001 to 11.7 per cent in March 2007. The ratio moderated to 10.3

per cent as at end March 2008. Loans maturing over 5 years grew even higher from 9.3 per cent to 18.9 per cent between 2001 and 2007 before moderating to 16.5 per cent in 2008.

- Funding of incremental asset growth by sources in addition to incremental deposits had been the trend in 2005 and 2006. But in 2007 and 2008, deposit growth has outpaced the growth in credit. *(Annex 2.3: Asset liability mismatches)*

(II) Liquidity Ratios

The sub-prime turmoil has brought the liquidity issue to the fore as a cornerstone of financial stability. What began with initial disruptions in credit market quickly manifested itself in the form of a drying up of market liquidity, both within and across borders. The emergence of innovative financial instruments to distribute credit risks prompted institutions to take risks disproportionate to their capability to assume such risks. In view of such concerns, attempts are underway to arrive at a better understanding of liquidity ratios.

Banks in India appear to have ample liquidity in view of the predominance of deposits as the main source of funding (Table 2.23).

The evidence indicates that low cost deposits, mainly current and savings deposits, comprised more than one third of total deposits, reflecting the inherent strength of banks in terms of cost. The fiscal incentives announced in the Union Budget 2006-07 have led to an increase in the share of time deposits (Table 2.24).

Banks have funded the high credit growth over the last few years by drawing down on their investments, resulting in a lowering from over 40 per cent of net demand and time liabilities (NDTL) in the early 2000s to around 30 per cent in end-2008.

Banks can meet their liquidity needs by two methods: *stored liquidity* and/or *purchased liquidity*. The former utilises on-balance sheet liquid assets and a well-crafted deposit structure to provide all funding needs; the latter uses non-core liabilities and borrowings to meet funding needs[26]. While each has its advantages and disadvantages because additional stored liquidity is garnered at an additional cost, a balanced approach to a liquidity strategy is often the most cost effective. It also entails low-risk.

Table 2.23: Liability Profile of the Indian Banking System

Particulars	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08
1	2	3	4	5	6	7
Capital & Reserves	5.7	5.9	6.6	6.9	6.7	7.9
Customer Deposits	76.8	77.3	75.4	75.4	76.1	75.7
Bank Deposits	3.7	3.2	3.0	2.5	2.7	2.2
Borrowings	4.8	4.0	6.2	6.1	5.2	4.6
Other Liabilities	9.0	9.6	8.8	9.1	9.3	9.6

Note : As per cent to total liabilities including capital and reserves
Source: RBI

[26] Ref: A Regulator's View Of Liquidity, David Hanson, NCBA Conference, Greensboro, NC 2003

Table 2.24: Deposit Structure of Indian Banks						
Particulars	**Mar-03**	**Mar-04**	**Mar-05**	**Mar-06**	**Mar-07**	**Mar-08**
1	2	3	4	5	6	7
Time Deposits	49.3	51.0	51.5	50.6	52.4	53.0
Savings Deposits	21.9	23.1	23.7	24.6	23.1	22.0
Current Deposits	10.5	11.2	11.1	12.0	11.4	12.1
NRI Deposits	13.8	10.8	9.4	7.6	6.8	5.3
CDs	0.0	0.1	0.5	1.9	3.0	4.7
Bank Deposits	4.5	3.9	3.8	3.3	3.3	2.9

Note : As per cent to total deposits
Source: RBI

Keeping these considerations in view, a set of liquidity ratios has been developed to focus squarely on this facet. Despite its limitations, these numbers provide important pointers towards the banks' overall funding strategy. The ratios along with the definitions, are given in Table 2.25.

An analysis of the data for the last four years reveals that there is a gradual and growing dependence on purchased liquidity coupled with an increase in illiquid component of banks' balance sheets (Table 2.26).

The analysis shows the following:

- There is now greater reliance on large liabilities to support asset growth. The ratio of volatile liabilities net of temporary assets to earning assets net of temporary assets increased from 34.7 per cent in March 2005 to 43.9 per cent in March 2008. The dependence on large volatile deposits is buttressed by the increasing dependence on wholesale deposits (deposits in excess of Rs.15 lakhs) which increased from less than 40 per cent in March 2004 to 57.6 per cent in March 2007.
- The share of stable funding source is shrinking and there is a greater reliance on short-term deposits and borrowings. The ratio of core deposits including net worth to total assets works out to 49.3 per cent in March 2008, down from 53.8 per cent in March 2005.
- The ratio of loans including fixed assets, mandatory CRR and SLR prescriptions to total assets has increased from 75.0 per cent in March 2005 to 85.9 per cent in March 2008 reflecting higher illiquidity in banks' balance sheets.
- The ratio of loans including fixed assets, mandatory CRR and SLR prescriptions to core deposits (including net worth) has remained over 1, reflecting purchased liquidity management generally followed by the banks. The ratio increased from 1.4 in March 2005 to 1.7 in March 2008.
- There is an increase in short-term assets with corresponding rise in short-term liabilities. The ratio of temporary assets to total assets has increased from about 29 per cent in March 2005 to 52 per cent in March 2008.
- Despite the rise in temporary assets, the cover of liquid assets in relation to volatile liabilities has remained at less than 1, reflecting a potential liquidity problem.
- The ratio of volatile liabilities to total assets has increased from 53.5 per cent in March 2005 to 73.1 per cent in March 2008, reflecting higher reliance on large volatile liabilities to fund asset growth.
- The ratio of market value of non-SLR securities and surplus SLR securities to their book values generally hovered around 1.

Table 2.25: Liquidity Ratios and Definitions

No	Ratio	Components	Significance
1	2	3	4
1	(Volatile liabilities – Temporary Assets)/ (Earning Assets – Temporary Assets)	**Volatile Liabilities:** (Deposits + borrowings+bills payable upto 1 year) Letters of credit – full outstanding Component-wise CCF of other contingent credit and commitments Swap funds (buy/ sell) upto one year As per extant norms, 15 per cent of current deposits (CA) and 10 per cent of savings deposits (SA) are to be treated as volatile and shown in 1-14 days time bucket; remainder in 1-3 years bucket. Hence CASA deposits reported by banks as payable within one year are included under volatile liabilities. Borrowings include from RBI, call, other institutions and refinance **Temporary Assets:** Cash Excess CRR balances with RBI Balances with banks Bills purchased/discounted upto 1 year Investments upto one year Swap funds (sell/ buy) upto one year **Earning Assets:** Total assets – (Fixed assets + Balances in current accounts with other banks + Other assets excl. leasing + Intangible assets)	Measures the extent to which hot money supports bank's basic earning assets. Since the numerator represents short-term, interest sensitive funds, a high and positive number implies some risk of illiquidity.
2	Core deposits / Total Assets	**Core Deposits:** All deposits (including CASA) above 1 year+net worth **Total Assets:** Balance sheet footing	Measures the extent to which assets are funded through stable deposit base
3	(Loans + mandatory SLR + mandatory CRR + Fixed Assets)/ Total Assets	Gross Advances Required SLR Required CRR Fixed assets	Loans including mandatory cash reserves and statutory liquidity investments are least liquid and hence a high ratio signifies the degree of 'illiquidity' embedded in the balance sheet

No	Ratio	Components	Significance
1	2	3	4
4	(Loans + mandatory SLR + mandatory CRR + Fixed Assets) / Core Deposits	Advances Required SLR Required CRR Fixed assets	Measures the extent to which illiquid assets are financed out of core deposits. Greater than 1 (purchased liquidity) Less than 1 (stored liquidity)
5	Temporary Assets / Total Assets		Measures the extent of available liquid assets. A higher ratio could impinge on the asset utilisation of banking system in terms of opportunity cost of holding liquidity
6	Temporary Assets / Volatile Liabilities		Measures the cover of liquid investments relative to volatile liabilities. A ratio of less than 1 indicates the possibility of a liquidity problem.
7	Volatile liabilities/Total Assets	Item 5 divided by item 6	Measures the extent to which volatile liabilities fund the balance sheet
8	(Market Value of Non-SLR Securities + Excess SLR Securities)/(Book Value of Non-SLR Securities + Excess SLR Securities)		Measures the market value of non-SLR securities and excess SLR securities relative to their book value. A ratio exceeding 1 reflects that a bank stands to gain if it sells off its saleable portfolio

Source : RBI/Joseph F. Sinkey - Commercial Bank Financial Management

(III) Liquidity Scenario Analysis

Liquidity risk is essentially a consequential risk triggered by a combination of several other risks like a loss of depositors' confidence, changes in counterparty credit risk, changes in economic conditions, fluctuations of interest rates, *etc.* Assessing liquidity involves estimating net cash-flow which, if adverse, has the potential of turning into a liquidity risk. A system level liquidity scenario analysis involves the aggregation of individual exposures, which may lead to netting-out effect. Besides, aggregation can also conceal substantial exposures at the individual level.

The severity, correlation, and impact of these multiple factors on banks' liquidity are often difficult to capture in a stress test scenario. In view of this, it is desirable that risk factors that create potential liquidity risk be analysed in a segmented way.

Keeping this in view, three scenarios depicting various factors with a bearing on bank liquidity have been hypothesised. The first captures unexpected deposit withdrawals and its bearing on bank liquidity. The second segregates unexpected withdrawal between uninsured and insured deposits. The third envisages a crystallisation of contingent credits/ commitments as a result of changes in the credit-risk profile and delinquency in the repayment of loans due to an economic downturn. The analysis has been done in respect of the five largest banks in terms of asset size at end March 2008.

The findings indicate that, under the first scenario, total deposit withdrawal on day one

Table 2.26: Liquidity Ratios – Frequency Distribution and Average Value

Variable/Range (per cent)	Mar-05		Mar-06		Mar-07		Mar-08	
	No. of banks	Share in asset	No. of banks	Share in asset	No. of banks	Share in asset	No. of banks	Share in asset
(Volatile liabilities – temp. asset)/ (Earning asset – temp. asset) - (per cent)								
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Negative	8	0.3	8	1	8	0.9	5	0.4
0 – 25	23	21.4	16	9.7	10	7.6	9	1.9
25 – 50	33	60.6	37	67.5	34	64.2	34	70.7
Above 50	24	17.8	24	21.8	29	27.3	38	27.0
Mean Value	**34.7**		**38.4**		**41.4**		**43.9**	
Core deposits)/Total assets – (per cent)								
Below 50	44	26	38	32.1	37	35.9	42	43.5
Above 50	44	74	47	67.9	44	64.1	34	56.5
Mean Value	**53.8**		**53.9**		**52.2**		**49.3**	
Loans+ Mandatory CRR + Mandatory SLR + Fixed assets)/ Total Assets – (per cent)								
Below 40	7	0.2	6	0.3	7	0.6	6	0.5
40 – 50	4	0.6	4	0.6	4	0.1	3	0.2
50 – 70	15	32.9	8	5.2	9	5.9	8	2.9
Above 70	62	66.3	67	93.9	61	93.4	59	96.4
Mean Value	**75.0**		**79.9**		**83.4**		**85.9**	
Loans + Mandatory CRR + Mandatory SLR + Fixed assets) / Core Deposits								
Less than 1	10	5.5	9	0.2	9	0.3	7	0.4
More than 1	78	94.5	76	99.8	72	99.7	69	99.6
Mean Value	**1.4**		**1.5**		**1.6**		**1.7**	
Temporary Assets/ Total assets - (per cent)								
Less than 15	19	51.1	18	31.6	14	26.2	9	13.5
15 – 20	11	12.1	4	3.9	7	9.7	11	17.3
Above 20	58	36.8	63	64.5	60	64.1	56	69.2
Mean Value	**28.8**		**30.3**		**43.4**		**52.0**	
Temporary Assets/ Volatile Liabilities								
Less than 1	78	99.3	76	98.9	71	99.1	68	99.0
One or more	10	0.7	9	1.1	10	0.9	8	1.0
Mean Value	**0.54**		**0.53**		**0.65**		**0.71**	
Volatile liabilities/Total asset - (per cent)								
Upto 10	0	0	0	0	0	0	0	0
10 – 25	3	3.2	3	1.6	2	0.4	0	0
25 – 50	39	66.2	33	48.5	29	47.8	22	26.5
Above 50	46	30.6	49	49.5	50	51.3	54	73.5
Mean Value	**53.5**		**57.1**		**66.8**		**73.1**	
(Market Value of Non-SLR Securities + Excess SLR securities)/ (Book Value of Non-SLR Securities + Excess SLR Securities)								
Less than 1	45	31.6	62	66.7	69	76.3	47	57.9
One or more	43	68.4	22	33.3	12	23.7	29	42.1
Mean Value	**1**		**1.1**		**0.98**		**1.0**	

Source: Computed from RBI data

accounts for 5.7 per cent of total deposits of these banks. One bank exhausts its stock of liquid assets and ends up with a negative balance at the end of the first day.

Under the second scenario, 4.1 per cent of total deposits are withdrawn on the first day and all the five banks are able to meet their stressed repayment obligations on the first day. One bank exhibit liquidity strains from the end of day two onwards.

In the third scenario, all five banks are able to meet the devolvement of their contingent liabilities upto three months horizon (Annex 2.4: Liquidity scenario analysis).

(IV) Recommendations

While the new financial environment has offered avenues for a better management of various risks, including credit, interest rate and foreign exchange risks, one exception to this general pattern has been liquidity risk. Banking, by definition, involves the acceptance of deposits that can be generally redeemed on demand. As a result, segregating the risks associated with liquidity for banks remains an important challenge. Measures to strengthen liquidity management, therefore, require priority attention. The Panel notes that there is a gradual and growing dependence on purchased liquidity coupled with an increase in the illiquid component of banks' balance sheets. Excessive reliance on short-term borrowed funds and wholesale deposits, rather than on retail deposits as a model for funding asset growth may engender serious asset liability mismatches, which can be called into question in times of stress.

Liquidity management and capital management are intimately intertwined as liquidity crises impact banks' balance sheets and in turn, impact their capital position. Liquidity risk can arise out of credit, market or operational risk and vice versa. Potential liquidity risk should, therefore, take into account its contagion with other risks and also be factored into the capital adequacy requirement of banks. Although there is no stipulated requirement of capital charge for liquidity risk prescribed by the BCBS, the internal capital adequacy assessment process (ICAAP), as enumerated in Pillar II of the Basel II capital accord, also includes liquidity risk. These internal assessments of capital requirements should be supported by appropriate stress and scenario testing arising out of liquidity shocks. In addition, these can be supplemented by system-wide modelling of liquidity using different levels of margins and risk spreads to ensure that the macro-prudential supervisor has an understanding of where liquidity pressures may build up in the system as a whole, rather than in specific institutions.

The recent sub-prime crisis shows that a significant component of liquidity risk has been the crystallisation of complex derivatives product on the balance sheets of institutions. In this context, the Panel feels that the on-site examination process can be supplemented by a forensic "follow the evolution of the product" approach. In such a scenario, instead of examining institution by institution, the examination process follows the evolution of a derivative product through its origination to final holder to check whether the final institutions, infrastructure and trading, clearing and settlement, risk management processes along the trading chain, are adequate in terms of sufficient due diligence and a risk control/audit trail. The purpose of such a "forensic" examination is to train examiners to understand complex products and "follow the money", to alert market participants (including originators) that the regulators are alert and checking the controls at every level of the transaction, so that all are at risk of being tested, and reveal to the examiners how embedded leverage is increased and risks can be transformed (or missed) at each stage of evolution of a derivative product. Dependence on purchased liquidity enhances the liquidity risk of banks and should be suitably factored into the internal assessment of capital. It may also be worth considering a specific regulatory capital charge if banks' dependence on purchased liquidity exceeds a threshold.

The Panel recommends the constitution of a Working Group to examine this aspect in its totality.

2.2.4 (i) Interest Rate Risk

Interest rate risk stress tests were undertaken using both earnings at risk (EaR) or short-term perspective, as also the economic value perspective (Annex 2.5: Interest Rate Risk – Scenarios and Results). In the EaR perspective, the focus of analysis is the impact of changes in interest rates on accrual or reported earnings. Changes in interest rates impact a bank's earnings due to changes in interest income and the level of other interest-sensitive income and operating expenses. In the EaR approach, the impact of changes in earnings due to changes in interest rates is related to net interest income (NII). Applying the EaR approach, it was observed in March 2008 that the NII increases for 45 banks comprising 64 per cent of the banking assets for an increase in interest rates. This is because, typically, the banks' balance sheets are asset sensitive and an increase in interest rate raises the interest income relative to interest expenses.

An increase in interest rates leads to a contraction in the economic value of both rate sensitive assets and liabilities as also off balance sheet items. The impact on banks' capital would be more, higher the duration of assets, as compared to the duration of liabilities. From the economic value perspective, the analyses have been carried out from two different angles. The duration of equity (DoE) or duration of net worth approach calculates the erosion in accounting capital due to unit increase in interest rate. Subject to certain limitations, DoE captures the interest rate risk and help move towards the assessment of risk based capital. Higher the duration of equity, more is the interest rate risk and greater the requirement of capital. For the purpose of the analyses, DoE is calculated for two scenarios. Scenario I assumes that all rate sensitive savings deposits mature in a 1 - 28 days time bucket. Scenario II assumes that the entire rate sensitive savings deposits mature in 3 - 6 months. Scenario I implies a lower duration of liabilities and consequently, is the more stringent scenario of the two.

From the DoE perspective, it is observed that banks have been actively managing their interest rate risk by reducing the duration of their portfolios. The duration of equity reduced from 14.0 years in March 2006 to 8.0 years in March 2008 (Scenario I) - a pointer to better interest rate risk management. The corresponding figures in Scenario II were 13.1 years and 7.2 years. As many as 65 banks under Scenario I and 68 banks under Scenario II have DoE less than or equal to 20 years as at end March 2008, suggesting that an interest rate shock of 500 bps or more would be required to wipe out their capital and reserve. Yield volatility was estimated at 244 basis points (bps) for a one-year holding period. A 244 bps increase in yield, ceteris paribus, would result in an erosion of 19.5 per cent of capital and reserves under Scenario I.

The erosion in capital funds (regulatory capital) is estimated by calculating the duration of the assets and liabilities including off balance sheet items and estimating the net duration gap. The erosion so arrived at is deducted from the existing regulatory capital and the adjusted CRAR is arrived at. In this case it is observed that as at end March 2008, CRAR would reduce

from 13 per cent to 10.9 per cent under Scenario I (11.1 per cent under Scenario II) for a 244 bps shock, CRAR of 29 banks (28 under Scenario II) accounting for 36 per cent (35 per cent in Scenario II) of the assets would go below the stipulated minimum.

Given the existing accounting norms, the impact of interest rate increase on the economic value of investment is expected to be significantly muted as a substantial portion of the banks' portfolio is immune to mark-to-market losses. An interest rate shock of 244 bps on the banks' trading book on the position as at end March 2008 would reduce the system level CRAR to 12.0 per cent, whereas it would have been reduced to 10.9 per cent if the entire balance sheet was marked to market. Similarly, a 244 bps rise in interest rates, if applied only to the banking book , would result in the CRAR being reduced from 13.0 per cent to 11.9 per cent in March 2008.

2.3 Regional Rural Banks

The regional rural banks (RRBs) present minimal risk because of their small size, but the risk of contagion always remains[27]. The asset quality of RRBs raises some cause for concern, with 5.9 per cent of their assets being classified as non-performing at end March 2008 along with a stagnant recovery performance. The ratio of recovery to demand has hovered around 80 per cent over the last few years. Profitability remains low, with 8 (out of 91) being loss-making banks at end March 2008 (Table 2.27). The Government has initiated recapitalisation of 27 RRBs to the tune of Rs.1,741 crore upto March 2010 to shore up their capital base.

The Annual Policy Statement by the Reserve Bank in 2004 had indicated that sponsor banks, in consultation with State Governments (the capital of base is held by the Central Government, State Governments and sponsor banks in the ratio of 50:15:35 in that order) would initiate steps for the amalgamation of RRBs sponsored by them. The process of amalgamation began in September 2005 as a result, the number of RRBs has declined to 86, including 41 stand-alone RRBs of which one RRB is newly incorporated, by December 2008. The SARFAESI Act has been extended to loans advanced by RRBs. The eligible RRBs are permitted to accept foreign currency (NRE/FCNR) deposits. In the meantime, several measures have been undertaken, to enlarge their scope of operations and improve profitability. Sponsor banks have been advised to provide

Table 2.27 : Performance Indicators of Regional Rural Banks

Position as at end-March (Amount in Rs. crore, ratios in per cent)

Year	2005	2006	2007	2008
1	2	3	4	5
Number	196	133**	96**	91**
Branch network	14,481	14,488	14,545	14,790
Deposits	62,143	71,329	83,144	99,095
Loans and advances (net)	31,803	38,520	47,326	57,601
Total assets	77,867	89,645	1,05,768	1,23,541
Profit-making RRBs (No.)	167	111	81	82
Net Profit (+)/Loss (-)	748	617	625	1,374
Net Profit/total assets	1.0	0.6	0.6	1.1
NPA/total assets	8.5	7.3	6.6	5.9

** after amalgamation;
Source: RBI and NABARD

[27] Reference 2.6.3 ibid

lines of credit at reasonable rates to augment their resource base. They have also been allowed to access inter-RRBs term money/borrowings and also to the repo/CBLO markets. They have been permitted to set up off-site ATMs, issue debit/credit cards and handle pension/ government business. RRBs have also been allowed to take up corporate agency business, without risk participation, for distribution of all insurance products, including health insurance and animal insurance.

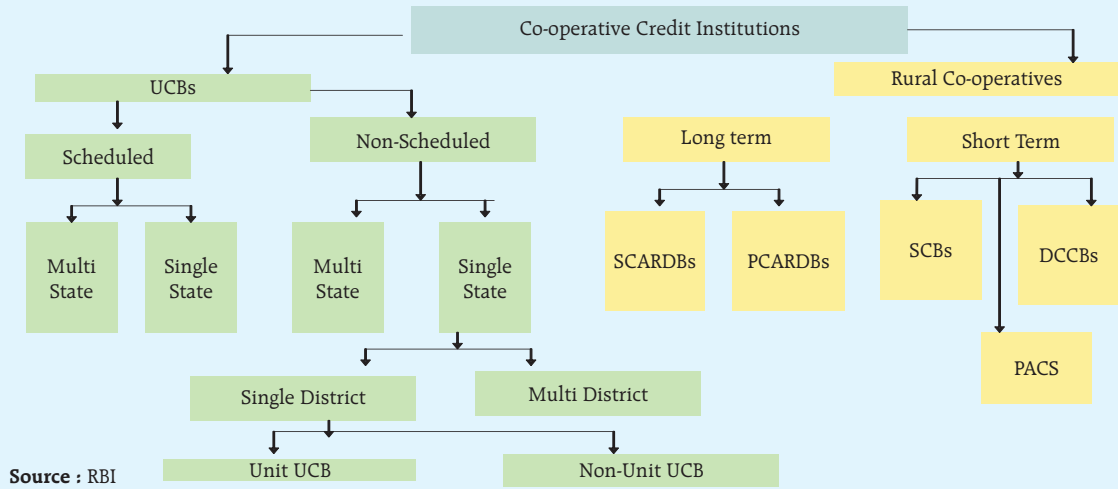
Currently, RRBs are not required to be Basel I compliant, and there is no stipulation for risk-based capital adequacy norms for these entities. Though not all principles as delineated in BCPs are applicable to RRBs, given their importance in rural credit delivery and financial inclusion, an assessment of the Basel Core Principles relating to RRBs was taken up by the Advisory Panel on Financial Regulation and Supervision. It indicated that out of the applicable 20 (out of 25) principles, they are compliant/largely compliant in respect of 12 principles. They are non compliant/materially non compliant in respect of eight which are mainly in respect of various inadequacies in the risk management process.

The Panel feels that given the varying status of RRBs as regards their financial health, computerisation, quality of governance, *etc.*, these banks could be appropriately categorised and a roadmap could be prescribed for operationalisation of Basel I norms.

2.4 Co-operative Banks

The co-operative banking structure comprises urban and rural co-operative banks (Chart 2.8). While urban co-operative banks (UCBs) have a single tier structure, rural co-operative credit institutions comprise two distinct structures: the short-term and the long-term. The short-term structure, comprises of Primary Agricultural Credit Societies (PACs) at the village level, District Central Co-operative Banks (DCCBs) at the intermediate level and State Co-operative Banks (StCBs) at the apex

Chart 2.8: Structure of Co-operative Banking Sector



Source : RBI

level. These institutions provide crop and other working capital loans to farmers and rural artisans.

The long-term structure comprises state co-operative agriculture and rural development banks at the state-level and primary co-operative agriculture and rural development banks at the district level. These entities typically provide medium and long-term loans for agricultural investments, rural industries and in the recent period, rural housing as well. This section discusses the performance and stability issues for the urban and rural co-operative banks.

2.4.1 Urban Co-operative Banks

Urban co-operative banks exhibit a high degree of regional concentration, with five states (Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu and Maharashtra) accounting for nearly 79 per cent of total number of UCBs. 50 out of the 53 scheduled banks as on March 2008 are in Andhra Pradesh, Gujarat, Karnataka, and Maharashtra. 874 out of 1770 UCBs were unit (single branch) banks as at the end of March 2008 and nearly 75 per cent have a small deposit base (less than Rs 50 crore). The scheduled UCBs constitute a significant portion of the sector, accounting for about 41.8 per cent of deposits and 40.0 percent of advances. Profitability levels are low and the quantum of non-performing advances quite high (Table 2.28).

A series of policy initiatives have been undertaken such as:

- subjecting these banks to CRAR discipline (9 per cent for all banks),
- introducing a system of graded supervisory action based on financial/ prudential parameters,
- 90-day norms for loan impairment (excluding gold loans and small loans and the smaller UCBs) enhanced provisioning (0.40 per cent from 0.25 per cent earlier) on standard advances [other than in case of direct advances to agriculture and SME and except for Tier I banks (*i.e.* UCBs with less than Rs.100 crore of deposits),
- enhanced risk weight on commercial real estate advances, exposure norms on par with commercial banks and enhanced disclosures in their balance sheets (effective March 31, 2003) for UCBs with more than Rs.100 crore of deposits. The enhanced risk weights have since been reduced in December 2008 as a counter-cyclical measure.

Table 2.28: Urban Co-operative Banks - Business and Profitability

(Amount in Rs. crore)

	Urban co-operative banks				*Of which* Scheduled urban co-operative banks			
Year (end-March)	**2005**	**2006**	**2007**	**2008**	**2005**	**2006**	**2007**	**2008**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Number	1,872	1,853	1,813	1,770	55	55	53	53
Deposits	1,05,021	1,14,060	1,21,391	1,38,496	40,950	45,297	51,173	57,916
Loans & advances	66,874	71,641	79,733	88,981	25,061	27,960	32,809	35,619
Total assets	132,145	1,50,954	1,61,452	1,79,421	56,217	64,702	72,085	79,318
CRAR					12.7	12.7	11.4	11.9
Gross NPA ratio (per cent)	23.2	18.9	18.3	16.4	24.8	21.1	17.7	14.2
RoA (per cent)	NA	NA	0.7	0.6	0.3	0.7	0.7	0.7
Cost income ratio (per cent)	–	–	–	–	66.5	55.9	58.9	56.2

Provisional data based on OSS returns submitted by banks;
Source: RBI.

To optimise supervisory resources[28] and focus on the weaker banks, the UCBs are classified into four grades, *i.e.* I to IV, with higher grades reflecting increasing supervisory concerns. Between 2005-08, there has been a decline in the proportion of banks in grades III and IV (*i.e.* weak / sick banks).

A Vision Document has been prepared for the sector, which proposes a state-specific strategy. As envisaged in the document, Memorandum of Understanding (MoU) have been entered into between the Reserve Bank and most of the State Governments, whereby a Task Force for UCBs has been constituted in these states to suggest revival plans for potentially viable banks and a non-disruptive exit for unviable ones.

MOU has also been entered into with the Central Government in respect of multi state UCBs. The MOU arrangement currently encompasses around 98.7 per cent of the banks and 99.3 per cent of the business. As a part of the process of consolidation of this sector, transparent and objective guidelines on mergers of UCBs were issued in February 2005. Consequently 65 mergers have been effected till end-January 2009.

Given the special features of UCBs in terms of their size, and the nature of their operations, some of the BCPs are not strictly applicable to UCBs. However, being banks, they are a part of the payments and settlement system and could have a significant contagion impact on financial stability. In view of this an assessment of the adherence to BCPs in regulating/supervising UCBs was attempted by the Advisory Panel on Financial Regulation and Supervision. This revealed that four principles were compliant, eleven were largely compliant, four were materially non-compliant and two principles were not compliant. Some of the principles, such as those relating to the transfer of significant ownership, country risk, consolidated supervision and home host relationship are not applicable to UCBs. The assessment reveals that significant gaps in the adherence to principles relating to management of market risk, operational risk, liquidity risk, as also internal control exist.

2.4.1. (a) Financial Soundness Indicators

A trend analysis of select financial soundness indicators for the scheduled UCBs is depicted in the following chart 2.9.

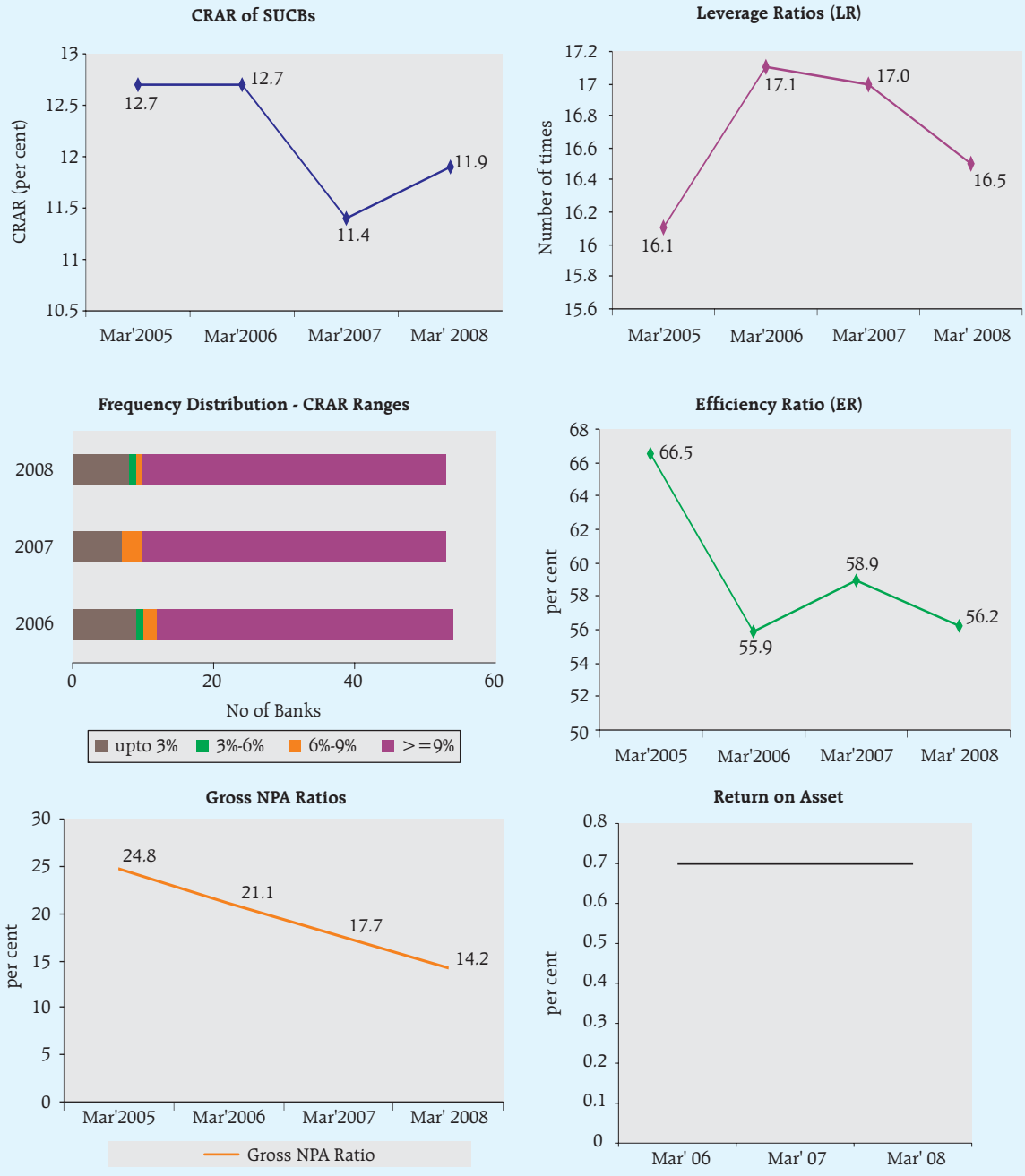
As compared to March 2007, there has been marginal improvement in the average CRAR at end March 2008. The leverage ratio (banks assets to capital) is hovering around 16 - 17. NPA ratios are showing a declining trend. But they are much higher compared to commercial banks. The gross NPA ratio, at around 14 per cent, throws up some concerns. The profitability of UCBs is low as evident from the low RoA and high cost-income ratio of the sector.

2.4.1. (b) Stress Test of Credit Risk

A stress test on 52 scheduled UCBs, accounting for 43 per cent of the total assets of the sector, was carried out by increasing the provisioning requirement and subjecting the credit portfolio to shocks of 25 per cent and 50 per cent increase in NPAs (Annex 2.2). The test revealed that for a 25 per cent shock, at end

[28] Reference III.6.2

Chart 2.9: Select Prudential and Financial Indicators of Co-operative Banks



Source: RBI data

March 2007, 27 banks (accounting for 38 per cent of scheduled UCBs assets and 16.5 per cent of urban co-operative banking assets) would not be able to comply with the 9 per cent CRAR norm (Table 2.29). Similarly, for a 50 per cent shock, 31 banks would be affected. At the system level, the CRAR would decline from 11.4 per cent to 5.56 per cent at 25 per cent stress and 2.8 per cent at 50 per cent consequent to the stress test, pointing to the fragility of this segment.

2.4.2 Rural Co-operative Banks

India has a broad range of rural financial service providers, which includes formal sector

Table 2.29: Number of Scheduled UCBs Defaulting on CRAR Maintenance

CRAR (per cent)	Before stress		After stress	
	25 per cent	50 per cent	25 per cent	50 per cent
1	2	3	4	5
Negative	9	9	14	19
[0, 3)	1	1	5	2
[3, 4.5)	-	-	-	1
[4.5, 7.5)	1	1	6	6
[7.5, 9)	-	-	2	3
Total	**11**	**11**	**27**	**31**

Source : RBI

financial institutions at one end of the spectrum, informal providers at the other end, and between these two extremes, a large number of semi-formal providers. The formal providers include banks (rural and semi-urban branches of commercial banks, regional rural banks and rural co-operative banks) as also PACS. The semi-formal sector comprises of Self-Help Groups (primarily, the SHG-Bank linkage) and Micro Finance Institutions (MFIs). The informal providers comprise of a large number of players – professional moneylenders, traders, *etc.*

The rural co-operative institutions[29] are beset with problems. The co-operative institutions have a low resource base, inadequate business diversification and recoveries, high levels of accumulated losses, weak management information systems (MIS) and poor internal controls. About a quarter of DCCBs(26 per cent) and 13 per cent of StCBs were unprofitable at end-2007. Of the long-term credit providers, about 40 per cent of SCARDBs and 50 per cent of PCARDBs were unprofitable during the same period. The total accumulated losses of the long and short-term co-operative credit structure (excluding PACS) amounted to Rs.9,917 crore at end-March 2007. The financial performance of rural co-operative banks (short-term structure) is given in Table 2.30.

Like the short-term institutions, the long-term rural co-operative institutions are also plagued by low profitability and high non-performing loans (Table 2.31). Given their low resource base, they (SCARDBs) are almost totally dependent on NABARD refinance. Compounding the problem is the low recovery performance and its declining trend.

StCBs and DCCBs are an important part of the financial system in India providing need based quality-banking services, essentially to the middle and lower middle classes and marginalised sections of the society. Basel norms have not yet been made applicable to the StCBs and DCCBs. The assessment of the BCPs by the Advisory Panel on Financial Regulation and Supervision has therefore been conducted keeping in view the ground realities in the rural financial sector. The assessment indicates that, three principles are compliant, ten are largely

[29] These institutions are typically classified into the short-term and long-term structure. The former comprises of State co-operative banks (StCBs), District Central Co-operative Banks (DCCBs) and Primary Agricultural Credit Societies (PACS); the long-term structure includes State Co-operative Agriculture and Rural Development Banks (SCARDBs) and Primary Co-operative Agriculture and Rural Development Banks (PCARDBs).

Table 2.30: Performance of Rural Co-operative Banks (Short-term Structure)

Position as at end-March (Amount in Rs. crore, ratios in per cent)

Item	StCBs			DCCBs			PACS		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
1	2	3	4	5	6	7	8	9	10
Number*	31	31	31	367	366	371	109	106	97
Deposits	44,316	45,405	48,560	82,098	87,532	94,529	18,976	19,561	23,484
Loans outstanding	37,346	39,684	47,354	73,091	79,202	89,038	48,787	51,779	58,620
Net Profit	291	378	275	974	203	30	(-)1,261	(-)857	(-)1,653
Total asset	71,806	76,481	85,756	1,33,331	1,43,090	1,58,894	75,407&	73,387&	79,959
Net profit/total asset (per cent)	0.41	0.49	0.32	0.73	0.14	0.02	(-)1.67	(-)0.12	(-)2.07
Non-performing loan@	6,073	6,360	6,704	14,520	15,712	16,495	16,052	15,476	11,558
Non-performing loans/# Total loans (per cent)	16.3	16.0	14.2	19.9	19.8	18.5	33.6	30.4	26.9

NA : Not available;
* : For PACS, number in thousands;
@ : For PACS, figures relate to Overdues;
# : For PACS, figures relate to Overdues/Loans outstanding;
& : For PACS, figures relate to working capital;
Source: RBI and NABARD

compliant, six are materially non-compliant and two are non-compliant. Some of the principles like those relating to transfer of significant ownership, country risk, consolidated supervision and home-host relationship are not applicable. The major gaps in adherence are observed in respect of capital adequacy and risk management.

Given the need for strengthening the rural co-operative credit institutions, a Task Force was constituted by the Government in August 2004 to recommend an implementable action plan for their revival. In its Report on the short-term co-operative credit institutions, the Task Force recommended the provision of liberal financial assistance to the ailing co-operatives,

Table 2.31: Performance of Rural Co-operative Banks (Long-term Structure)

Position as at end-March (Amount in Rs. crore, ratios in per cent)

Item	SCARDBs			PCARDBs		
	2005	2006	2007	2005	2006	2007
1	2	3	4	5	6	7
Number	20	20	20	727	696	697
Share capital	791	801	794	920	922	918
Reserves	2,165	2,354	2,137	2,196	2,665	2,678
Deposits	608	636	605	364	382	341
Borrowings	17,182	17,075	16,662	12,750	13,066	12,751
Loan outstanding	17,403	17,713	18,644	12,622	12,740	12,114
Total asset	24,271	24,604	24,336	20,413	21,365	21,774
Net profit	(-)163	262	89	359	(-)109	(-)147
Net profit/total asset	(-)0.7	1.1	0.4	1.8	(-)0.5	(-)0.7
Non-performing assets (NPAs)	5,437	5,779	5,643	4,056	4,586	4,316
NPAs/ total loans	31.2	32.7	30.3	32.1	35.6	35.4

Source: RBI and NABARD

subject to certain legal and institutional reforms in the sector. Based on consultations with State Governments and other feedback received, an estimated outlay of Rs.13,600 crore was provided for the purpose. Financial assistance under the package, including a cleansing of the balance sheets, capital infusion to ensure a CRAR of 7 per cent, technical support for building up a common accounting and internal control system, computerisation and capacity-building were made contingent upon certain legal and institutional reforms relating to the co-operative credit structure. Implementation and Monitoring Committees at the national, state and district levels have been constituted to oversee the restructuring exercise. The Government has constituted a National Implementing and Monitoring Committee while NABARD has constituted state-level Task Forces. NABARD is the implementing agency for the purpose. Until November 2008, 25 State Governments had executed MoUs with the Government and NABARD for implementing the revival package.

On its part, the Government has been making concerted efforts over the last few years to strengthen the co-operative sector. Beginning 2004, budget allocations have been made for grants through NABARD to incentivise State Governments and co-operative institutions to adopt reform measures for strengthening the co-operative credit structure. Until 2006, Rs.602 crore had been allotted to NABARD. The Union Budget 2006-07 has earmarked Rs.1,500 crore for this purpose.

The Task Force was also asked by the Government to make suggestions for the revival of the long-term co-operative credit institutions. The Report was submitted to the Government in August 2006. The Government has since circulated the Report to all states and Union Territories. Based on the deliberations with the State Governments, the package is being finalised by the Central Government.

2.5 The Broader Financial Sector

The broader financial sector comprises development financial institutions, non-banking financial companies, the non-financial sector, including corporates and households and the housing finance companies.

2.5.1 Non-banking Finance Companies

Non-banking finance companies (NBFCs) have become an integral part of the financial system in India, playing a crucial role in broadening access to financial services, enhancing competition and bringing in greater diversification of the financial sector which also enables risk diversification in the system. Their growth has been supported by the following factors:

- They constitute an important avenue for private initiative and innovation in the Indian financial system.
- The diversification of the economy, the growth in infrastructure development related activities, and the rise in middle class consumerism.
- They have shown great flexibility in meeting the increasingly complex financial needs of India's growing economy.

Deposit-taking NBFCs (NBFCs-D) witnessed rapid growth in the mid-1990s, but, growth has since slowed down because of the

introduction of strict entry and prudential norms, the prescription of ceiling rate of interest on deposits that can be offered by these entities and the process of obtaining a Certificate of Registration (CoR) by these NBFCs. In spite of a slowdown in NBFCs-D, there has since been a resurgence of this sector, primarily because of high growth recorded in the NBFC-ND (non-deposit-taking) segment, which has emerged as the most dominant component of the NBFC segment in recent times.

Out of 364 deposit-taking NBFCs, 335 (including 2 Residuary Non-Banking Companies or RNBCs) filed annual returns for the year ended March 2008, with total asset of Rs.94,744 crore and public deposits of Rs.24,395 crore (Table 2.32). RNBCs is a separate sub-set of deposit-taking NBFCs, allowed to accept deposits with no ceiling on quantum of deposits as a multiple of net owned fund (NoF), unlike other deposit-taking NBFCs. Hence, RNBCs cannot be compared with other NBFCs.

The RNBC segment accounts for over 90 per cent of public deposits with high gearing ratios, defined as public deposits as a multiple of NoF (Table 2.32). However, this cannot be considered a matter for concern as RNBCs have no freedom for investments and are not permitted discretionary investment against the aggregate liability to depositors. RNBCs are required to invest 100 per cent of their Aggregate Liability towards Depositors (ALD) in directed investments:

- investments in unencumbered approved securities like securities issued by the Central and State Government,
- fixed deposits / certificates of deposits of SCBs and CDs of specified financial institutions, provided the CDs are rated not less than AA+ or its equivalent by an approved credit rating agency,
- bonds and debentures of any company incorporated under Companies Act, 1956 which have a minimum credit rating of not less than AA+ or equivalent by an approved credit rating agency and listed on a recognised stock exchange and
- debt oriented mutual funds subject to the condition that not more than two per cent of the ALD shall be invested in any one mutual fund and the aggregate of such investment shall not exceed 10 per cent of the ALD.

Although the interest rate paid by NBFCs-D on their public deposits has been high in comparison to that payable by banks (the ceiling interest rate is capped at 12.5 per cent with effect from April 24, 2007), 73 per cent of public deposits bear interest rates not exceeding 10 per cent; the maturity profile has been evenly distributed, with roughly 30 per cent being at

Table 2.32: Profile of NBFC-D/RNBC Segment

Position as at end-March (Amount in Rs. crore)

Institution	NBFCs				RNBCs			
	2005*	2006	2007	2008	2005	2006	2007	2008
1	2	3	4	5	6	7	8	9
Reporting numbers	703	435	362	335	3	3	3	2
NoF	5,036	6,494	6,921	10,547	1,065	1,183	1,366	1,714
Public deposits	3,926	2,448	2,077	2,037	16,600	20,175	22,622	22,358
Public deposit/NoF	0.8	0.4	0.3	0.2	15.6	17.1	16.6	13.0
Total Asset	36,003	37,828	48,553	70.292	19,056	21,891	23,172	24.452

* : Data for 2004-05 include MBCs, MBFCs and MNBCs besides NBFC-D, hence not comparable to the data for the years 2005-06 and 2006-07.
Note : NoF: Net owned funds
Source: RBI

the shorter end of the maturity spectrum (1 year) (Table 2.33). On account of the spread (difference between ceiling interest rate on NBFC deposits *and* the maximum rate on bank deposits of 1-5 years maturity by PSBs), a concern regarding the risk-premium on NBFC deposits *vis-à-vis* banks, given their low NoF requirement, may arise.

In reality, though the NoF requirement in case of NBFCs is low compared to banks, NBFCs, especially deposit-taking ones, have to maintain higher CRAR ranging from 12-15 per cent, which is substantially higher than banks. It may also be mentioned that minimum Net Owned Funds (NoF) of Rupees two crore (with effect from April 21, 1999) is only an entry point norm and the accretion to reserve fund under Section 45-IC of the Reserve Bank Act has helped NBFCs to increase their NoF over time. Even non-deposit-taking NBFCs with an asset size of Rs.100 crore and above have to maintain a CRAR of 10 per cent, a notch above 9 per cent requirement in case of banks.

The asset quality of NBFCs-D reveals that their gross NPA to gross loans ratio has declined over the period. The overall ratio was 1.5 per cent at end March 2008 (Table 2.34).

Capital adequacy ratios of the NBFCs-D are high at 22.4 per cent as at end March 2008. At end March 2008, 44 NBFCs had CRAR ratios less than the stipulated minimum of 12 per cent, up from 20 the year earlier. Of the 167 asset finance companies (the segment with the majority of public deposits), 147 had a CRAR in excess of the stipulated levels; 115 (or 69 per cent) had CRAR ratios of 30 per cent and above.

The NBFC sector is less closely regulated and supervised than the banks and not all Basel Core Principles (BCPs) can be made applicable to it. Further, the BCPs are not applicable to a significant proportion of these entities as they are very small in size and do not strictly conduct banking operations. Though NBFCs are not part of the payments and settlement system like banks, they provide some financial services that are similar to that of banks. Therefore, an assessment of the adherence to BCPs in respect of regulation and supervision of NBFCs under the broad categories was attempted by the

Table 2.33:Public Deposits According to Interest Rate and Maturity of NBFCs-D

Year	Interest rates (in per cent)			Maturity (in years)			Total deposits (Rs. crore)
	Upto 10	10-12	Above 12	Less than 1	1-2	Exceeding 2	
1	2	3	4	5	6	7	8
2004-05*	68.7	21.7	9.6	30.8	24.0	45.2	3,926
2005-06	83.6	13.0	3.4	35.9	26.5	37.6	2,447
2006-07	88.5	9.7	1.7	34.9	23.0	42.1	2,077
2007-08	73.1	25.4	1.5	29.9	23.6	46.5	2,038

* : Data for 2004-05 include MBCs, MBFCs and MNBCs besides NBFC-D, hence not comparable to the data for the years 2005-06 and 2006-07.

Source: RBI.

Table 2.34: Public Deposits and NPAs Across Different Classes of NBFCs-D

	AFC@	EL	HP	LC	IC	Others	Total
1	2	3	4	5	6	7	8
Public deposits (per cent)							
2004-05	..	8.7	61.7	5.2	2.4	22.0	100.0
2005-06	..	6.7	83.2	6.8	3.3	..	100.0
2006-07	9.0	2.1	81.0	5.6	2.2	0.1	100.0
2007-08	56.7	0.4	26.2	15.8	0.9	..	100.0
Gross NPA/ Gross advances (per cent)							**Overall ratio %**
2004-05	..	12.3	3.8	6.0	18.0	..	5.7
2005-06	..	2.4	2.5	36.5	0.4	..	3.6
2006-07	2.2	4.2	2.5	1.6	2.8	..	2.2
2007-08	1.8	24.3	29.2	0.2	..	..	1.5

@ : Companies financing real/physical assets for productive/ economic activities are re-classified as Asset Finance Companies (AFCs). This revised classification became effective since December 2006.
EL : equipment leasing;
HP : hire purchase;
LC : loan companies;
IC : investment companies
* : Data for 2004-05 includes MBCs, MBFCs and MNBCs besides NBFC-D, hence not comparable to the data for the years 2005-06 and 2006-07.
Source: RBI

Advisory Panel on Financial Regulation and Supervision. Out of the 24 Core Principles applicable to NBFCs, they were observed to be compliant/ largely compliant in respect of 14 Principles and materially non-compliant /non-compliant in respect of 10, which relate primarily to risk management, ownership and control and home host relationship.

Given the growing similarity in the business of banks and deposit-taking NBFCs, especially on the asset side and in view of the differential regulatory and cost-incentive structure across these two sets of institutions, it became imperative to establish certain checks and balances to ensure that bank depositors are not directly exposed to the risks of a different cost-incentive structure. Furthermore, some regulatory gaps in the area of bank *vis-à-vis* NBFC operations may contribute to creating the possibility of regulatory arbitrage, giving rise to an uneven playing field and some concerns of systemic risk. In view of these concerns, the regulatory framework for systemically important (non-deposit taking) NBFCs (NBFCs-ND-SI) was modified. The basic framework for classifying such NBFCs was based on their asset size.[30] These NBFCs have also to comply with various prudential regulations, *viz.*, capital adequacy ratio, exposures and credit/ investment concentration norms.

The NBFCs-ND-SI is the fastest growing segment in the NBFC sector. It grew at a rate of 28.6 per cent between 2007 and 2008. A profile of balance sheet and income positions reveals that in aggregate, NBFCs-ND-SI have a significant exposure to the capital market which accounted for more than 25 per cent of their asset base at end March 2008. More specifically, capital market exposures as at end March 2008 have been 67.8 per cent, 33.3 per cent and less than 1 per cent of total assets for investment NBFCs-ND-SI, all NBFCs-ND-SI and deposit-taking NBFCs with asset size of Rs.100 crore and above, respectively. Dependence on bank borrowings

[30] NBFCs with asset size of Rs.100 crore and above as per their latest audited balance sheet were considered has NBFCs-ND-SI.

as sources of funds of NBFCs-ND-SI has been declining over the period in comparison to that of debentures. Though, Capital Market Exposure as a percentage of total liabilities appears to be high, it is restricted to Investment Companies. The bank borrowings of the Investment NBFCs-ND-SI was at Rs.10,845 crore. CME constituted 248 per cent of the bank borrowings, indicating that dependence of CME on bank borrowings of such companies cannot be considered as significant.

From the sources of funds at end March 2008, unsecured borrowings constitute a significant portion (36.8 per cent) of sources of funds (total liabilities) and 55.4 per cent of the total borrowings of NBFCs-ND-SI (Table 2.35). Of this, bank borrowings (secured as well as unsecured) constituted 26.5 per cent of their total borrowings as on the same date. Unsecured bank borrowings constituted 17 per cent of total borrowings during the same period. Unsecured debentures constituted 16.4 per cent of total borrowings of NBFCs-ND-SI as at end March 2008. Secured debentures also constituted 16.4 per cent of the total borrowings of the NBFCs-ND-SI as at end-March 2008.

Unlike banks, NBFCs do not have access to low cost deposits. NBFCs are therefore much more dependent on borrowing especially, the non-deposit taking NBFCs. Of the borrowings, significant portion is unsecured, which other than cost implications, could also have a huge systemic impact if the NBFCs go bankrupt. In this context therefore, in order to reduce

Table 2.35: Profile of Systemically Important Non-Deposit Taking NBFCs

(Amount in Rs. crore)

Year/ Item	March 2006	March 2007	March 2008
1	2	3	4
Source of funds			
Secured borrowings	71,509	93,765	1,21,082
of which: Debentures	39,179	32,564	44,439
Bank borrowings	16,116	19,503	25,774
Unsecured borrowings	1,03,086	1,18,221	1,50,206
of which: Loans from banks	28,276	33,191	46,243
Inter-corporate deposits	19,459	20,018	22,019
Debentures	20,788	30,549	44,432
Use of funds			
Total loans	1,68,728	2,12,667	2,78,632
of which: Secured loans	63,120	1,14,898	1,60,017
Unsecured loans	82,996	69,609	88,783
Capital market exposure	59,583	81,435	1,11,630
Total Asset/Liabilities	2,50,765	3,17,898	4,08,705
Net profit	4,301 (1.7)	7,460 (2.3)	8,705 (2.1)
Gross NPAs/Total credit exposure (per cent)	7.0	4.9	3.1

Note : Figures in brackets are percent to total asset
Source: RBI

systemic liability arising out of exposures to unsecured borrowings from NBFCs, there is an immediate requirement to develop the corporate bond market which could be a source of funds to NBFCs. The Panel therefore feels that while capping of bank lending to NBFCs has a prudential objective, there is an urgent need to develop an active corporate bond market so that these entities have alternative financing sources to enable their growth without disrupting systemic stability.

2.5.2 Development Finance Institutions (DFIs)

DFIs which were designed to provide long-term finance to industry, have gradually shrunk, with some of the large all-India finance institutions (term-lending and refinance institutions) having amalgamated with their banking counterparts over the last few years. Some of the FIs have been reclassified as systemically important non deposit-taking NBFCs.[31] Their outstanding loans increased from Rs.85,151 crore as at end March 2005 to Rs.1,44,692 crore by end March 2008. With the economic upturn over the past few years, there has been an improvement in the asset quality as seen from the decline in NPA ratios as well as their absolute levels (Table 2.36). These numbers need to be viewed in the light of the fact that income recognition and asset classification for DFIs have, only recently, been made on par with those for banks.[32]

Table 2.36: Select Indicators of DFIs

	Year	2005-06	2006-07	2007-08
	1	2	3	4
I.	**Increase/ decrease (-)**			
	Loans and advances	24.8	20.5	16.9
	Gross NPAs	(-)12.2	(-)26.1	(-)27.4
	Net NPAs	(-)29.0	(-)56.2	(-)5.6
II.	**Key ratios**			
	Gross NPA ratio	1.3	0.8	0.5
	Net NPA ratio	0.9	0.1	0.1
III.	**Weighted average cost**			
	TFCI	10.1	9.9	..
	SIDBI	5.9	6.9	8.2
	EXIM Bank	6.9	7.8	8.2
	NABARD	5.8	8.7	9.5
	NHB	6.4	7.4	7.7
IV.	**Weighted average maturity**			
	TFCI	5.2	4.3	..
	SIDBI	3.9	6.5	1.0
	EXIM Bank	4.6	3.7	3.0
	NABARD	3.5	5.0	4.0
	NHB	2.2	2.4	2.8

Note : Under (I), the reported numbers are percentage change over the previous year.
Data for 2005-06, 2006-07 and 2007-08 (I and II) includes only four DFIs (SIDBI, NABARD, NHB & EXIM Bank) currently being regulated by RBI.
Source: RBI

[31] IIBI is in process of voluntary winding up. IFCI and IDFC are presently regulated as systemically important non deposit-taking NBFC. TFCI is being regulated as a NBFC.

[32] For DFIs, with effect from end-March 2006, an asset would be classified as non-performing if the interest and/or instalment of principal remain overdue for more than 90 days. DFIs would have the option to phase out the additional provisioning required for moving over to the 90-day income recognition norm over a period of three years beginning from the year ending March 31, 2006, subject to at least one fourth of the additional provisioning being made in each year.

In keeping with the increase in interest rates during 2004-07, there has been an increase in the cost of borrowings of DFIs. But it is lower than the levels seen in early 2000. Though DFIs are required to fund themselves with initial maturities of over one year, their long-term nature of loan portfolio can entail a term mismatch. Illustratively, the weighted average maturity of the rupee resources of DFIs has declined significantly over the past few years from an average of over six years to less than four years. The change in the operating environment coupled with increased competition and availability of alternative modes of finance to the corporates and organisational restructuring being faced by these institutions, *inter alia*, have led to the declining share of business of the financial institutions.

The aggregate CRAR of DFIs stood at 25.6 per cent at end March 2008 (Table 2.37). All reporting institutions adhered to the stipulated minimum CRAR requirements. Gross NPA ratio declined significantly from 1.3 per cent to 0.5 per cent between March 2006 and March 2008. Reflecting the combined effect of better recovery management and improved provisioning, net NPAs witnessed a sharp decline and stood at 0.1 per cent at end March 2008.

2.5.3 Housing Finance Companies (HFCs)

The real estate sector has been experiencing a credit boom in recent years. Housing loans outstanding as at end March 2006 which were to the tune of Rs.2,72,600 crore, increased to Rs.3,10,755 crore as at end March 2007 and further to Rs.3,50,957 crore as at end March 2008. Outstanding housing loans however, constituted only 7.4 per cent of GDP (2007-08).

The entry of banks in the housing finance business resulted in a rapid expansion of the market. While the HFCs also witnessed an increase in their business (aggregate housing finance disbursed was Rs.46,164 crore during 2007-08), banks garnered the larger share of this market due to their lower cost of funds and

Table 2.37: Profile of DFIs

(Amount in Rs. Crore)

Item	2005-06	2006-07	2007-08
1	2	3	4
Income	7,562	9,073	11,541
Expenditure	5,489	6,895	8,707
Tax provision	588	632	936
Operating profit	2,073	2,178	2,834
Net profit	1,484	1,546	1,898
Total assets	1,27,686	1,48,787	1,77,765
Net profit/Total asset (per cent)	1.16	1.04	1.07
CRAR (per cent)	30.7	25.9	25.6
CRAR (below 12 per cent)	nil	nil	nil

Note : Data for 2005-06 and 2006-07 includes only four DFIs (SIDBI, NABARD, NHB & EXIM Bank) currently being regulated by RBI.
Source: RBI

wider distribution network. Notwithstanding this, an analysis of HFCs assumes importance, because changes in the volumes of lending and property prices could have a bearing on credit quality and collateral. For the purpose of analysis, 12 (out of the 43 registered with National Housing Bank) HFCs were chosen.[33]

Although the BCPs are not strictly applicable to HFCs, an attempt was made by the Advisory Panel on Financial Regulation and Supervision to assess the relevance of these Principles to HFCs, as appropriate. The assessment indicated that they are compliant/ largely compliant in respect of 12 of the 25 Principles. Assessed areas of material non-compliance relate to permissible activities, risk management process, exposure to related parties and home-host relationships.

2.5.3. (a) Capital Adequacy

The prescribed minimum Net Owned Fund (tier-I capital) for HFCs to commence or carry on the business of a housing finance institution is Rs. two crore. All the selected HFCs complied with these minimum numbers.

The prescribed minimum CRAR for HFCs is 12 per cent. On an average, HFCs have been able to maintain a CRAR well above the prescribed levels, with an overwhelming portion comprising core capital (Table 2.38). The ratio of tier-I capital to risk-weighted assets increased between 2004 and 2008. This is inspite of the increased risk weights in individual housing loans from 50 per cent to 75 per cent with effect from October 2005. The improvement in the ratio of tier-I capital to risk-weighted assets continued during 2007-08. This is a manifestation of the lowering of risk-weight applicable to individual housing loans up to Rs.20 lakh, from 75 per cent to 50 per cent with effect from July 2007. This is also reflected in the increase in the ratios of tier I capital to total assets during 2007-08.

The ratio of tier II capital to risk weighted assets showed a sudden jump for the year ended March 2006 due to issue of Foreign Currency Convertible Bonds (FCCBs) by a leading HFC. Subsequently, almost 78 per cent of these FCCBs got converted into equity, resulting in a drop in tier II ratio and an increase in the tier I ratio in 2006-07.

A significant aspect of HFCs is their leveraged positions. As per regulatory prescriptions, a ceiling of 16 times of NoF for borrowings is mandated for them.[34] Over the period March 2004 to March 2006, the ratio has shown steady increase from 8.25 to 9.38. The increase in tier II Capital (a debt component) between 2004 and 2006 appears to have contributed to the increase in this ratio. However, the same has declined to 6.58 for the period ending March 2008.

Table 2.38 Average Ratios on Capital Adequacy - HFCs

(Ratios in per cent)

Parameter	2004	2005	2006	2007	2008
1	2	3	4	5	6
Total capital funds (tier-I and tier-II)/ Risk weighted assets	15.0	16.2	17.8	16.8	18.1
Tier-I capital/ Risk weighted assets	14.0	14.7	12.4	15.3	15.8
Tier-I capital/ Total assets	10.3	9.9	9.2	10.0	10.4
Tier-II capital/Risk weighted assets	0.9	1.6	5.4	1.5	2.3

Note : figures as at end-March.
Source: NHB

[33] Based on their asset size at end-June 2006. These HFCs account for roughly 97 per cent of the outstanding housing loans, 99 per cent of the public deposits and 98 per cent of the total borrowings of the sector. The analysis is based on statutory returns submitted by the HFCs.

[34] This ratio indicates borrowings leveraged by the institution vis-à-vis their tier-I capital.

Table 2.39: Ratios on Asset Quality-HFCs

(Ratios in per cent)

Category	2004	2005	2006	2007	2008
1	2	3	4	5	6
Gross NPAs/ Gross loans	3.6	6.2	4.5	1.7	2.2
Net NPAs/ Net loans	2.0	4.4	3.1	1.2	1.6
Net NPAs/ Tier-I capital	16.5	37.5	28.9	7.7	7.8

Note : figures as at end-March
Source: NHB

2.5.3. (b) Asset Quality

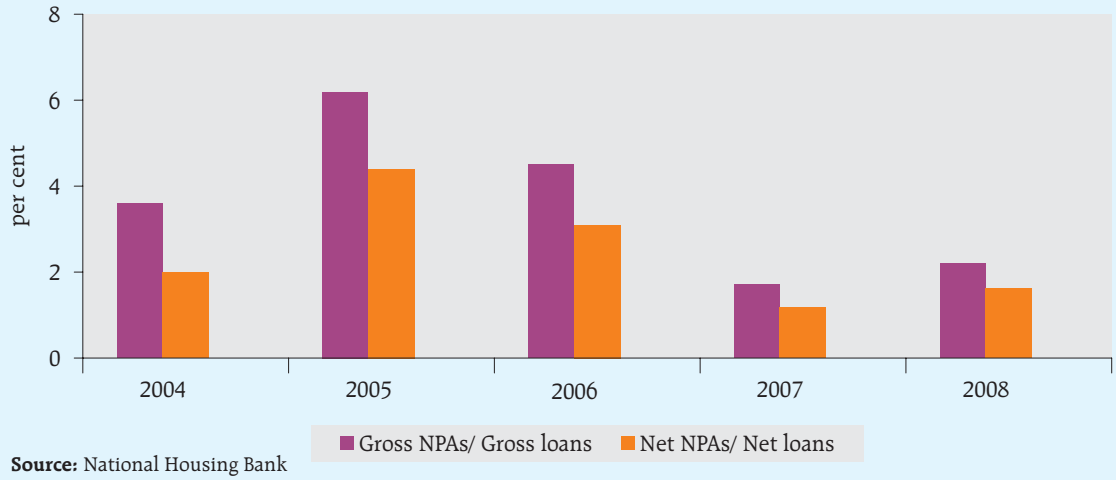
The asset quality of housing loans is an area of concern, especially in a regime of rapid credit growth, given the evidence of asset impairment in periods of economic downturn. The data for HFCs, however, indicate that these ratios are still moderate (Table 2.39). The spurt during 2004-05 was more on account of the introduction of 90-day norm for asset classification norms with effect from end March, 2005 (Chart 2.10).

2.5.3. (c) Earnings and Profitability

The marginal declining trend of the Return on Assets (RoA) particularly during 2005-06 in the wake of increased competition and volume building has shown an upturn during 2007 and 2008. The sector exhibits high potential as seen from the increasing levels of the interest margin to gross income ratio. The growing demand for housing has prompted HFCs to assume more debt and thereby increase their balance sheet size. Though the HFCs are comfortably placed in terms of liquidity as indicated by their current ratio, the declining trend since 2006 indicates a growing concern (Table 2.40).

While the CAGR of housing loans has been around 33 per cent between 2003 and

Chart 2.10 : Asset Quality Indicators of HFCs



Source: National Housing Bank

Table 2.40 : Ratios on Earnings and Profitability - HFCs

(Ratios in per cent)

Indicators	2003-04	2004-05	2005-06	2006-07	2007-08
1	2	3	4	5	6
Return on assets	1.9	1.9	1.8	1.99	2.23
Return on Tier-I capital	18.3	19.2	19.3	19.83	17.71
Interest margin to gross income	25.1	28.0	26.2	28.92	34.16
Non-interest expense to gross income	11.1	12.1	10.1	8.11	7.37
Current ratio	1.77	1.73	1.83	1.41	1.15

Note : figures as at end-March
Source: NHB

2006, the growth in household income in the corresponding period has been 20 per cent[35]. This, coupled with the increase in interest rates, has led to an increase in the household debt burdens and elongation of repayment periods, raising concerns of loan delinquency.

2.5.3. (d) Housing Price Index

Most countries employ house prices as part of their assessment of the asset-price channel of monetary policy. In the Indian context, owing to non-availability of systematic data on house prices, gauging the impact of activity in this segment is a challenging task. To overcome this deficiency, a Technical Advisory Group (TAG) had been constituted by the National Housing Bank (NHB) for the construction of a national Housing Price Index. Based on its recommendation, NHB has developed a housing price index for five cities *viz.*, Mumbai, Bhopal, Bangalore, Delhi and Kolkata. Over time, it is expected to cover 63 cities with population more than one million. However to make an assessment of the risks associated with the housing growth a national loan to value (LTV) ratio is required. Due to the non-availability of a nation-wide housing price index, an accurate estimate of the LTV ratio is difficult. The Panel therefore recommends that the work related to the construction of a national housing price index be taken up on priority basis. It should be supplemented by a house start-up index to provide insights on the elasticity of property supply to property prices as well as the cost of housing credit. The Panel recommends that the report of the TAG set up by the Reserve Bank for the purpose of constructing the housing start up index requires to be submitted early. (Annex 2.6: House Price Index and Housing Starts).

2.5.4 Non-Financial Sectors

The quality of assets and performance of financial institutions depend directly on borrowers' capacity to repay. The non-financial sector, therefore, is the counterpart of the financial sector in a myriad of transactions, and could become a source of risk. This makes it necessary for central banks to monitor and analyse the financial strength of corporate borrowers. A second reason for monitoring the non-financial sector is that the dividing line between the financial and non-financial sector has become increasingly blurred. The evolution of the credit risk transfer market, for example, has facilitated shifts in credit risk between the financial and non-financial sectors. The two major components of the non-financial sector are the corporate and the household sectors.

2.5.4. (a) Corporate Sector

The manufacturing sector had witnessed a significant improvement in financial performance during the period between 2003-04 and 2006-07. Return on equity for public limited companies increased significantly to

[35] Source - CRISIL

19.8 per cent in 2006 -07 from 13.7 per cent in 2003-04. Also for private limited companies, it has increased to 16.3 per cent in 2005-06 from 14.9 per cent in 2003-04. The profit margin (gross profits to sales) for public limited companies in the year 2006-07 was the highest in the recent past. This robust economic activity, and the decline in debt servicing, are the two important factors driving the high profitability levels (Table 2.41).

For public limited companies, the debt-equity ratio has declined, a fall-out of a lesser reliance on borrowed funds; for private companies, there has been a marginal rise, although the ratios were much lower than public companies. With the reduced dependence on borrowed funds, interest outgo declined, lowering its share in total expenditure for both public and private companies. Companies have been maintaining a current ratio (current assets to current liabilities) in excess of one, indicating their ability to meet their current obligations.

Primarily on account of the sustained moderation in inflation till the end of 2007, nominal interest rate was not high. This resulted in substantial fall in debt servicing costs. Given that borrowing costs for larger corporates have fallen in recent years, profits for these companies have surged. Combined with rising economic activity, the average growth of profits was 45.8 per cent during 2003-04 to 2006-07, raising returns on equity to well above the overall cost of capital. Mainly driven by the up-trend in the investment cycle since 2003-04, firms retained a higher proportion of profits, which as the share of profits increased from 62.6 per cent in 2003-04 to 79.5 per cent in 2006-07. Improved internal funds so generated led to the increase in overall equity capital.

Table 2.41 : Indicators of Financial Stability in Manufacturing

(Ratios in per cent)

Item / Year	2003-04		2004-05		2005-06		2006-07	
	Public	Private	Public	Private	Public	Private	Public	Private
1	2	3	4	5	6	7	8	9
Debt equity ratio	62.2	14.5	52.8	22.1	47.7	20.8	48.4	NA
Return on equity	13.7	14.9	17.6	14.3	17.7	16.3	19.8	NA
Interest coverage ratio (times) (Gross Profit/Interest payments)	3.2	6.7	4.5	7.0	5.3	7.4	6.2	NA
Interest payments/Total expenditure	3.6	1.3	2.8	1.1	2.3	1.2	2.3	NA
Gross profit/Sales	10.9	8.4	11.8	7.8	11.8	8.4	13.2	NA
Sales / gross fixed asset	116.3	267.4	130.4	295.2	131.4	304.4	141.7	NA
Profits retained / Profits after tax	62.6	76.7	71.4	79.4	74.4	85.5	79.5	NA
Current asset/current liabilities (number of times)	1.0	1.40	1.0	1.40	1.1	1.40	1.2	NA
ICOR (number of times)	0.75	0.57	0.62	0.56	1.2	0.57	1.03	NA
Memo: Number of firms	1,693	785	1,693	785	2,263	785	2,263	NA

Source: RBI

Over time, the corporate tax rate in India has also witnessed a downward trend, from 45 per cent in 1992-93 to 30 per cent by 2005-06. Since then the rate has held fairly steady. The peak rate of customs duty on non-farm goods has also been brought down from 150 per cent in 1991-92 to 10 per cent in 2007-08. The declining tax rates took away to some extent the advantages generally associated with debt and at the same time increased the reliance of firms on equity finance. Restructuring of debt helped firms to retire expensive debt. Encouraged by the buoyant asset markets and valuations which tended upwards on account of large profits and lower debt levels on their balance sheet, firms raised funds with huge premia. Though debt and equity levels have been rising over the years, it is equity which has been rising much faster relative to the rise in debt, as reflected in declining debt-equity ratio.

However, there has been some moderation in sales and profits growth from 2007-08 and it has started impacting profitability. This could result in a lower generation of internal funds. Lately, there has also been a sharp correction in the valuations of listed firms. To that extent, there could be a reversal in the declining debt equity ratio. The sales performance of select non-government non-financial public limited companies in the private corporate sector during the first two quarters of 2008-09 showed improvement, however, profits performance was subdued as compared to 2008-09. This could further accentuate the increase in debt-equity ratio.

The private corporate sector has performed well during the period 2003-04 to 2006-07. An analysis by CRISIL among its rated companies indicate that the risk appetite of Indian corporates in the manufacturing and infrastructure sectors has increased as is evident in the growing number and size of acquisitions. This recent phenomenon has reversed the trend of steadily declining debt-equity ratio that was observed among Indian corporates between 2002 and 2007.

The total investments by Indian corporates in capacity expansion across sectors are expected to increase significantly. As per CRISIL, the total estimated investments for seven major industries (aluminium, automobiles, cement, oil and gas, petrochemical, steel and textiles) during the period between FY07 and FY11 is around Rs.6,29,500 crore, which is more than thrice the investments in these industries during the period between FY02 and FY06.

The aggressive growth plans of Indian corporates' are also illustrated by a study of about 70 CRISIL-rated companies[36] with a total turnover of Rs.2,60,000 crores. The study reveals that the total planned capital expenditure between FY08 and FY10 is expected to be nearly 1.4 times the aggregate net worth of the companies as on March 31, 2007. This is in comparison to a figure of 0.6 times for the period FY05 to FY07 (Table 2.42).

As per the study, a large part of these capacity expansions and acquisitions will be

Table 2.42 : Planned Capital Expenditure

(Rs. crore)

As on	Networth	Capital Expenditure during the next 3 years	Projected Capital Expenditure / Networth
1	2	3	4
March 31, 2004	86,150	51,740 (FY05-07)	0.60
March 31, 2007	1,45,860	2,04,970 (FY08-10)	1.41

Source: CRISIL Estimates

[36] CRISIL ratings cover more than two thirds of manufacturing companies forming part of BSE Sensex. This study covers more than 50 per cent of these rated manufacturing companies.

debt-funded which could add to credit quality pressure among Indian corporates. Increase in input costs, higher interest rates and wage inflation could add to the profitability pressures resulting in weakening in credit quality among Indian corporates. However, the default rates are not likely to increase significantly, as the balance sheet of the corporates have strengthened significantly due to healthy operating performance and minimal capital expenditure of most of these companies during the preceding five years.

The incremental capital output ratio (ICOR), defined as the ratio between incremental capital employed to incremental value of production, increased significantly to 1.03 in 2006-07 from 0.75 in 2003-04 for public limited companies. But it remained unchanged at 0.57 for private limited companies during the same period. The steep increase in ICOR for the former may be attributed partly to deployment of capital for creation of additional capacity.

2.5.4. (b) Unhedged Foreign Currency (FC) Exposure of Corporates

Indian corporates with foreign currency exposures (export, import, borrowings, equity issues, etc) are exposed to currency risk, unless natural hedges (revenue or other flows in foreign currency) are available. In the context of the appreciation of the rupee, it is observed that there is no incentive for the entities including exporters (exporters expect that rupee would depreciate) to hedge their exposures. Thus, the unhedged exposures had been increasing, leading to a systemic risk. This, in spite of, the policymakers increasingly expressing concern over the unhedged foreign currency exposures of corporates in view of its implications for financial stability in the event of unforeseen adverse conditions.

In view of such concerns, an attempt was made to arrive at some ballpark numbers on the unhedged foreign currency exposure of corporates. Based on an analysis on 32 companies out of the BSE top 100 in the manufacturing and infrastructure sectors, CRISIL found that, as on March 31, 2007:

- Total unhedged FC exposure of these companies of the order of Rs.51,000 crore
- Total net worth of these companies of the order of Rs.2,03,600 crore
- Total net profits of these companies of the order of Rs.46,600 crore

Therefore, for these 32 companies on aggregate, the unhedged FC exposure constituted about 25 per cent of their net worth and nearly 110 per cent of their net profits. In case the foreign currency were to appreciate / depreciate by, say 10 per cent, the resultant impact could be about 11 per cent on the net profits of these companies.

This analysis might not reflect the underlying position, as it seems likely that the natural hedges that are available to the corporates might not have been taken into account. As a result, the real risk being run by the corporates could be higher or lower, depending on the extent of the natural hedge available.[37]

[37] In this set of 32 companies, four companies have the unhedged foreign currency exposure exceeding their net worth and six companies have their unhedged foreign currency exposures forming significantly more than 2 times the net profits reported in the previous year. This could be a pointer to the fact that for smaller companies, these numbers could be much higher and given their paucity of skills in managing foreign currency risks, the ability to manage the foreign currency movements might be limited in relation to the large companies.

While hedging or not hedging of currency exposure is a commercial decision, the impact of market risk triggered credit risk on the financials of banks is significant. It is therefore important that banks, for prudential reasons, be aware of and monitor the unhedged exposures of their clients and the impact on their asset quality. In view of this risk, banks have been encouraged to obtain information from their large borrowers on their unhedged foreign exchange exposures, so that they can assess the risk of their own exposure to such corporates on an on-going basis.

Similarly, while corporate profits have been healthy and leverage ratios are down, the monitoring of corporate leverage, particularly for SMEs and their foreign exchange mismatch has become necessary. Such reporting could be done as part of listed company disclosures and also such data could be captured for credit information to be shared amongst banks.

The Panel feels that a practical way forward could be a two-pronged strategy comprising a periodic survey by the Reserve Bank based on the returns collated by authorised dealers, supplemented with mandated disclosures in companies' balance sheets, through ICAI.

2.5.4. (c) Household Sector

The absence of recent data in respect of household indebtedness is a serious concern. This shortcoming is all the more pronounced in view of the recent increase in the retail loan portfolio of the banks and the increasing housing demand. The Panel underscores the requirement to have recent system level data of household indebtedness as a major action point going forward.

The health of the household sector provides useful leads as to the overall health of the financial sector. At the all-India rural level, the available data suggests that in respect of two indicators of indebtedness, there has been a decline over time in indebtedness (Table 2.43).[38] While the incidence of indebtedness appears to be lower, the debt-asset ratio is generally higher for urban than for rural areas.

The burden of debt is higher for the asset-poor households than for the asset-rich ones, as reflected in a monotonically declining debt-asset ratio with the size class of asset ownership (Table 2.44), which presents data for India, rural and urban households combined, in 2002-03).

Available evidence as per the results of the *All-India Debt and Investment Survey* 2002-03 indicates that 26.5 per cent of the rural households reported indebtedness to various agencies (either institutional or non-institutional). The comparable figure for urban households was 17.8 per cent (Table 2.45). Professional money-lenders emerged as the

Table 2.43: Indebtedness Over Time at All-India Level

(All figures in percentage terms)

Year	Rural		Urban	
	Proportion of household indebted	Debt asset ratio	Proportion of household indebted	Debt asset ratio
1	2	3	4	5
1961-62	62.8	NA	NA	NA
1971-72	42.9	4.4	NA	NA
1981-82	19.9	1.8	17.4	2.5
1991-92	23.4	1.8	19.3	2.5
2002-03	26.5	2.8	17.8	2.8

Note : NA: Not Available
Source: RBI (1965); NSSO (1985, 37th round); NSSO (1998; 48 th Round); NSSO (2005; 59 th Round)

[38] Indebtedness is captured through the incidence measure (or, the proportion of households reporting indebtedness) and the debt-asset ratio.

Table 2.44 : The Inverse Monotonicity Between Indebtedness and Asset Holdings – 2002/03

Size class of household asset holdings (Rupees)	Average value of cash loans (Rupees)	Average value of asset holdings (Rupees)	Debt asset ratio (per cent)
1	2	3	4
0-15,000	1,443	6,317	22.8
15,000-30,000	2,510	22,353	11.2
30,000-60,000	3,251	44,595	7.3
60,000-1,00,000	4,323	78,539	5.5
1,00,000-1,50,000	5,279	1,23,453	4.3
1,50,000-2,00,000	5,729	1,73,397	3.3
2,00,000-3,00,000	7,458	2,44,483	3.1
3,00,000-4,50,000	10,201	3,67,066	2.8
4,50,000-8,00,000	16,772	5,92,415	2.8
≥ 8,00,000	36,712	17,52,321	2.1
Aggregate	8,694	3,06,967	2.8

Source: Subramanium and Jayaraj (WIDER Working Paper 116, 2006)

main non-institutional source of finance in both rural and urban areas. The average amount of debt per rural household which was Rs.1,906 in 1991-92 increased to Rs.7,539 in 2002-03, a four-fold increase. The corresponding figures for urban household for the two periods were Rs.3,618 and Rs.11,771, respectively.

A study by CRISIL (April 2007) shows that for five years till March 2006, the affordability index[39] for home buyers in metros and larger cities was around 4.4, indicating that the average home-buyer spent around 4 times the net annual income for purchasing a new residential home. The subsequent increase in property prices and increase in interest rates on new home loan originations, notwithstanding the increase in the salary of the home buyer, suggests that the affordability index has increased. Stress tests of twin shocks of an increase in property prices (by 50 per cent over March 2006) and increase in interest rates on a 20-year loan to 10.5 per cent (from 8.75 per cent), taking into account the cushion of a 20 per cent increase in the annual salary of the home buyer, indicate a rise in the affordability index to 5.5. Given the high level of retail borrowings, primarily by urban households over the past several years, the Panel feels that any downturn in economic activity might quickly impair their repayment schedule and engender increased indebtedness.

2.6 Other Key concerns

This section examines, based on the above analysis, some key concerns confronting the banking and broader financial sector.

2.6.1 Commercial Banks

PSBs dominate the system accounting for 70 per cent of the assets of commercial banks.

[39] Affordability index is defined as the ratio of property price to average net annual income; higher value indicates lower affordability.

Table 2.45 : Distribution of Households Reporting Cash Debt According to Credit Agencies (AIDIS, 1991-92 and AIDIS 2002-03) - Debt to Asset Ratios

(per cent)

	Credit agency	Rural		Urban	
		1991-92	2002-03	1991-92	2002-03
	1	2	3	4	5
I.	Institutional	15.6	13.4	11.8	9.3
	1.1 Government, *etc*	1.7	0.8	2.3	1.0
	1.2 Co-operative society/ bank	6.7	6.9	4.9	3.6
	1.3 Commercial banks, *etc.*	7.5	5.7	3.7	3.2
	1.4 Insurance	0.1	0.1	0.3	0.3
	1.5 Provident fund	0.2	0.1	1.7	0.7
	1.6 Other institutional agencies	0.4	0.5	1.2	1.1
II.	Non-institutional	9.8	15.5	9.4	9.4
	II.1 Landlord	1.1	0.4	0.2	0.1
	II.2 Agriculturalist moneylender	2.3	3.3	0.4	0.2
	II.3 Professional moneylender	3.1	6.9	3.4	4.9
	II.4 Trader	0.7	0.9	0.8	0.5
	II.5 Relatives/ friends	2.3	3.7	3.9	3.6
	II.6 Others, including doctors, *etc*	1.2	1.0	1.6	3.7
III.	Unspecified	1.8	0.0	1.1	0.0
IV.	Total	23.4	26.5	19.3	17.8
V.	Average amount of debt per household (Rs.)	1,906	7,539	3,618	11,771

Source: National Sample Survey Organisation

The importance of this bank group was even greater in 2001, when they accounted for nearly 80 per cent of the commercial banks' assets. The decline in the market share of PSBs since the latter half of the 1990s was primarily due to the growth of private sector banks and the growing presence of foreign banks.

PSBs still maintain their dominance notwithstanding growing competition because of their extensive branch network that permits deposit mobilisation at low cost, increased holding of government debt (although declining in recent times, because of rapid credit expansion), labour cost saving from voluntary retirement programmes (wage cost of public banks declined from 1.85 per cent of assets in 1999-2000 to 1.59 per cent in 2003-04 and have remained low since then);[40] and the gradual improvement in customer service and technology.

2.6.1.(a) Capacity Building

Greater openness and competition, along with the increasing presence of new players, have led to new supervisory challenges. First, there is the challenge of improving the quality of aggregate supervisory information on financial institutions and the transparency and integrity of such information. Second is the challenge of better risk monitoring. This is because, banks in general, and the new private Indian banks and foreign banks in particular, have tended to rely more on market-based funding and have been venturing forth with new and complex products like derivatives. This in turn requires the Reserve Bank to develop and strengthen expertise in monitoring and assessing standard risk management capacities and operational risks, emerging as the standard for bank supervision, particularly under Basel II. The Reserve Bank has therefore been

[40] Even the share of wages in total expense has declined from 19.1 per cent in 1999-2000 to 14.3 per cent in 2007-08.

endeavouring to introduce risk-based supervision (RBS) for commercial banks. This would lead to better allocation of supervisory resources in accordance with the risk profile of the respective institutions and is a refinement/ enhancement over the CAMELS approach of on-site and off-site monitoring.

The effectiveness of RBS hinges on the Reserve Bank's preparedness in critical areas, like instituting an efficient and elaborate off-site surveillance mechanism, effectively exploiting the synergies with on-site inspections, thereby enhancing the quality and reliability of data, assessment of soundness of systems and technology, appropriateness of risk control mechanisms, *etc.* This would, in turn, require supporting human resources in terms of capacity building, both for commercial banks (Annex 2.7: Human Resource Issues in banks) as also within the Reserve Bank. Currently, pilot RBS programmes are running parallel with the CAMELS-based supervision. The Panel feels that the adoption of techniques and methodology of RBS at an early date needs to be actively considered.

In the case of derivative products, it is felt that the on-site examination process should be supplemented by a forensic "follow the evolution of the product" approach. Such "forensic" examination would require training examiners to understand complex products and the risks at each stage of evolution of a derivative product[41].

2.6.1.(b) Bank Consolidation

The pressure on capital structure is expected to trigger a phase of consolidation in the banking industry. The point was raised in both the Narasimham Committee Reports. Both had pointed to the need for a four-tier banking sector structure. This would comprise three to four banks with global presence at the top end of the tier, followed by national banks with country-wide presence and, local and rural banks with niche markets at the lowest two tiers. So far, restructuring has not led to an extensive consolidation process. The number of commercial banks decreased by 20 between 1998-2007, partly as a result of about 17 mergers over 1993-2007, with four such mergers occurring in 2006-07. Two private sector banks were merged in 2007-08. The year also saw the amalgamation of one foreign bank. The consolidation process at present has primarily been confined to domestic mergers, often as a response to localised bank failures.

Though the legal framework for insolvency in banking companies is in substantial compliance with the emerging international standards professed by the World Bank, timely invocation of creditor rights remains an issue.[42] As a result, the bankruptcy process frequently fails to provide a timely exit route. To circumvent the problem, merger of weak banks with stronger ones are resorted to protect depositors' interests.

In the past, mergers were initiated by regulators to protect the interests of depositors of weak banks. In recent years, market-led mergers between private banks have also taken place. It is expected that this process will gain momentum in the coming years. Market-led mergers between PSBs or PSBs and private banks

[41] Reference: Section 2.2.4 (h) (IV) ibid.
[42] Although the Indian legal system provides excellent protection for lenders, the *de facto* protection of investors' rights lags far behind the *de jure* protection (Chakrabarti, S., W.Megginson and P.K.Yadav, 2007).

could be the next logical development as market players consolidate their positions to remain in competition (Annex 2.8 : Bank consolidation).

Consolidation can also take place through strategic alliances / partnerships. Besides helping banks to achieve economies of scale and augment the capital base, it could help market players in other ways also to strengthen their competitiveness. Alternatively, strategic alliances and collaborative approaches could be attempted to reduce transaction costs through outsourcing, leveraging synergies in operations and avoiding problems related to work culture. Rapid expansion in foreign markets without a sufficient knowledge of the local economic conditions could increase the vulnerability of individual banks.

Pressure on bottom lines can prompt banks to seek consolidation in their range of services offered. For instance, some banks may like to shed their non-core business portfolios to others. This could see the emergence of niche players in different functional areas and business segments such as housing, cards, mutual funds, insurance, sharing of their infrastructure including ATM network. Accordingly, the rationalisation of a very large network of branches, which at present has rendered the system cost ineffective and deficient in services would also need to assume priority. While brick-and-mortar branches continue to be relevant in a poorly connected country like India, the real growth driver for cost cutting would be virtual branches, *viz.*, ATMs, internet banking, mobile banking, kiosks *etc.* This will stimulate strategic alliances/ partnerships amongst banks and this phenomenon has already set in as evidenced in the adoption of core-banking solutions in a fully networked environment.

The Panel feels that, notwithstanding the advantages, the scope for consolidation in PSBs needs to be explored with caution, although it might be more appropriate just now for the troubled, smaller banks. In any case, the gains from consolidation and the synergies needed should be clearly quantified by the management and it is important for bank boards to track whether these gains are, in fact, being realised. It would prove useful provided suitable progress could be made on human resources, and more importantly, industrial relations issues. The Panel, therefore, believes that consolidation would prove useful only if certain enabling conditions, such as progress in terms of industrial relations and human resource issues, are adequately addressed.

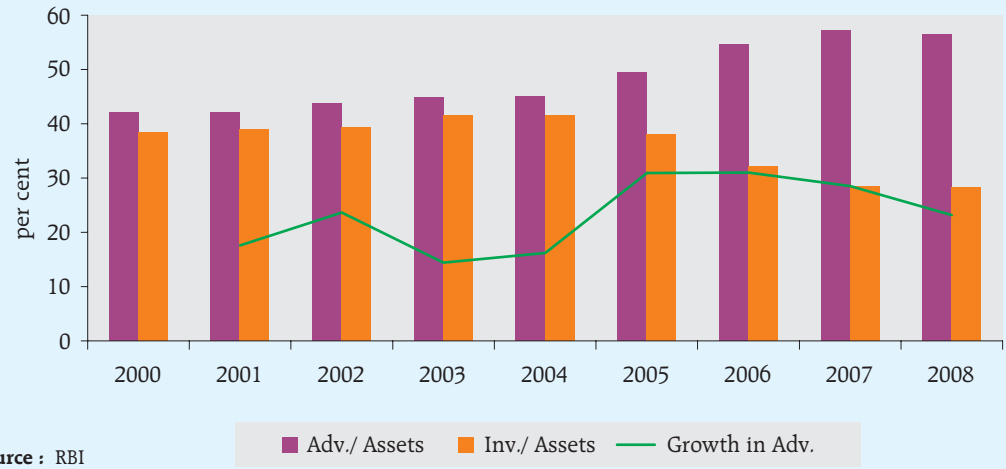
The Panel is also of the view that the time is opportune for old private banks to explore the possibilities of consolidation, more so given that several of them are already listed. The regulators can also play a pro-active role in facilitating consolidation within this segment.

2.6.1. (c) Credit Growth

There was a sharp increase in bank credit from the financial year 2004-05 onwards. The rate of growth in bank credit which touched a low of 15.8 per cent (net of conversion) in 2002-03 accelerated sharply to 31.7 per cent in 2004-05 and 30.8 per cent in 2005-06. Though there has been a decline to 28.5 per cent in 2006-07 and a further deceleration to 23.1 per cent during 2007-08, credit growth still remains high (Chart 2.11). This upturn can be attributed to the following factors:

- Robust macroeconomic performance with GDP growth rates hovering between 7.5 per cent and 9.6 per cent between 2004-05 and 2007-08.
- Rising income levels reflecting a benign economic climate leading to growth in credit demand in the retail sector.
- The removal of restrictions on retail credit and project finance by banks.
- The hardening of sovereign yields from the second half of 2003-04 has exposed the banks to market risks. As a result, banks have been reshuffling their assets

Chart 2.11 : Growth in Advances and Investments of Banks

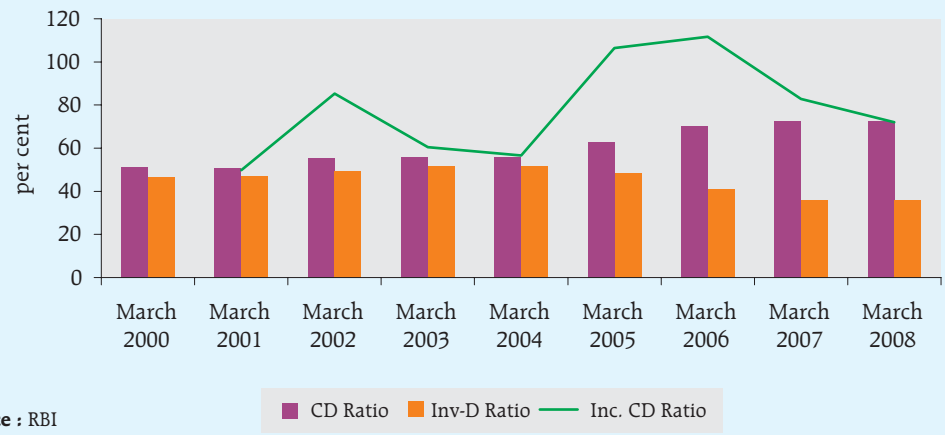


Source : RBI

portfolio by shifting from investments to advances. While the share of gross advances in total assets of commercial banks grew from 49.4 per cent to 56.5 per cent, that of investments declined from 38.0 per cent to 28.2 per cent during the period March' 05 to March' 08.

Growth in credit out-performed the growth in deposits between 2004-05 and 2005-06 resulting in the increase in credit deposit ratio from 55.9 per cent at end March 2004 to 72.5 per cent at end March 2008 (Chart 2.12). The increase was accompanied by a corresponding drop in the investment-deposit

Chart 2.12 : Credit-Deposit and Investment-Deposit Ratios



Source : RBI

ratio, which declined from 51.7 per cent to 36.2 per cent during the same period. This indicates a shift of preference from SLR investments to advances. The incremental credit deposit ratio which increased from 56.5 per cent in 2003-04 to 111.6 per cent in 2005-06 declined to 72.0 per cent in 2007-08.

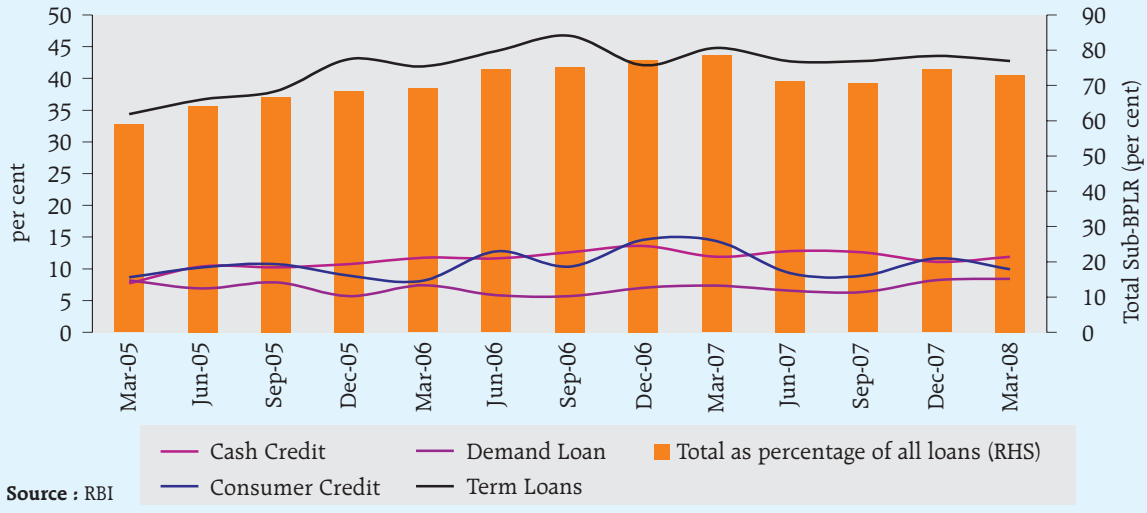
This growth in credit has been widely welcomed. But cross-country data provides graphic evidence of the pitfalls. Firstly, with growing housing loans and real estate exposure and exposure to infrastructure sectors, the maturity profiles of assets of banks are becoming increasingly long-term. Coupled with excessive dependence on borrowings, which are mostly short-term, serious ALM mismatches are a possibility. Increased recourse to borrowed funds could also engender liquidity problems (See Section 2.2.4(h)(IV)).

Post March 2007, deposit growth has significantly outpaced credit growth. This has implications for banks' ability to effectively deploy funds to assets. Also the increasing dependence on bulk deposits has resulted in an escalation in the cost of raising deposits at the margin which could have profitability implications.

The current credit boom, particularly in the retail loans and commercial real estate sectors, has been accompanied by an increase in asset prices. Increased competition has resulted in a high proportion of sub-BPLR[43] loans in total loans which could have jeopardised the appropriate risk pricing of assets.

Sub-BPLR loans by SCBs, which comprised 27.7 per cent of total loans in March 2002 have shown an increasing trend and stood at 76.0 per cent as at end March 2008 (Chart 2.13) and further at 78.6 per cent as at end June 2008. This growth is highly noticeable in consumer credit, followed by term loans. The share of consumer credit in sub-BPLR loans which was 0.4 per cent in March 2002, increased sharply over a period of time to 15.2 per cent of total sub-BPLR loans in March 2008. The share of term loans in total sub-BPLR loans increased from 9.9 per cent in March 2002 to 46.9 per cent in June 2008. The high proportion of sub-BPLR loans has come about because of an increase in liquidity, stiff competition, buoyant corporate performance which lowered credit risk and growth in retail credit (housing). An increasing ratio gives rise to a concern in relation to risk-pricing of assets, which appears to be less than

Chart 2.13 : Sub-BPLR Loans



Source : RBI

[43] Sub-BPLR loans are loans advanced below the Benchmark Prime Lending Rate and should not be confused with subprime loans.

adequate, and could affect banks adversely in the event of an economic downturn.

It is widely recognised that during an upswing, credit evaluation skills are often compromised. Often, the seeds of non-performing loans are sown during periods of economic upturns due to an underestimation of potential risks. The increased share of credit portfolio has also resulted in a decline in the liquidity embedded in the banks' balance sheets. The shift of portfolios away from SLR securities inhibits banks' ability to avail of collateralised facilities as many banks are now operating with marginal SLR securities.

Recognising the inherent risks in rapid credit growth, especially in the retail and housing loans segments, the Reserve Bank has cautioned banks on the need for proper risk assessments and a honing of their risk assessment skills. Risk-weights for retail, real estate and capital market exposures had been enhanced as counter-cyclical measures. Provisions for standard advances on exposures to these sectors had also been increased. These helped to cushion the negative fallout of a cyclical downturn. Very recently, the Reserve Bank has reversed this measure to boost domestic credit aimed at countering the decline in external funding sources of the corporates due to the global financial meltdown.

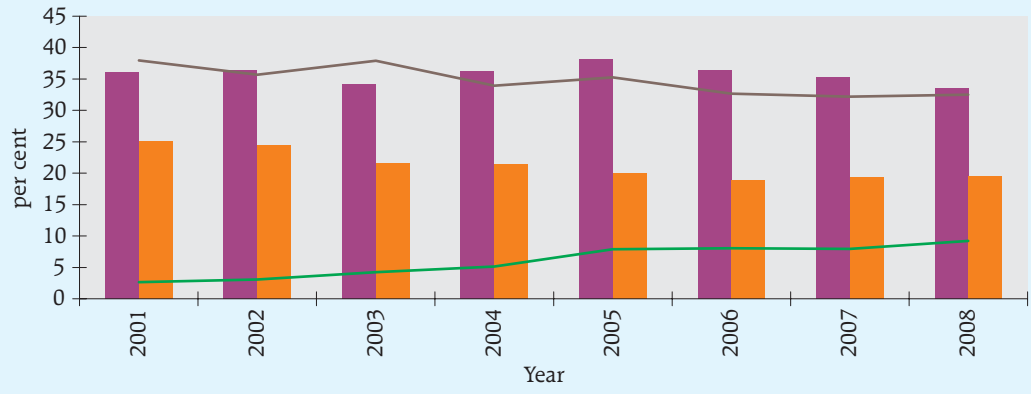
Banks have also been advised to devise and improve their risk management systems suitably tailored to their business philosophies. Besides, banks have built up comfortable capital buffers that can enable them to withstand exigencies in the real estate sector (see the stress tests on credit risk section 2.4.4(f)(II). These need to be tempered by the fact that the Reserve Bank has stipulated limits on the exposure to capital markets. As regards other sensitive sectors, it has directed the bank boards to fix internal limits. Also, the level of consumer credit penetration is low compared to emerging economies and the loan to value ratios in housing is also not perceived to be high (though there is some pressure on LTV ratio in 2008-09).

The development of the credit derivatives market could, to a great extent, be a risk mitigator. At the same time, there is need to tread cautiously in this respect as excessive dependence on the principle of 'originate and distribute' could result in a compromise on loan evaluation and increase systemic risks (Annex 2.9: Credit Portfolio Management). The management of credit portfolio with particular reference to credit risk transfer (CRT) is analysed in Chapter V.

2.6.1.(d) Sectoral Distribution of Credit

Credit growth has been broad-based making banks less vulnerable to credit concentration risk. Although the share of the priority sector in credit allocations has been stable, the flow of credit to agriculture and SSI has declined somewhat (Chart 2.14). This is in line with the widening definition of priority sector which has opened options for banks to fund alternate avenues. Credit flow to medium and large industries has also witnessed a moderate decline due to structural changes in the economy towards the services sector. Also, there has been a tendency on the part of an increasing number of corporates to meet their funding requirements by accessing domestic and overseas capital markets, as also through robust internal accruals. External Commercial

Chart 2.14: Credit Flow to Priority Sector and Major Industries



Source : RBI

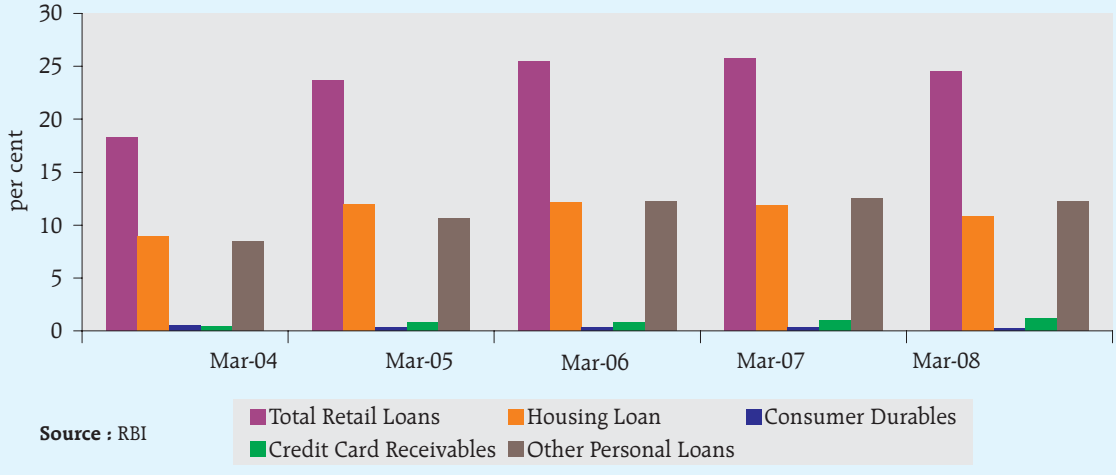
Borrowings (ECBs) by corporates have also increased significantly till 2007-08. The ongoing global financial turmoil has, however, reduced the flow of ECBs very significantly in 2008-09.

The declining trend of priority sector loans in the credit book of banks due to prudential write - offs and compromise settlements of a large number of small accounts in 2001- 2002 was reversed from 2002-03 on the strength of growth in the housing loan portfolio of banks.

Retail loans, which witnessed a growth of around 41 per cent in both 2004-05 and 2005-06, have been one of the prime drivers of the credit growth in recent years even after a moderation of the growth rate to 30 per cent in 2006-07 and further to 17 per cent in 2007-08 (Chart 2.15). Of the components of retail credit, the growth in housing loans which had been 50 per cent in 2004-05 came down to 25 per cent in 2006-07 and further to 12.7 per cent in 2007-08. Retail loans as a percentage of gross advances, however, increased from 18.3 per cent in March 2004 to 24.5 per cent in March 2008.

The buoyancy in the housing market has also increased banks' exposure to real estate at

Chart 2.15: Share of Retail Loans in Total Loans



Source : RBI

19.3 per cent of total loans in 2007-08. However, banks need to be on guard against movements in property prices because cross-country evidence indicates that housing price peaks tend to follow equity price peaks with a lag in the wake of buoyant economic activity. The feedback from property prices to credit growth is strongest in countries with a greater prevalence of variable rate mortgages, indicating the possibility of mutually reinforcing imbalances in the real estate market and the financial sector. These could have implications for financial stability.

Banks' exposure to the capital market remains low and direct equity exposure is small (Table 2.46). While PSBs have negligible exposures, it is only slightly higher for new private sector banks. So the vulnerability on this count appears to be limited. Stress tests of banks' direct exposure to the capital market as at end-March 2007, assuming a drop in the representative index by 26 to 35 per cent[44], reveals limited impact on banks' capital position. In the case of the former, capital adequacy declines to 12.05 per cent (system average of 12.32 per cent).In the case of the latter, the decline is slightly larger at 11.95 per cent. The correlation between direct and indirect (financial guarantees) exposures to the capital market, although significant for the banking sector as a whole, is only prominent in the case of old private sector and foreign banks, suggesting limited systemic concerns. Looking to the sharp decline in representative index since the beginning of 2008, a stress test

Table 2.46 : Banks' Exposure to Sensitive Sectors

(Rs. crore)

Sector/Year	2005-06			2006-07			2007-08		
	CM	RE	Comm.	CM	RE	Comm.	CM	RE	Comm.
1	2	3	4	5	6	7	8	9	10
Commercial Banks	22,303	2,62,053	1,414	35,106	3,72,874	862	62,998	4,46,758	1,238
	(1.5)	(17.3)	(0.09)	(1.8)	(18.9)	(0.04)	(2.5)	(18.0)	(0.1)
Public sector	13,470	1,58,033	1,228	20,621	2,19,785	351	32,719	2,75,134	734
	(1.2)	(14.3)	(0.1)	(1.4)	(15.3)	(0.02)	(1.8)	(15.3)	(0.04)
Old private	1,049	12,086	155	1,708	15,566	501	2,267	18,427	403
	(1.3)	(14.5)	(0.19)	(1.8)	(16.8)	(0.5)	(2.0)	(16.5)	(0.4)
New private	5,282	66,980	..	8,968	1,04,093	..	22,729	16,002	..
	(2.3)	(29.1)		(2.8)	(32.3)	..	(5.6)	(28.6)	..
Foreign	2,502	24,954	32	3,809	33,430	10	5,283	37,195	101
	(2.6)	(25.6)	(0.03)	(3.0)	(26.5)	(0.01)	(3.3)	(23.1)	(0.01)

CM : capital market;
RE : real estate market
Comm : Commodities market
Note : Figures in brackets are per cent to total loans and advances of concerned bank group
Source : RBI.

[44] These represent the largest change in a representative index over a five-year horizon (March 2001 to March 2006)

assuming diminution in value by 80 per cent (a much more adverse stress than that attempted for March 2007) was undertaken as at end-March 2008. The stress test revealed that the impact on capital adequacy was to the tune of one per cent and CRAR decreased from 13.0 before the stress to 12.0 thereafter. The impact on equity price risk on banks' capital therefore does not appear to be significant.

Banks' foreign exchange exposure is limited by position limits, which in most cases limit a bank's open position to 25 per cent of regulatory capital.

2.6.1. (e) Off-balance Sheet Exposures

Banks have expanded heavily into off-balance sheet (OBS) activities over the last few years. As a result, the notional principal amount of OBS exposures has increased from Rs.8,41,882 crore at end March 2002 to Rs.1,49,69,243 crore at end March 2008. The ratio of OBS exposure to total assets increased from 57 per cent at end March 2002 to 363 per cent at end March 2008. The spurt in OBS exposures has been fuelled mainly by derivatives, whose share averaged around 80 per cent. The derivatives portfolio has undergone a transformation, with single currency interest rate swaps comprising roughly 57 per cent (Table 2.47) of the total derivatives portfolio at end-2008 from less than 15 per cent at end-2002.

From the financial stability perspective, the tendency of participants to use derivatives to assume greater leverage coupled with a lack

Table 2.47: OBS Exposure of Commercial Banks

(Amount in Rs. crore)

Particulars	2004-05					2005-06				
	SCBs	PSBs	OPBs	NPBs	FBs	SCBs	PSBs	OPBs	NPBs	FBs
1	2	3	4	5	6	7	8	9	10	11
Currency Options										
Purchased	52,570	3,100	429	13,208	35,834	199,847	20,206	1,101	48,657	129,884
%	2.31	0.18	0.32	4.35	23.17	7.42	1.04	0.74	12.14	64.04
Forward Forex										
Contracts	1,248,717	380,066	22,826	164,016	681,809	1,528,644	413,766	25,924	219,174	869,779
%	54.81	22.54	17.13	53.98	440.93	56.72	21.31	17.33	54.7	428.85
IRS	1,281,727	61,639	21,220	269,279	929,590	2,152,986	154,009	21,277	409,960	1,567,739
%	56.26	3.66	15.93	88.62	601.17	79.89	7.93	14.22	102.32	772.98
LCs and										
Guarantees	230,672	159,672	9,988	34,454	26,559	285,981	195,294	12,200	42,395	36,093
%	10.13	9.47	7.5	11.34	17.18	10.61	10.06	8.15	10.58	17.8
Particulars	**2006-07**					**2007-08**				
	SCBs	**PSBs**	**OPBs**	**NPBs**	**FBs**	**SCBs**	**PSBs**	**OPBs**	**NPBs**	**FBs**
Currency Options										
Purchased	460,104	38,391	9,092	75,491	337,130	769,717	117,195	12,370	99,515	540,637
%	13.89	1.65	5.67	13.93	120.77	18.66	4.06	6.35	14.67	148.05
Forward Forex										
Contracts	2,465,312	485,421	26,598	333,420	1,619,873	4,735,959	888,917	56,931	616,351	3,173,761
%	74.45	20.84	16.58	61.51	580.29	114.84	30.81	29.23	90.85	869.13
IRS (Single										
Currency IRS)	4,159,721	277,972	19,421	653,550	3,208,778	8,515,949	224,262	18,237	1,217,452	7,055,998
%	125.62	11.93	12.1	120.57	1149.48	206.50	7.77	9.36	179.45	1932.27
LCs and Guarantees	392,053	262,731	12,978	63,887	52,456	546,267	359,793	18,554	101,063	66,857
%	11.84	11.28	8.09	11.79	18.79	13.25	12.47	9.53	14.90	18.31

SCBs : Scheduled Commercial Banks
PSBs : Public Sector Banks
OPBs : Old Private Sector Banks
NPBs : New Private Sector banks
FBs : Foreign Banks
% : percentages of total liabilities including capital of the concerned bank group. Forex : Foreign Exchange.
Source : RBI

of prudential accounting guidelines is a major concern. Along with knowledge concentration and reporting issues, the use of appropriate risk mitigation techniques (such as collaterals and netting) to reduce systemic risks and evolving appropriate accounting guidelines is a must now. (Annex 2.11: Off-balance Sheet Activities of Banks). Bank regulators also need to have a much better understanding of off-balance sheet liabilities. There should be disclosure on the probability of such liabilities being likely to crystallise as on-balance sheet items. A centralised netting, collateral custody and clearing system for derivative transactions could mitigate some of these risks.

In view of these concerns, the holding of minimum defined regulatory capital for all OBS exposures, the collection of periodic supervisory data and incorporating transparency and disclosure requirements in banks' balance sheets are some of the major regulatory initiatives undertaken by the Reserve Bank. More recently, comprehensive guidelines have been issued to banks encompassing broad generic principles for undertaking derivative transactions, management of risk and sound corporate governance requirements.

2.6.1. (f) Risk Management

As the system graduates towards a more market-oriented one with emphasis on customer value enhancement, the demands for improved risk management will increase manifold. Even under the impending implementation of Basel II, capital allocation will be based on the risk inherent in the asset. It will also strengthen the regulatory review process and, with the passage of time, the review process will become increasingly sophisticated. Besides regulatory requirements, capital allocation would also be determined by the market forces. External users of financial information will demand better inputs to make investment decisions. There will be an increase in the growth of consulting services such as data providers, risk advisory bureaus and risk reviewers. These reviews will be intended to provide comfort to the bank managements and regulators as to the soundness of internal risk management systems. These have assumed added significance in the context of the recent sub-prime turmoil.

To handle all this, risk management functions will need to be centralised and seamlessly integrated into the business process. Risk-return will be assessed for new business opportunities and incorporated into the designs of the new products. All risks – credit, market and operational - should be combined, reported and managed on an integrated basis. The demand for Risk Adjusted Return on Capital (RaRoC) based performance measures will increase. RaRoC will be used to drive pricing, performance measurement, portfolio management and capital management.

Banks will also have to deal with issues relating to reputational risks as they will need to maintain a high degree of public confidence for raising capital and other resources. Risks to reputation could arise on account of operational lapses, opaqueness in operations, shortcomings in services and the intent to defraud. Systems and internal controls would then be crucial for ensuring that this risk is managed well.

Risk management is also intricately linked to the banks' credit evaluation skills. With the establishment of the best risk management

systems and implementation of prudential norms of accounting and asset classification, the quality of assets in commercial banks ought to improve. At the same time, there should be adequate cover through provisioning for impaired loans. In this context, dynamic provisioning as a pattern of general provisioning has gained currency. The fundamental principle underpinning such provisioning is that provisions are set against loans outstanding in each accounting time period in line with an estimate of long-run expected loss. Pending such a measure, several countries including India have stipulated a minimum requirement for standard loans - a *de facto* general provision - as the rudiment of a forward-looking system (Annex 2.10: Loan loss provisioning).

2.6.1. (g) Corporate Governance

The issue of the governance framework in banks also assumes relevance at the present juncture. Admittedly, a significant amount of progress has been made. Most banks explicitly state their governance policy in their Annual Reports as part of 'Notes on Accounts' in their balance sheets and also provide information on number of board meetings, the functions and workings of the sub-committees of the board, price performance of bank shares (if listed) along with auditors' certification on the procedures and implementation for ensuring compliance. For listed banks, the governance standards are even more stringent, with such banks having to disclose quarterly information on financial parameters to SEBI as a part of listing requirements.

The Second Narasimham Committee (1998) had observed that it is for bank boards to take decisions on corporate strategy and all aspects of business management. However, to the extent that the Government happens to be the sole (or major) shareholder of banks, the boards have necessarily to be responsible to the Government. In the Indian case, with pre-dominant government ownership, it has been an instrument of management, leading to a blurring of distinction between ownership responsibility and managerial duties.

Composition, independence and professionalism of the boards of the PSBs also remain a concern. Also treading into an uncharted territory of somewhat complex financial instruments requires investment in capacity building and drawing of appropriate talent.

The Panel is of the view that any suggestion that Government must exit its monitoring function and leave governance entirely to a duly constituted board is unrealistic in the present environment and that such a move might, perhaps, be undesirable as well. It is unrealistic because Government, as owner, is ultimately responsible for PSBs and, therefore, Government cannot possibly be expected to abdicate its monitoring function. The BR Act prescribes that members of bank boards should possess specialised knowledge or practical experience pertinent to banking activities. Fit and proper criteria for elected directors have also been prescribed by the Banking Companies (Acquisition & Transfer of Undertakings) Act, 1980 (as amended in 2006). The Reserve Bank of India, in November 2007, has extended the fit and proper criteria for directors earlier issued to private sector banks, to the elected directors on boards of nationalised banks and associate banks of State bank of India. The Banking Companies (Acquisition & Transfer of Undertakings) Act, 1980 as well as the State Bank of India (Subsidiary Banks) Act, 1959 have laid emphasis on having varied experience on the bank boards. The Panel however, feels that full professionalism in the Boards may not have been fully achieved.

The Panel believes therefore that the fit and proper guidelines stipulated for bank boards need to be followed in both letter and spirit. Improving flexibility of decision making of bank management, unhindered by government interference also remains a key challenge in this regard.

2.6.1. (h) Prompt Corrective Action and Exit Policy

Increased competition in the banking sector has generated an even greater need to create an effective prompt corrective action mechanism and exit policies. The risk is that, sans such a mechanism, weak banks, whether public or private, could have incentives for high risk/high return lending in an attempt to re-establish their capital, leaving the Government to bear an even larger burden when the risks materialise. A Prompt Correction Action (PCA) framework was put in place for banks exhibiting weaknesses in certain prudential and financial parameters in 2002; however, whether any action on this front has been undertaken against any bank and under what circumstance is not transparent. While well-defined trigger points have been provided for prudential/financial parameters breaching defined thresholds, a suitable time-frame for the delineated action points would need to be categorically documented for effective implementation, which the Panel feels is a crucial ingredient to improve the efficacy of the PCA framework.

2.6.1. (i) Executive Compensation in Banking

One of the important issues arising from the current sub-prime crisis is the role of managerial remuneration in the financial sector in creating systemic risk. Excessive risk-taking in the presence of high leverage as is the case of banks has assumed prominence, a phenomenon highlighted in the wake of the recent sub-prime episode. Managers have incentives to take huge risks because of limited liability constraint, they stand to benefit from high payoffs; if the bets did not work out, shareholders and bondholders bear the loss. Internationally, there is increasing concern about the excessive rewards for bankers. Leading investment bankers are proposing new guidelines on pay and bonuses in the financial sector.[45] Table 2.48 lists the remuneration of top executives in banks across ownership groups in India. It omits stock options whose value cannot be determined from balance sheet information. Keeping in view the possible data limitations, several observations emanating from the data are of note:

First, in 2006-07, the salary of the chief executive of the largest (in terms of assets) new private sector bank exceeded that of the largest state-owned bank by a factor of 44.9:1; in other words, the chief executive in new private sector bank earned total remuneration that was 45 times the state-owned banking counterpart.

Second, the ratio of remuneration of the largest new private sector bank to that of the remuneration of the highest paid old private bank is roughly in the ratio of 9:1

Third, the average remuneration of CEOs in new private sector banks was Rs.1.4 crore, as compared with Rs.0.06 crore in state-owned banks and Rs.0.26 crore in old private sector banks.[46]

In view of such concerns, the Reserve Bank had, in August 2003, instructed new private sector banks that, while devising the total

[45] Ideas floated include bonuses being deferred until the full impact of bankers' strategy is clear, to prevent them benefitting from short-term high-risk bets that later do not bear fruit (*Financial Times*, March 5, 2008).

[46] The average value is based on the sample available in Table 2.48. Owing to missing data on the relevant figures for old private bank, reported figures for one old private bank pertain only to 2006-07.

Table 2.48: Executive Compensation in the Banking Sector

(Amount in Rupees)

Bank category/Name	Year	Designation	Salary	Sitting fees	B & C	Perquisites	Total remuneration (4+5+6+7)
1	2	3	4	5	6	7	8
New private banks							
Bank A	2005-06	MD & CEO	1,83,84,181	0	52,15,200	0	2,35,99,381
	2006-07	MD & CEO	1,28,34,000	0	55,80,000	64,03,635	2,48,17,635
Bank B	2005-06	MD	83,41,508	0	36,05,000	0	1,19,46,508
	2006-07	MD	1,03,83,247	0	51,46,020	0	1,55,29,267
Bank C	2005-06	Exec. VC & MD	1,04,25,000	0	0	0	1,04,25,000
	2006-07	Exec. VC & MD	92,07,200	0	0	0	92,07,200
Bank D	2005-06	CH & MD	71,28,000	1,20,000	0	0	72,48,000
	2006-07	CH & MD	94,80,000	0	0	0	94,80,000
Public sector banks							
Bank A	2005-06	CH	5,72,833	0	0	0	5,72,833
	2006-07	CH	5,52,259	0	0	0	5,52,259
Bank B	2005-06	CH & MD	5,76,876	0	0	0	5,76,876
	2006-07	CH & MD	5,92,431	..	..	..	5,92,431
Bank C	2005-06	CH & MD	5,83,784	0	0	0	5,83,784
	2006-07	CH & MD	6,06,721	0	0	0	6,06,721
Old private banks							
Bank A	2005-06	CH & CEO	19,01,342	0	0	0	19,01,342
	2006-07	CH & CEO	22,44,356	0	0	0	22,44,356
Bank B	2005-06	CH & CEO	..	..	..	..	..
	2006-07	CH & CEO	28,79,000	0	0	0	28,79,000

.. Not reported

Note : CH: Chairman; MD: Managing Director; CEO: Chief Executive Officer; VC: Vice Chairman; B&C: Bonus & commissions

Source : Prowess database (Release 3.0) and annual reports of banks

remuneration package (including all perquisites and bonus) of the CEO and whole-time directors, boards should ensure that the package is 'reasonable' in the light of industry norms.

In March 2007, the Government issued the parameters for payment of performance-linked incentives, beginning from the financial year 2005-06, to the whole-time directors of PSBs, subject to achievement of broad quantitative parameters fixed for performance evaluation matrix based on the statement of intent on goals and qualitative parameters and benchmarks based on various compliance reports during the previous financial year. The basis of evaluation of the quantitative and qualitative parameters would be bank's audited financial data as on March 31 of the relevant year.

The quantitative parameters are based on growth in i) core deposits (ii) advances (iii) agricultural advances (iv) SME advances (v) advances to weaker sections, along with (vi) reduction in gross NPAs (vii) return on average assets (viii) net profit and, (ix) cost income ratio.

The qualitative parameters are leadership and brand building, human resource management and information technology and other initiatives (for CMDs) and customer centricity, adherence to KYC/AML guidelines, prevention/detection of frauds and quality of compliance of inspection and audit reports (for Executive Directors).

The evaluation of performance would be done by a sub-committee of the board of directors called the 'Remuneration Committee'. On

completion of the evaluation by the Committee, the eligible incentive amount would be paid to the whole-time director(s) and a copy of the evaluation report would be put to the board for information and a copy of the same should also be sent to the Ministry of Finance (Department of Financial Services) for information.

The Panel is of the view that there is a need to closely examine this issue of managerial compensation in the Indian banking sector. The remuneration/incentive structure of the PSBs should be commensurate with the responsibility that the job entails and more aligned to market trends. As long as pay is constrained relative to private sector compensation, PSBs may lose valuable staff with entrepreneurial skills to the higher paying private financial institutions.

At the same time, there is also a need to ensure that the incentives for top management and key executives are linked to their performance over a longer-term economic cycle and both cash and non-cash (e.g., ESOPs) payments need to be monitored. This is important in the context of the recent sub-prime turmoil, given that some top executives are believed to have resorted to excessive risk-taking encouraged by rewards for their shorter-term performance. In case of banks where incentives for risk-taking are high, it may be appropriate to mandate a higher level of regulatory capital.

2.6.1. (j) Assessment

In-spite of the overall systemic stability, certain vulnerabilities remain in the commercial banking system. First, there is a need to further improve the capital cushion in terms of tier-I capital, in order to build up a capital cushion against market, operational and other non-measured risks. Second, notwithstanding improvements in credit quality, the absolute quantum of delinquent loans at Rs.55,844 crore at end March 2008 remains high though the 'standard asset' category across all banks works out to 97.6 per cent of total loans at end March 2008. Third, most emerging markets with high quantum of sticky assets also have high 'coverage' (*i.e.*, provisions/NPA). Despite the improvements in 'coverage' by Indian banks over the last few years emanating largely from the ploughing back of trading income in a low interest environment, these remain low compared to international standards.

These vulnerabilities need to be tempered by three positives: first, loan classification norms in India are presently on par with international best practices, so that the decline in NPAs has occurred despite the switchover to more stringent norms. Second, the difference between gross and net NPAs has gradually narrowed, reflecting the improved loan loss provisions by the banking sector. It also seems that the decline in gross NPAs could have been driven by increased write-offs and recoveries. Third, profitability of the banking sector has improved in recent years, with return on asset trending at around 1 per cent, a figure comparable to international levels.

However, the sustenance of high profitability levels, much of which was the result of high trading incomes in a soft interest regime, in a changed environment when interest rates have firmed up remains an open question. The

Table 2.49: Income Diversity of Bank Groups					
End-March	**All Banks**	**Public Sector Banks**	**Old Private Banks**	**New Private Banks**	**Foreign Banks**
1	2	3	4	5	6
2004-05	0.680	0.633	0.516	0.895	0.857
2005-06	0.654	0.575	0.502	0.938	0.844
2006-07	0.590	0.487	0.499	0.845	0.794
2007-08	0.753	0.660	0.620	0.982	0.859

Source: RBI

significant improvements in non-interest income notwithstanding, its share in total income for PSBs is around 20 per cent, compared with about 25 per cent for foreign banks. This is consistent with the income diversity numbers across bank groups, which shows that public and old private sector banks tend to be the least income-diversified[47] (Table 2.49).

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 presently stands at 15 per cent and that for group borrowers at 40 per cent; the latter being extendible by an additional 10 per cent in case of financing infrastructure projects (Table 2.50).

In assessing the risks to stability, it must be mentioned that the Indian banking system is almost unique among banking systems in not having had any major crisis consequent to deregulation. It is plausible that public ownership of banks and pre-emptive recapitalisation of these at the start of deregulation have contributed to this impressive record. In order to maintain the record in the face of growing complexities, the levels of regulation and supervision will need to be raised to a higher level in order to ensure that the system remains free from crisis.

Table 2.50: Cross-Country Limits for Loan Exposure to Single Borrower	
Country	**Single borrower (per cent of capital)**
1	2
Chile	5
China, Colombia, Mexico	10
Argentina, India, Israel, Korea, United States (a)	15
Brazil, Hong Kong, Hungary, Japan, Malaysia, Philippines, Poland, Russia, Singapore	25
Australia	30

Note : 10-25 per cent for state-chartered banks
Source: Hawkins and Turner (IMF, 1999) and Morris (IMF, 2001)

[47] The diversity of the income streams for a bank, provides comfort as to whether a bank is able to maintain its profitability if one of its revenue streams were to become insignificant and is calculated as:
1- |(net interest income – other operating income)/total operating income|,
where, net interest income is interest income less interest expense and other operating income includes fee income, commission income and trading income. Income diversity ranges between zero and one, higher values indicative of greater diversification.

2.6.2 Urban Co-operative Banks

Urban Co-operative Banks (UCBs) occupy an important place in the financial system providing need based banking services, essentially to the middle and lower middle classes and marginalised sections of the society. UCBs are regulated and supervised by State Registrars of Co-operative Societies, Central Registrar of Co-operative Societies in case of multi-state co-operative banks and by the Reserve Bank. The Registrars of Co-operative Societies of the States exercise powers under the respective Co-operative Societies Act of the States in regard to incorporation, registration, management, amalgamation, reconstruction or liquidation. In case of the urban co-operative banks having multi-state presence, the Central Registrar of Co-operative Societies (CRCS) exercises such powers. The banking related functions, such as issue of license to start new banks / branches, matters relating to interest rates, loan policies, investments, prudential exposure norms *etc.,* are regulated and supervised by the Reserve Bank under the provisions of the *BR Act*, 1949 (AACS)[48]. Various committees in the past, which went into working of the UCBs, have found that the multiplicity of command centres and the absence of clear-cut demarcation between the functions of State Governments and the Reserve Bank have been a vexatious problem of urban co-operative banking sector.

In order to address the problem of dual control, the Vision Document for UCBs, released in March 2005, proposed signing of Memorandum of Understanding (MoU) between the Reserve Bank and respective State Governments for establishing a consultative approach to supervision and regulation of the banks by establishing of a Task Force for Urban Co-operative Banks (TAFCUBs) comprising representatives of State Government, Federation of UCBs and the Reserve Bank. As indicated earlier[49], till date MoUs have been signed with 24 states and the Central Government in respect of multi state UCBs, thereby bringing about 98.7 per cent of banks and 99.3 per cent of deposits of the sector under the MoU arrangement. The TAFCUBs constituted in MoU states identify the potentially viable and unviable UCBs in the respective states and suggest measures for revival of the former and non - disruptive exit of the latter either through merger/ amalgamation with stronger banks, conversion into societies or by liquidation as a last resort. As per the terms of the MoU the Reserve Bank commits to facilitate human resources development and information technology initiatives in UCBs. The State Government undertakes to introduce reforms relating to audit of UCBs.

Many of the problems faced by UCBs have also been due to governance issues and related lending activities. Since board members of UCBs are elected by borrowers, this has the potential of influencing the boards to take decisions that may not always be in the interest of the depositors who constitute the most important stakeholders of a bank. While the role of directors has been sought to be delineated by the Reserve Bank, the power of taking action against the directors or the board is vested with

[48] AACS: As Applicable to Co-operative Societies
[49] Ref Section 2.4.1 ibid

the State/Central Government. In case of gross violation of the Reserve Bank guidelines/ directives where complicity of a director or of the board is noticed, the Reserve Bank has to approach the Registrar of Co-operative societies of the concerned state for removal of director / supersession of board. While the MoU arrangement forms a basis for greater co-ordination, the Panel thinks that it would be desirable to bring aspects related to management of the UCBs within the ambit of BR Act and limiting the influence of the Registrar of Co-operative Societies in this respect. This could create an environment for enhancing professionalism in the UCB management.

The prudential norms stipulated for the UCBs are mostly Basel-I compliant. However, the Reserve Bank recognises the varied nature of UCBs and has devised a two-tier regulatory framework wherein some relaxation and deferment of prudential norms have been allowed in respect of select categories of UCBs considering their difficulties in adhering to the norms. An attempt is made to phase out weaker UCBs through a process of merger/amalgamation and restructuring of weak UCBs. However, the process of merger/amalgamation is time consuming as in much as the involvement of both the Reserve Bank (for issuance of no-objection certificate) and Registrar of Co-operative Societies (for issuance of the order of amalgamation) is required. The Panel feels that procedural simplification by enhancement of the power of the regulator may speed up the process.

UCBs are saddled with high levels of gross NPAs. Other than the inherent difficulties of credit appraisal, cumbersome procedure of writing-off of NPAs, *etc.,* it is also related to the propensity of UCBs to pursue borrower-oriented policies as generally, the debtors are shareholders of the banks and have a say in their governance. This leads to a distortion as UCBs solicit deposits from non-members as well, while their policies are not always in congruence with the interests of depositors. As such, the Panel feels that increasing the involvement of depositors in the management of UCBs by encouraging membership for depositors would go a long way in strengthening governance of UCBs.

2.6.3 Rural Financial Institutions

The inadequate performance of the sector can be traced to several reasons.

First, with volatile cash flows, there is often uncertainty about loan repayment. They are also exposed to systemic risk – such as crop failures or a decline in commodity prices – and therefore, face difficulties in servicing loans.

Second, such problems are exacerbated by the lack of reliable information on past credit histories of borrowers. Additionally, with limited collateral backing and paucity of proper titles to their assets, the uncertainty regarding repayment is further compounded.

Third, the small loan sizes, high frequency of transactions, borrower heterogeneity, rising transactions costs, further acts as a deterrent to rural lending.

Fourth, the legal and regulatory environment is less creditor-friendly, making contract design, its renegotiation and enforcement weak, thereby making it difficult for financiers to provide borrowers with the right incentives for repayment.

Fifth, the cost of funds for rural co-operatives is very high, which squeezes their financial margins. Illustratively, the costs of funds[50] for rural co-operatives at end-2005 ranged from 5.2 to 9.6 per cent, whereas the same for commercial banks during the same period was 4.8 per cent and even lower for RRBs (Table 2.51).

[50] Cost of funds= Interest expended/(Deposits+ Borrowings), expressed in percentage terms
Return on Funds = Interest income/(loans + investments), expressed in percentage terms

Table 2.51 : Deposits of Rural Financial Institutions - 2007

Category	Deposits + Borrowings	Cost of Funds	Loans+ investments	Return on Funds
1	2	3	4	5
StCBs	82.6	5.2	83.4	7.0
DCCBs	78.3	5.4	81.8	8.1
SCARDBs	71.0	7.4	84.5	8.8
PCARDBs	60.1	9.6	59.4	14.9
RRBs	85.8	4.2	87.9	7.9
Commercial banks	85.0	4.8	84.7	7.9

Note : Deposits + Borrowings and Loans + Investments are as percentages to total assets of the concerned institution
Source: Computed from RBI data

To top it all, the overarching presence of the Government complicates the risk-return signals and creates inefficiencies in the delivery of rural financial services: RRBs are majority government owned, in case of rural co-operatives, the State Governments, through the Registrar of Rural Co-operatives, have considerable powers and can supersede elected boards. As at end March 2007, 46.4 per cent of the elected boards of rural co-operatives were under supersession. This is compounded by weaknesses in the regulatory architecture. While the Reserve Bank is the overall regulator of the rural finance sector, supervision of RRBs and rural co-operatives is delegated to NABARD. State Governments, through the Registrar of Co-operatives, also play a role in the regulatory process. The net effect of this process is cross-directives, inadequate levels of control by the central bank in respect of banking and consequent weakening of the overall quality of regulation of co-operative banks.

The combined effect of government intervention, weak asset quality, and high cost of funds has led to a weakening of the balance sheets of these institutions. By virtue of the MoUs entered into by the State Governments with NABARD under the package recommended by the Task Force on Revival of Co-operative Credit Institutions which was headed by Dr.A.Vaidyanathan, the issues of dual control and good governance as also government interference are being addressed. Carrying out necessary legislative amendments by the State Governments is one of the pre-requisites for getting financial assistance under the package.

The responsibility for regulation and supervision of the State Co-operative Bank (SCBs) and District Central Co-operative Banks (DCCBs) and the Regional Rural Banks (RRBs) is divided between the Reserve Bank of India (RBI) and National Bank for Agricultural and Rural Development (NABARD). While the Reserve Bank has the regulatory responsibilities, NABARD is entrusted with supervisory responsibilities. So is the case of RRBs. Furthermore, co-operation being a state subject, the aspects relating to registration, audit liquidation, election and constitution of the board of directors, its dismissal, registration of

bye-laws and other management aspects regarding co-operative institutions are in the realm of the State Governments. Therefore, the State Government is also involved in the regulation and supervision of co-operative societies. The division of regulatory responsibilities is that the banking regulation is in the ambit of the Reserve Bank and the regulation relating to the provisions of the State Act is with the State Government. In practice, however, there are considerable overlaps in regulatory roles which lead to conflicts.

The Vaidyanathan Committee has suggested some changes in the laws to resolve these issues. Based on the recommendations of the Committee, the Government has approved a revival package which includes providing financial assistance, subject to introduction of legal and institutional reforms and improvement of quality of management. Until November 2008, 25 states had agreed to participate in the package.

In the case of RRBs, there are four institutions involved. The Reserve Bank is the regulator, NABARD is the supervisor, the sponsor bank is providing financial and technical assistance and the Government is in the picture as per the provisions of the RRB Act. The issues such as establishment, constitution of the board, amalgamation, closure, *etc.*, are in the realm of the Government. Given the poor financial health of the RRBs it has been decided to restructure the sector through amalgamation and recapitalisation.

While most prudential norms related to asset quality (IRAC norms) are applicable to the rural financial institutions, capital adequacy (CRAR) norms have not been made applicable to them as yet. The co-operatives could graduate and further accomplish adoption of certain Basel principles through on-going reform process particularly in light of Vaidyanathan Committee recommendations where 7 per cent capital adequacy norm is envisaged. Similarly, the amalgamation of RRBs could hasten the process of application of Basel principles as there has been a significant boost in IT initiatives by banks.

The segregation of regulatory and supervisory roles insofar as StCB/DCCB and RRB are concerned, has raised some important issues. The Agricultural Credit Review Committee (ACRC) has commented that the powers of enforcement of inspection findings by NABARD are limited. These limitations are that NABARD has no powers to grant or withdraw licenses; and any restriction on withdrawal of refinance by NABARD is likely to weaken the institutions rather than improving them. Furthermore, the control is divided among the Reserve Bank /NABARD/State Governments. Thus, NABARD has to depend on its own persuasiveness for ensuring its inspection recommendations which contain development aspects also. In extreme cases, it has to seek action through interventions by the Reserve Bank or State Government which delays action and reduces the efficacy of supervisory process. The action that the regulator can take, in view of the duality of control, is also constrained. While the regulator can issue directions to the bank relating to the banking business, it cannot take action against the management. For bringing about improvement in the system, these institutions will have to be brought completely under the BR Act, including Section 10 (management), 30 (audit), Part III (winding up) *etc.*, and limiting the powers presently exercised by the Registrars of Co-operative Societies.

2.6.4 Non-Banking Finance Companies

Given that NBFCs fill an important void in India's financial space, factors impeding their growth and viability need to be immediately addressed. An important inhibiting factor for NBFCs relates to their funding sources. Barring deposit-taking, which only some NBFCs engage in, banks are a major source of funding for NBFCs, either directly or indirectly. Besides providing loans, banks also are major investors

in bonds issued by NBFCs. This results in extremely high dependence of NBFCs on banks, which raises systemic risk in the financial system.

In response to the perceived increase in risk, prudential norms have been significantly tightened for bank lending to NBFCs in terms of bank exposure limits, higher provisioning requirement and higher risk weights regardless of the credit rating of the borrowing NBFC. These measures have reduced NBFCs' access to bank funds and also increased their cost of funds. However, the root cause of the problem lies in the absence of alternative avenues for NBFCs to mobilise funds. The appropriate response should focus on diversifying the funding sources for NBFCs. The Panel therefore considers it urgent to develop an active corporate bond market. This would help NBFCs to continue to grow, albeit with less dependence on banks and such growth would have fewer repercussions on systemic risk. On the other hand, NBFCs would need to improve their corporate governance to attract funds from the market.

Over the past few years, the market share of NBFCs in most retail finance segments, especially car and commercial vehicle financing, has been declining. As price-setters in a rate-sensitive market, banks have an edge over NBFCs, resulting from their access to low-cost funds. In a rising interest rate environment, NBFCs have not been able to fully pass on the increases in cost of borrowings to end users, except in markets where banks have done it, resulting in severe profitability pressures for this sector. In response, NBFCs have diversified their portfolios and ventured into newer and riskier assets classes, such as small-ticket personal loans. Although banks dominate the personal finance market, their presence in the small-ticket segment (loans less than Rs.50,000 or roughly USD 1,250)[51] is limited, given the high credit costs and operating expense that characterise this segment. This has resulted in a mismatch between the demand for loans and supply of credit from organised financiers, enabling loan companies to garner significantly higher rates of return. Others (investment companies) have adopted a capital market based business model, with a presence in the loan – against - shares and public issue financing businesses on account of higher yields in these segments.

The Panel is of the view that there is a need to devise an appropriate framework for regulating this diverse set of companies with different business models.

For the purpose of regulation NBFCs are segregated in three distinct categories. These are deposit taking NBFCs (NBFC-D), non-deposit taking NBFCs (NBFC-ND) and Residuary Non-Banking Companies (RNBC). NBFCs in India are not permitted to accept demand deposits and are not part of the payment and settlement system. While the NBFC-D segment and the RNBCs have been monitored closely, NBFC-NDs were till recently subject to minimal regulation.

The Reserve Bank's powers to regulate NBFCs are drawn from Section 45N of the RBI Act. Though, since 1997 the Reserve Bank has been formulating policies in tune with the

[51] At USD1= Rs.40

changing environment in order to strengthen the regulatory and supervisory framework with the objective of making the sector healthy and vibrant, there are some significant gaps in the power of the regulator to regulate and supervise NBFCs. The Reserve Bank has no say in the removal of management nor does it have any power in the appointment of auditors. The issuance of appropriate guidelines in this regard to empower the Reserve Bank regarding appointment, rejection and rescinding of auditors could be explored, in consultation with ICAI. The major acquisitions of the NBFCs cannot be reviewed by the supervisor.

The Panel believes that the Reserve Bank may explore the option of obtaining information on names and holdings of significant shareholders of NBFCs who exert controlling influence.

The current benign economic scenario has evinced considerable interest of the foreign non-banking companies in the Indian financial sector. No direct arrangements have so far been worked out with other regulators outside the country for sharing regulatory information. There is a need to explore the possibility of formalisation of relationship with foreign regulators that encompasses a transparent method of information sharing. Also, unlike in case of banks, the Reserve Bank has no control over the branch expansion by NBFCs.

The regulatory framework for banks and NBFCs needs to be appropriately defined. Illustratively, in the case of banks there are limited restrictions on their liability side as they can raise low-cost deposits. On the asset side, there are restrictions on their lending and investments. Therefore, if a level playing field is sought to be ensured between banks and NBFCs by restricting NBFCs on their asset side akin to those for banks, the Panel feels that a similar freedom needs to be provided to them on their liability side as well.

Bank exposure to risks emanating from lending to non-banks and through them to the capital market needs to be reviewed. To address this potential problem, restrictions on the range of activities that NBFCs can undertake might not be the appropriate remedy.

The Panel believes that it is important to create a regulatory structure that prevents regulatory arbitrage.

2.7 Concluding Remarks

The financial sector is in the throes of very significant changes. Rapid growth is opening up unprecedented opportunities. But at the same time, it also contains the potential for future disturbances. Notwithstanding observed successes, much remains to be done for the sector if it has to support the rapid economic growth, maintain system stability and improve shareholder value. Enabling policy that imparts greater flexibility in decision-making of state-owned banks and supports their globalisation efforts is essential. A constant re-balancing of growth and stability, without jeopardising equity concerns, remains an on-going challenge.

Annex 2.1: Projected Capital Requirements of Nationalised Banks

The exercise attempts to assess the capital requirements of 20 nationalised banks, including IDBI Ltd., over the period beginning April 1, 2007 through March 31, 2013. This covers not only the Basel II requirements, but also their future business growth. The assumptions underlying the analysis are as under:

1) The banks are expected to maintain a capital adequacy ratio of 12 per cent (for both Pillar I and Pillar II) and a tier I capital ratio of at least 8 per cent,
2) Risk Weighted Assets (RWA) of the banks are estimated to grow at 20, 25 and 30 per cent per annum (this takes into account the effect of trade cycles on credit off-take).
3) Likely benefit of reduction in RWA for credit risk, if any, under Basel II is ignored.
4) RWAs for market risk are assumed at 10 per cent of the RWA for credit risk.
5) RWAs for operational risk are assumed at 12 per cent of the RWA for credit risk.
6) The banks retain each year profits to the extent of 15 per cent of their tier I capital (excluding Innovative Perpetual Debt Instruments [IPDI]).
7) The banks raise tier II capital up to the permissible level, during the above period.

Table: Year-wise Projected Government Infusion of Capital

(Amount in Rs. crore)

(i) Scenario: RWAs grow by 20 per cent

Bank name*	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total
1	2	3	4	5	6	7	8
Bank No 1	0	0	0	0	0	0	0
Bank No 2	0	0	0	0	0	0	0
Bank No 3	0	0	0	0	0	0	0
Bank No 4	0	0	0	0	0	0	0
Bank No 5	0	0	0	0	0	79	79
Bank No 6	0	0	0	0	0	0	0
Bank No 7	0	0	0	0	0	254	254
Bank No 8	0	0	0	0	0	0	0
Bank No 9	19	65	8	61	79	102	334
Bank No 10	0	0	0	0	0	0	0
Bank No 11	0	0	0	0	0	0	0
Bank No 12	0	0	0	0	0	0	0
Bank No 13	0	0	0	0	0	0	0
Bank No 14	0	0	0	0	0	0	0
Bank No 15	0	0	0	0	16	276	292
Bank No 16	188	0	5	201	254	320	968
Bank No 17	0	0	0	0	0	93	93
Bank No 18	0	0	0	0	0	0	0
Bank No 19	0	0	0	0	7	107	114
Bank No 20	0	0	0	0	0	0	0
Total	**207**	**65**	**12**	**262**	**356**	**1231**	**2134**
Banks needing funds (no.)	**2**	**1**	**2**	**2**	**4**	**7**	

8) The banks raise the IPDI up to eligible level *i.e.*, up to 15 per cent of tier I capital as at the end of the previous year during the above period.

9) The banks raise the preference shares up to eligible level *i.e.*, up to 25 per cent of tier I capital as at the end of the previous year during the above period.

10) The banks' share issue price has been taken at the average of low and high prices between June 28, 2006 and June 27, 2007.

(ii) Scenario: RWAs grow by 25 per cent

Bank name*	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total
1	2	3	4	5	6	7	8
Bank No 1	0	0	0	0	340	483	823
Bank No 2	0	0	0	0	0	0	0
Bank No 3	0	0	0	0	95	873	968
Bank No 4	0	0	0	0	0	862	862
Bank No 5	0	0	0	138	266	353	757
Bank No 6	0	0	0	0	64	1362	1426
Bank No 7	0	0	24	399	537	715	1674
Bank No 8	0	0	0	0	0	0	0
Bank No 9	56	114	66	143	192	254	824
Bank No 10	0	0	0	0	0	0	0
Bank No 11	0	0	0	0	437	649	1086
Bank No 12	0	0	0	0	0	233	233
Bank No 13	0	0	0	0	0	0	0
Bank No 14	0	0	0	0	0	367	367
Bank No 15	0	0	49	396	532	708	1686
Bank No 16	288	0	256	403	530	692	2169
Bank No 17	0	0	69	419	579	787	1854
Bank No 18	0	0	0	0	0	0	0
Bank No 19	0	8	69	176	242	327	822
Bank No 20	0	0	0	0	0	770	770
Total	**343**	**122**	**531**	**2076**	**3814**	**9435**	**16321**
Banks needing funds (no.)	**2**	**2**	**6**	**7**	**11**	**15**	

(iii) Scenario: RWAs grow by 30 per cent

Bank name*	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total
1	2	3	4	5	6	7	8
Bank No 1	0	0	129	492	702	983	2306
Bank No 2	0	0	0	0	402	615	1017
Bank No 3	0	0	0	728	1318	1867	3913
Bank No 4	0	0	0	51	1612	2212	3875
Bank No 5	0	0	156	339	467	637	1598
Bank No 6	0	0	0	629	1888	2612	5130
Bank No 7	0	105	373	691	956	1309	3434
Bank No 8	0	0	0	0	0	364	364
Bank No 9	92	166	133	244	336	459	1431
Bank No 10	0	0	0	0	0	0	0
Bank No 11	0	0	75	645	906	1255	2881
Bank No 12	0	0	0	213	714	1026	1952
Bank No 13	0	0	0	0	14	250	264
Bank No 14	0	0	0	120	1653	2348	4121
Bank No 15	0	1	488	683	944	1291	3407
Bank No 16	387	65	475	651	885	1194	3657
Bank No 17	0	235	397	782	1099	1524	4037
Bank No 18	0	0	0	0	154	562	716
Bank No 19	0	137	166	322	451	623	1700
Bank No 20	0	0	0	620	1291	1839	3750
Total	**480**	**708**	**2394**	**7211**	**15791**	**22969**	**49552**
Banks needing funds (no.)	**2**	**6**	**9**	**15**	**18**	**19**	

Note : 1. In all the three scenarios above, Bank 1 ,2, 3…etc refer to the same bank.
2. Total after rounding off

Computed from RBI data

Annex 2.2: Credit Risk Stress Test - Scenarios and Results

(a) Commercial Banks

To ascertain the resilience of banks, stress tests of credit portfolio by increasing both NPA levels (for entire portfolio as well as specific sector) and provisioning requirement were undertaken and the resultant estimates were related to bank capital. The analysis was carried out both at the aggregate level as well as at the individual bank level based on supervisory data as at end March 2008 under three scenarios. Along with increased provisioning norms for standard, sub-standard and doubtful assets, the first scenario assumes a 25 per cent increase and 50 per cent increase in NPAs. The shock imparted in the second scenario amounts to the maximum asset slippage experienced by banks since 2001. The third scenario assumes a 50 per cent increase in retail NPAs. The findings indicated that the impact of credit risk on banks' capital position was relatively muted. Under the worst-case scanario (scenario II), the overall capital adequacy of the banking sector declined to 11.6 per cent (10.9 per cent as at end-March 2007). CRAR of 15 banks accounting for roughly 14.7 per cent of commercial banking sector assets would be reduced below the regulatory minimum as against 14 banks accounting for about 10.2 per cent as at end March 2007 (Table 1: Stress Tests of Credit Risk - Scenarios and Results). The details of the assumptions under various scenarios are as under:

Scenario I:

Under this scenario, NPAs were subjected to increase of 25 per cent and then 50 per cent. The increase in NPAs was distributed across sub-standard, doubtful and loss category in the existing proportion. An additional provisioning requirement was applied to the altered composition of the credit portfolio. The provisioning requirements were taken to be 1 per cent, 25 per cent and 100 per cent on standard, sub-standard and doubtful/loss assets, respectively.

Scenario II:

Standard NPA ratios often do not reveal fresh slippages in loan assets as they are computed net of recoveries, write-offs and NPAs' upgradation to standard category through restructuring or otherwise. Credit quality generally tends to deteriorate during economic downturn as debtors begin to experience cash flow problems which in turn affect smooth servicing of debts leading to a possible deterioration in asset quality. In order to simulate the effect of an economic slowdown on the banks advances portfolio, the maximum asset slippage experienced by banks since 2001 was applied to the stock of gross loans to arrive at gross NPAs. The NPAs so generated were distributed among sub-standard, doubtful and loss assets

in the existing proportion. The additional provisioning requirements stipulated in scenario I were then applied to the portfolio of standard and non-performing loans.

Scenario III:

This scenario assumes differential NPAs in the retail segments. Specifically, this category of loan was subjected to a shock in the form of an increase in impairment by 50 per cent. The increase in NPAs thereof was distributed among sub-standard, doubtful and loss categories in the existing proportion. The additional provisioning requirements stipulated in scenario I were then applied to the portfolio of standard and non-performing loans.

Stress Tests of Credit Risk – Scenarios and Results

Bank Group	Existing		Scenario I				Scenario II		Scenario III	
			NPA increase by 25%		NPA increase by 50%					
	CRAR	Banks	CRAR	Banks	CRAR	Banks	CRAR	Banks	CRAR	Outlier Banks
1	2	3	4	5	6	7	8	9	10	11
All Banks	13.0	0	12.3	5	12.1	5	11.6	15	12.6	2
	(12.3)	(1)	(11.4)	(6)	(11.1)	(8)	(10.9)	(14)	(11.7)	(3)
Nationalised	12.1	0	11.4	2	11.1	2	10.4	6	11.6	1
	(12.4)	(0)	(11.4)	(1)	(11.0)	(1)	(10.9)	(3)	(11.8)	(0)
SBI Group	13.2	0	12.1	0	10.8	0	11.7	2	12.4	0
	(12.3)	(0)	(11.1)	(0)	(10.7)	(0)	(10.7)	(2)	(11.4)	(0)
NPB	14.4	0	14.1	0	13.9	0	13.8	2	14.3	0
	(12.0)	(0)	(11.6)	(0)	(11.5)	(1)	(11.0)	(3)	(11.8)	(0)
OPB	14.1	0	13.2	2	12.9	2	12.1	4	13.5	1
	(12.1)	(1)	(10.8)	(4)	(10.3)	(5)	(10.2)	(5)	(11.3)	(3)
FB	13.1	0	12.9	1	12.8	1	12.2	1	13.0	0
	(12.4)	(0)	(12.1)	(1)	(12.0)	(1)	(11.6)	(1)	(12.2)	(0)
Share #		0.0		5.3		5.3		14.7		2.1
		(0.04)		(3.2)		(3.8)		(10.2)		(0.3)

Note : 1. Position as at end March 2008.
2. Figures in parenthesis indicate the position as at end March 2007.
3. The impact on CRAR has been arrived at without reckoning the PBT of banks.
4. Under Scenario-II, asset slippage of one outlier bank is replaced with the system average.

@: Number of affected banks.

#: Assets of affected banks as percent to commercial banking system assets.

Results: Under Scenario I, if NPAs were increased by 25 per cent, the CRAR at the system level reduced to 12.3 per cent in March 2008 (as against 11.4 per cent as at end March 2007) and if NPAs were increased by 50 per cent, the CRAR reduced to 12.1 per cent (as against 11.1 per cent as at end March 2007). When NPAs were subjected to 50 percent increase in place of 25 percent increase, the number of affected banks whose CRAR went below the stipulated minimum remained the same at 5 (as against the increase to 8 from 6 as at end March 2007).

Under Scenario II (the most stringent scenario), system-level CRAR would decline to 11.6 per cent (as against 10.9 per cent as at end March 2007) and as many as 15 banks (as against 14 banks as at end March 2007) accounting for about 14.7 per cent (10.2 per cent at end March 2007) of commercial banking assets would not be able to meet the stipulated minimum.

Scenario III is the least stringent and proportion of the assets of the affected banks to the total commercial banking assets was 2.1 per cent at end March 2008.

(b) Urban Co-operative Banks

A stress test on 52 scheduled UCBs accounting for 43 per cent of the total assets of the sector was carried out for March 2007 by increasing the provisioning requirement and subjecting the credit portfolio to a shock of 25 and 50 per cent and also increase in non performing assets.

The following scenario was considered: -

1 per cent provisions for standard assets;

25 per cent provisioning for sub-standard assets

100 per cent for provisioning doubtful and loss assets

25/50 per cent increase in Non-Performing Assets

Thereafter, capital (tier I & II) was recomputed by subtracting the new provisions from the original capital (tier I & II) and adding the actual provisions already made. The CRAR was recompiled with reference to recomputed capital and original Risk Weighted Assets (RWAs).

CRAR (per cent)	Before stress		After stress	
	25%	50%	25%	50%
1	2	3	4	5
Negative	9	9	14	19
[0, 3)	1	1	5	2
[3, 4.5)	-	-	-	1
[4.5, 7.5)	1	1	6	6
[7.5, 9)	-	-	2	3
Total	**11**	**11**	**27**	**31**

The stress test revealed that for a 25 per cent shock, as at end March 2007, 27 banks (accounting for 38 per cent of scheduled UCBs' assets and 16.5 per cent of urban co-operative banking assets) would not be able to comply with the 9 per cent CRAR norm. Similarly, for a 50 per cent shock, 31 banks would not be able to comply with the 9 per cent CRAR. At the system level, the CRAR declined from 11.4 per cent to 5.6 per cent for a 25 per cent stress and further to 2.8 per cent consequent upon a 50 per cent stress, pointing to the fragility inherent in this segment.

Computed from RBI data.

Annex 2.3: Asset-Liability Mismatches

The essence of liability management is raising and managing of appropriate resources at a competitive cost. The sources available to a bank to raise resources to fund asset growth are capital and reserves (owned funds), customer deposits, institutional deposits, borrowings, and float funds. Being highly leveraged institutions, deposits and borrowings account for the major share of banks' total liabilities. While longer-term customer deposits constitute the core deposits of a bank, bank deposits and borrowings as also short-term customer deposits form the purchased liquidity base of the bank. Avenues of deployment of funds are primarily loans and investments. Loans are preferred as they generate higher spread but these are generally long-term, illiquid and carry credit risk.

The core activity of any bank is to attain profitability through fund management *i.e.* acquisition and deployment of financial resources. Integral to fund management is liquidity management which relates primarily to the forecasting and structuring of cash flows, both inflows and outflows, with a view to enabling the bank to meet maturing liabilities and customer demands for cash within its basic pricing policy framework. Liquidity risk, thus originates from the potential inability of a bank to generate cash to cope with demands entailing a decline in liabilities or increase in assets. Thus, the cause and effect of liquidity risk are primarily linked to the nature of the assets and liabilities of a bank.

Maturity Profile of Deposits, Advances and Investments of Commercial Banks

Deposits (percent to total)

Period	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08
1	2	3	4	5	6	7	8	9
1- 14 days	7.8	7.6	7.1	7.3	7.9	8.1	7.8	8.8
15 – 28 days	2.4	2.5	2.0	2.1	2.3	2.6	2.8	2.5
29 days - 3 months	6.0	5.9	5.2	6.0	6.7	7.8	8.6	8.6
3 - 6 months	6.6	6.0	7.3	6.2	6.7	6.9	7.6	8.8
6 - 12 months	10.4	9.6	10.1	9.3	12.2	12.6	13.3	14.9
1- 3 years	46.0	47.6	43.7	35.6	32.4	29.5	29.5	28.7
3 - 5 years	11.7	9.2	7.9	10.0	9.9	10.1	10.8	9.0
Over 5 years	9.1	11.8	16.7	23.5	21.9	22.5	19.7	18.8

- Since March 01 there has been a steady rise in the proportion of deposits maturing up to one year.
- Deposits maturing upto one year increased from 33.2 per cent in March 01 to 43.6 per cent in March 08.
- Similarly, deposits maturing beyond 5 years have increased from 9.1 per cent in March 01 to 18.8 per cent in March 08.

Advances (percent to total)

Period	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08
1	2	3	4	5	6	7	8	9
1- 14 days	13.5	13.3	11.1	11.7	11.8	10.1	8.5	8.6
15 – 28 days	7.5	5.9	5.5	4.3	2.9	2.4	2.6	2.4
29 days - 3 months	11.6	10.2	9.9	9.1	7.5	7.0	6.5	7.5
3 - 6 months	6.7	6.6	6.1	6.7	6.2	6.1	5.9	6.3
6 - 12 months	9.5	11.0	8.6	9.6	9.0	8.9	8.7	10.2
1- 3 years	34.3	36.0	35.5	34.0	35.1	36.3	37.1	38.1
3-5 years	7.6	7.8	8.6	10.3	10.0	11.0	11.7	10.3
Over 5 years	9.3	9.2	14.6	14.4	17.4	18.3	18.9	16.5

- Loan portfolio is steadily becoming long-term oriented.
- Loans maturing between three to five years increased from 7.6 per cent of total loans in March 01 to 10.3 per cent in March 08 while those maturing over 5 years grew even higher from 9.3 per cent to 16.5 per cent during the same period.
- Thus proportion of advances maturing over 3 years increased from 17 per cent in March 01 to 27 per cent in March 08.

Investments (percent to total)

Period	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08
1	2	3	4	5	6	7	8	9
1- 14 days	13.5	13.3	11.1	11.7	11.8	10.1	8.5	12.4
15 – 28 days	7.5	5.9	5.5	4.3	2.9	2.4	2.6	2.7
29 days - 3 months	11.6	10.2	9.9	9.1	7.5	7.0	6.5	7.2
3 - 6 months	6.7	6.6	6.1	6.7	6.2	6.1	5.9	5.5
6 - 12 months	9.5	11.0	8.6	9.6	9.0	8.9	8.7	8.2
1- 3 years	34.3	36.0	35.5	34.0	35.1	36.3	37.1	20.3
3-5 years	7.6	7.8	8.6	10.3	10.0	11.0	11.7	11.0
Over 5 years	9.3	9.2	14.6	14.4	17.4	18.3	18.9	32.2

- Total investments maturing up to one year declined from 48.8 per cent in March 01 to 36.0 per cent in March 08.
- The share of investments maturing over 5 years in total investments increased considerably from 9.3 per cent in March 2001 to 18.9 per cent in March 2007 and further to 32.2 per cent in March 2008.

Thus it is observed that while there has been a steady decline in maturity of deposits, maturity of loan and investment portfolio has increased reflecting higher asset liability mismatches. This is important as banking system loan portfolio & investment portfolio witnessed a steep increase in the last couple of years. The table below shows the important growth parameters of commercial banks since March 2001.

(All figures in per cent)

Growth Indicators	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08
1	2	3	4	5	6	7	8	9
Total Assets	17.2	19.0	11.7	16.0	19.3	18.3	22.9	24.9
Total Deposits	18.0	14.1	13.2	16.0	16.3	17.5	24.1	23.1
Gross Advances	17.6	23.6	14.4	16.2	31.0	31.0	28.5	25.0
Total Investments	18.9	20.1	18.4	16.1	8.8	0.1	8.7	23.4
Ratios								
Credit Deposit (CD)	50.9	55.2	55.8	55.9	63.0	70.2	72.7	72.5
Incremental CD	49.9	85.3	60.5	56.5	106.4	111.6	82.9	72.0
Incremental Credit + Investment Deposit	98.8	152.1	129.6	108.4	134.3	111.9	97.8	108.2

- Funding of incremental asset growth by sources in addition to incremental deposits has been the general trend.
- Incremental CD ratio in March 05 & 06 stood above 100 per cent and reflected incremental deposits lagging far behind the growth in loans.

The process entails certain risks, the crux of which can be summarised as under:

Liquidity and Interest Rate Risk: Extensive reliance on purchased liquidity may expose a bank to liquidity problems. Purchased liquidity is much more sensitive than core deposits to both changes in bank risk and interest rates changes. If the financial market perceives a decline in a bank's safety and soundness, its purchased liquidity would have to be rolled over at higher rates and may even cease to be available as institutions may shy away from placing liquid assets in an institution that shows deteriorating financials.

Systemic Risk: Funding long-term assets through short-term funds usually takes the route of purchased liquidity. A concern emanating from such inter-bank exposures is that of systemic risk. Bank failures are potentially contagious and losses in one bank may cascade into problems for other banks or to the economy at large.

Computed from RBI data.

Annex 2.4: Liquidity Scenario Analysis

The basic objective of liquidity stress testing is to ascertain how long a bank may withstand a liquidity drain without resorting to liquidity from outside. This is a relatively narrow approach to liquidity stress testing, but it is one that allows for an introductory exposition without going into complex details. Recently, a leading bank in the UK faced a deposit run and reportedly lost 6 per cent of its total deposits in a single day.

The analysis is done on top-five banks according to asset size as at end-March 2008. Taken together, these banks accounted for roughly two-fifths of commercial bank assets.

Scenario I depicts unexpected deposit withdrawals on account of sudden loss of depositors' confidence and assesses the adequacy of liquid assets available to the bank to fund them. The rate of withdrawal is different for different types of deposits. The deposit run is assumed to continue for five days.

Scenario II attempts to capture unexpected withdrawal of uninsured and insured deposits separately. Empirical research suggests that bank runs are often information-based, *i.e.* they are the result of noisy and adverse information about banks. Uninsured depositors comprise institutional depositors and other bulk depositors and generally are privy to market information. Experience has shown that these deposits are the first to adopt the 'flight to quality' as soon as they sense a bank in trouble. On the other hand, insured deposits adopt a wait and watch policy partly on account of deposit insurance comfort and lack of information about market developments.

Scenario III describes different probabilities of crystallisation of contingent credits / commitments as result of changes in bank's borrowers' credit risk and delinquency in repayment of loans due to economic downturn. The time horizon has been considered to be six months. During economic downturn, expected cash inflows for maturing loans are expected to be impacted due to increased delinquency. Hence, a haircut has been applied for the expected repayment of loans upto six months. The liquid assets available with the bank are compared with the stressed funding requirement.

Methodologies: Scenario I

- Objective is to capture the ability of the bank to meet unexpected withdrawal of deposits for five days through sale of its available liquid assets without any outside support.
- Deposits are segregated into three types, current deposits, savings deposits and term deposits.
- Liquid assets consist of cash funds, excess CRR balance with the Reserve Bank, balances with other banks payable within one year and investments payable within one year.
- Unexpected withdrawal of deposits is assumed to take place in the following proportion:
  - Current deposits – two times the proportion of reported outflows of current deposits in 1-14 days time bucket.

- Savings deposits – two times the proportion of reported outflows of savings deposits in 1-14 days time bucket.
- Term deposits – three times the proportion of reported outflows of term deposits in 1-14 days time bucket.

- The bank is assumed to meet stressed withdrawal of deposits through sale of liquid assets.
- The sale of investments is done with a hair cut of 10 per cent of their market value.
- The stress test is done on a static mode.

Methodologies: Scenario II

- Objective is to capture differential withdrawal of uninsured and insured deposits and the adequacy of liquid assets to sustain repayment of withdrawals without any outside support for five days.
- 30 per cent of total uninsured deposits of the bank are assumed to be withdrawn in a span of five days in the following proportion:
  - 10 per cent on the first day.
  - 8 per cent on the second day.
  - 5 per cent on the third day.
  - 4 per cent fourth day.
  - 3 per cent on the fifth day.
- 1 per cent of total insured deposits are assumed to be withdrawn on each of the five days.
- Liquid assets consist of cash funds, excess CRR balance with the Reserve Bank, balances with other banks payable within one year and investments payable within one year.
- Investments are sold with a hair cut of 10 per cent of their market value.

Methodologies: Scenario III

- Objective is to capture the impact of devolvement of off-balance sheet exposures *viz.* letters of credit, guarantees, other commitments on account of adverse changes in credit worthiness of the bank's borrowers spread over six month period.
- The stress scenario is carried out on one month, three months and six months time horizon.
- Contingent credits and commitments consist of LCs, guarantees (both financial and performance), and all other contingent commitments.
- 10 per cent, 20 per cent and 30 per cent of total contingent credits and commitments are assumed to devolve.
- As borrowers face financial difficulties, expected inflow of loans and advances are also adversely impacted and defaults are assumed which add to adverse cash flow mismatches.
- Expected inflows of loans and advances within six month time horizon are assumed to materialise with a hair cut of 5 per cent, 10 per cent and 15 per cent respectively.
- Liquid assets consist of cash funds, excess CRR balance with the Reserve Bank, balances with other banks payable within one year and investments payable within one year.
- Investments are sold with a hair cut of 5 per cent, 10 per cent and 15 per cent of their market value respectively for one month, three months and six months time horizon.

Scenario I

Results

Scenario I					
(Withdrawal of deposits due to loss of depositors' confidence)					
Cumulative Withdrawal as per cent of total deposits	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**
1	2	3	4	5	6
Bank 1	6.3	9.4	12.5	14.1	15.7
Bank 2	5.5	8.3	11.0	12.4	13.8
Bank 3	4.2	6.2	8.3	9.3	10.4
Bank 4	5.7	8.6	11.4	12.8	14.3
Bank 5	5.3	7.9	10.5	11.9	13.2
Cumulative withdrawal as per cent of deposits of 5 banks	**5.7**	**8.5**	**11.4**	**12.8**	**14.2**
Surplus (+)/ deficit (-) after meeting withdrawals through liquid assets - per cent to total asset					
Bank 1	-1.5	-4.3	-7.0	-8.4	-9.8
Bank 2	15.0	13.1	11.2	10.2	9.3
Bank 3	2.2	0.5	-1.3	-2.2	-3.0
Bank 4	10.8	8.4	6.0	4.8	3.6
Bank 5	3.5	1.3	-0.8	-1.8	-2.9
Total of 5 banks	**4.5**	**2.2**	**-0.1**	**-1.3**	**-2.4**

- Existing gaps in relevant time period are added to stressed gaps to arrive at net stressed liquidity gaps.
- Total withdrawal of deposits on the first day accounts for 5.7 per cent of total deposits of the 5 banks,
- Except Bank 1, the other four banks are able to meet their repayment obligations both on the first and second day and still left with positive balance of liquid assets.
- From third day onwards, the stocks of liquid assets of Bank 3 and Bank 5 turn negative. The remaining two banks (Bank 2 and Bank 4) are able to meet the stressed withdrawal of deposits and still left with positive balance of liquid assets till the end of the fifth day.
- Thus, Bank 1 faces deficit from the first day which deteriorates progressively and becomes significant on fourth and fifth day. On the other hand, the deficits of Bank 3 and Bank 5 remain within manageable bounds.

Scenario II

Results

- 4.1 per cent of total deposits are withdrawn on the first day and all the five banks are able to meet their stressed repayment obligations on the first day.
- Bank 3 encounters a small deficit on the second day while Bank 1 is left with negligible surplus.
- At the end of third day, deficit surfaces for Bank 1 while stock of liquid assets of Bank 5 turn negligible.

Scenario II					
(Cumulative withdrawal of uninsured and insured deposits – per cent to total deposits)					
Bank	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**
1	2	3	4	5	6
Bank 1	2.5	4.9	6.6	8.1	9.5
Bank 2	7.9	14.3	18.4	21.7	24.3
Bank 3	3.8	7.0	9.2	11.1	12.8
Bank 4	3.8	7.0	9.2	11.1	12.8
Bank 5	3.8	7.0	9.2	11.1	12.8
Cumulative withdrawals as per cent of total deposits of 5 banks	**4.1**	**7.5**	**9.9**	**11.9**	**13.6**
Surplus (+)/ Deficit (-) after meeting withdrawals through liquid assets					
Bank 1	1.9	0.2	-1.2	-2.4	-3.4
Bank 2	13.3	8.8	6.0	3.7	1.9
Bank 3	2.5	-0.2	-2.0	-3.6	-5.0
Bank 4	12.4	9.7	7.8	6.2	4.8
Bank 5	4.5	1.9	0.0	-1.6	-3.0
Total of 5 banks	**6.0**	**3.3**	**1.5**	**-0.1**	**-1.5**

- At the end of fourth day, deficits of Bank 1 and Bank 2 deteriorate and stock of liquid assets of Bank 5 turns negative.
- Bank 2 and 4 are able to show positive liquid assets till the end of fifth day of the crisis.
- Thus of the five top banks, Bank 1,Bank 3 and Bank 5 exhibit liquidity strains specially on the fifth day of the stress.

Scenario III

Results

- All the five banks are able to meet the devolvement of their contingent liabilities (and reduced inflows on account of haircut on maturing loans) upto 3 months horizon.
- Bank 1 experiences a marginal deficit at the end of six months while the remaining four banks continue to maintain surplus positions.

Scenario III			
(Additional outflows on account of devolvement of contingent liabilities)			
Bank	**1 month**	**3 months**	**6 months**
1	2	3	4
Expected devolvement of contingent liabilities – per cent to total asset			
Bank 1	1.3	3.3	6.3
Bank 2	1.5	4.5	8.9
Bank 3	1.3	3.4	6.6
Bank 4	1.2	3.1	6.1
Bank 5	1.1	3.1	6.0
Total of 5 banks	**1.3**	**3.5**	**6.9**
Revised liquidity mismatches (+ for Surplus, - for Deficit) after adjusting the gaps reported by the banks in respective time bands - per cent to total asset			
Bank 1	2.9	1.9	-0.3
Bank 2	11.7	8.5	3.6
Bank 3	4.9	4.5	2.9
Bank 4	10.7	11.2	10.4
Bank 5	6.1	5.0	2.6
Total of 5 banks	**6.3**	**5.1**	**2.5**

Computed from RBI data.

Annex 2.5: Interest Rate Risk – Scenarios and Results

Interest rate risk stress tests were computed using both the earnings at risk (EaR) or short-term perspective as also the economic value (EV), or long-term perspective. In case of the latter, the duration of equity (DoE) was computed. Also, the capital positions of banks were recomputed after adjusting the erosion in banks' regulatory capital on account of change in interest rates for March 2006, March 2007 and March 2008.

EaR Approach

From the EaR perspective, the focus of analysis is the impact of changes in interest rates on accrual or reported earnings. Changes in the interest rates impact banks' earnings due to changes in interest income and the level of other interest sensitive income and expenses. In the EaR approach, the impact of changes in earnings due to changes in interest rates is related to Net Interest Income (NII). For a one per cent increase in interest rates, at the system level, NII rises by Rs.949 crore in March 2008. At the bank level, the NII of 45 banks (64 per cent of commercial bank asset) increases. Since the banking system typically exhibits positive 'gap', the rise in interest rates leads to a rise in interest income relatively higher than the rise in interest expense, which explains this result.

EV Approach

I. Duration of Equity (DoE)

The duration of equity (DoE) or net-worth duration approach calculates the erosion in accounting capital due to unit increase in interest rates. Subject to certain limitations, DoE captures the interest rate risk and helps move towards the assessment of risk based capital. Higher the duration of equity, more is the interest rate risk and greater the requirement of capital. Under this approach, the duration of equity (DoE) of a bank's portfolio is computed under two scenarios: entire rate sensitive savings deposits are assumed to mature in the first time band *viz.* 1 to 28 days (scenario I); entire rate sensitive savings deposits are assumed to mature in 3 months to 6 months time band (scenario II). The time band-wise rate sensitive liabilities have been accordingly adjusted under the two scenarios.[52]

Under scenario I, at the system level, the DoE worked out to 14.1 years, 12.0 years and 8.0 years as on March 2006, March 2007 and March 2008 respectively. Under scenario II, at the system

[52] The assumptions underlying the analysis are as under: First, the time band-wise Rate Sensitive Assets (RSA) and Rate Sensitive Liabilities (RSL) has been obtained for balance sheet items. Subsequently, the absolute (notional value) amount of interest rate derivatives in each time bucket has been added to RSA (if positive) or added to RSL (if negative). Second, the end-point of each time bucket has been taken as a proxy for the maturity of all assets and liabilities in that time bucket. Third, the asset coupon has been taken as all banks' interest income divided by interest earning assets. Likewise, the liability coupon has been taken as all banks' interest expense divided by interest bearing liabilities. The derived asset and liability coupons have been used across all the time bands. Cash flows are assumed to occur on semi annual basis across all time bands. The modified duration (MD) have been calculated for each time band using the FIMMDA Treasury Bill yield curve for YTM below 1 year and FIMMDA YTM Government Securities yield curve for 1 year and above.

level, the DoE gets reduced to 13.1 years (as on March 2006), 11.0 years (as on March 2007) and 7.2 years (as on March 2008). The DoE of the commercial banks has declined in March 2008 compared to March 2006 pointing towards better management of interest rate risk by the banks. The daily standard deviation of yield is estimated at 6.6 bps. This translates into a 244 bps annualised volatility. Given the DoE of 8.0 per cent in March 08 (scenario I), a 244 bps increase in yield would result in around 19.5 per cent erosion in capital and reserves at the system level.

Table: Position as on March 2008, March 2007 and March 2006

DoE	Year	Scenario I		Scenario II	
		No of banks	Share (per cent) in total assets	No. of banks	Share (per cent) in total assets
1	2	3	4	5	6
Negative	2008	7 (7)	17.3 (17.3)	7 (7)	17.3 (17.3)
	2007	5 (5)	0.5 (0.5)	6 (6)	0.5 (0.5)
	2006	7 (7)	1.0 (1.0)	7 (7)	1.0 (1.0)
0 to 5	2008	16(23)	7.8 (25.1)	19 (26)	10.5 (27.8)
	2007	18 (23)	19.2 (19.7)	17 (23)	19.2 (19.7)
	2006	15 (22)	3.8 (4.8)	15 (22)	3.8 (4.8)
6 to 10	2008	18 (41)	21.8 (46.9)	18 (44)	28.4 (56.2)
	2007	16 (39)	33.1 (52.8)	20 (43)	36.5 (56.2)
	2006	9 (31)	34.7 (39.5)	13 (35)	40.9 (45.7)
11 to 15	2008	15 (56)	26.2 (73.1)	14 (58)	18.5 (74.7)
	2007	19 (58)	19.2 (72.0)	19 (62)	19.2 (75.4)
	2006	14 (45)	15.9 (55.4)	12 (47)	12.3 (58.0)
16 to 20	2008	9 (65)	8.2 (81.3)	10 (68)	15.4 (90.1)
	2007	10 (68)	9.4 (81.4)	7 (69)	6.1 (81.5)
	2006	13 (58)	17.6 (73.0)	15 (62)	19.5 (77.5)
21 to 30	2008	12 (77)	17.4 (98.7)	9 (77)	8.6 (98.7)
	2007	9 (77)	13.4 (94.8)	8 (77)	13.2 (94.7)
	2006	16 (74)	16.0 (89.0)	12 (74)	10.5 (88.0)
Above 30	2008	1 (78)	1.3 (100)	1 (78)	1.3 (100)
	2007	5 (82)	5.2 (100)	5 (82)	5.3 (100)
	2006	11 (85)	11.0 (100.0)	11 (85)	11.5 (100.0)

Cumulative totals within brackets;
Number of banks were 78 in March 2008, 82 in March 2007 and 85 in March 2006

At the bank level, the distribution of DoE under the two scenarios is given in table. As many as 65 banks (under scenario I) and 68 banks (under scenario II) have DoE less than or equal to 20 years as at end March 2008, suggesting that an interest rate shock of 500 bps or higher would be required to wipe out their capital funds. The corresponding figures for end March 2006 was 58 and 62 banks, which also signifies an improvement in banks' interest rate risk management.

II. Erosion in CRAR

The erosion in capital has also been calculated by applying the modified duration to the net gap (between assets and liabilities including off-balance sheet items) and the erosion so calculated has been deducted from the regulatory capital to arrive at revised CRAR. In addition to the entire balance sheet, this exercise has also been done for banks' trading and banking books separately.

The broad methodology for computing revised CRAR is as follows:

1. The modified duration of each bucket has been multiplied with the net gap in each bucket to arrive at the erosion in each time bucket. Net gap has been arrived by subtracting rate sensitive liabilities (RSL) from rate sensitive assets (RSA) and adding net derivative positions where positive (+ve) and subtracting where negative (-ve).
2. The erosion has been reduced from regulatory capital (tier I + tier II) of the banks for recalculation of CRAR under different interest rate shocks.

The results of the exercise are detailed as under: -

a. Interest Rate Shock on Balance Sheet - Impact on CRAR

Range of CRAR (per cent)	Year	100 bps shock	200 bps shock	300 bps shock
1	2	3	4	5
Scenario I				
Negative	2008	0(0.0)	0(0.0)	0(0.0)
	2007	1(0.04)	2(0.05)	2(0.05)
	2006	3(0.4)	4(0.4)	7(3.0)
0- 6	2008	0(0.0)	1(0.4)	10(9.0)
	2007	1(0.01)	3(2.8)	14(12.8)
	2006	1(0.01)	7(9.0)	21(23.3)
Exceeding 6 but below 9	2008	4(4.3)	19(25.5)	23(31.4)
	2007	6(5.9)	22(26.1)	22(31.7)
	2006	13(12.2)	29(33.5)	25(42.2)
Total (below 9)	2008	4(4.3)	20(25.9)	33(40.4)
	2007	8(5.9)	27(28.9)	38(44.5)
	2006	17(12.6)	40 (42.9)	53(68.4)
Scenario II				
Negative	2008	0(0.0)	0(0.0)	0(0.0)
	2007	1(0.04)	2(0.1)	2(0.05)
	2006	3(0.4)	4(0.4)	5(0.8)
0 – 6	2008	0(0.0)	0(0.0)	9(6.5)
	2007	1(0.01)	2(1.5)	13(12.3)
	2006	1(0.01)	6(8.0)	21(22.7)
Exceeding 6 but below 9	2008	3(2.2)	18(22.4)	23(31.8)
	2007	4(4.5)	21(21.1)	21(31.4)
	2006	11(11.04)	28(33.4)	22(33.0)
Total (below 9)	2008	3(2.2)	18(22.4)	32(38.3)
	2007	6(4.6)	25(22.6)	36(43.8)
	2006	15(11.4)	38(41.7)	48(56.5)

(Figures in Brackets indicate per cent share of assets of the banks)

b. Interest Rate Shock on Banking Book - Impact on CRAR

The banking book has been taken as all Rate Sensitive Liabilities (RSLs) and all Rate Sensitive Assets (RSAs) excluding assets and derivative positions which are included in the trading book.

Range of CRAR (per cent)	Year	100 bps shock	200 bps shock	300 bps shock
1	2	3	4	5
Scenario I				
Negative	2008	0(0.0)	0(0.0)	0(0.0)
	2007	1(0.04)	1(0.04)	2(0.05)
	2006	2(0.3)	3(0.4)	4(0.8)
0- 6	2008	0(0.0)	0(0.0)	5(4.1)
	2007	1(0.01)	1(0.01)	8(8.6)
	2006	2(0.02)	4(2.6)	9(11.3)
Exceeding 6 but below 9	2008	1(1.2)	11(10.3)	17(25.3)
	2007	2(1.5)	14(14.8)	13(16.4)
	2006	5(3.6)	15(16.6)	19(17.7)
Total (below 9)	2008	1(1.2)	11(10.3)	22(29.4)
	2007	4(1.5)	16(14.8)	23(25.0)
	2006	9(4.0)	22(19.6)	32(29.9)
Scenario II				
Negative	2008	0(0.0)	0(0.0)	0(0.0)
	2007	1(0.04)	1(0.04)	2(0.05)
	2006	1(0.3)	2(0.3)	4(0.8)
0 – 6	2008	0(0.0)	0(0.0)	4(3.9)
	2007	1(0.01)	1(0.01)	7(8.0)
	2006	3(0.1)	5(2.6)	7(6.0)
Exceeding 6 but below 9	2008	0(0.0)	10(10.2)	13(18.1)
	2007	2(1.5)	14(14.8)	14(16.9)
	2006	5(3.6)	13(14.8)	15(14.7)
Total (below 9)	2008	0(0.0)	10(10.2)	17(22.0)
	2007	4(1.5)	16(14.8)	23(25.0)
	2006	9(4.0)	20(17.7)	26(21.5)

(Figures in Brackets indicate per cent share of assets of the banks)

c. Interest Rate Shock on Trading Book – Impact on CRAR

Trading book comprises investments classified in 'Available for sale' and 'Held for trading' and interest rate sensitive derivative products.

Range of CRAR	Year	100 bps shock	200 bps shock	300 bps shock
1	2	3	4	5
	No. of banks (per cent share of assets)			
Negative	2008	0(0.0)	0(0.0)	0(0.0)
	2007	1(0.04)	1(0.04)	1(0.04)
	2006	3(0.4)	3(0.4)	4(0.4)
0- 6	2008	0(0.0)	0(0.0)	3(1.0)
	2007	0(0.0)	2(0.2)	3(0.3)
	2006	0(0.0)	2(0.4)	5(4.0)
Exceeding 6 but below 9	2008	1(0.1)	4(3.8)	6(7.3)
	2007	2(0.2)	5(5.3)	12(14.2)
	2006	4(0.5)	10(9.7)	18(23.7)
Total (below 9)	2008	1(0.1)	4(3.8)	9(8.3)
	2007	3(0.2)	8(5.5)	16(14.5)
	2006	7(0.9)	15(10.4)	27(28.0)

(Figures in Brackets indicate per cent share of assets of the banks)

d. Impact Based on Estimated Yield Volatility

The interest rate shock based on yield volatility for a liquid government security having similar modified duration as the DoE was estimated at 244 basis points. The system level CRAR which is around 13.0 per cent for March 2008 , and 12.3 per cent both for March 2006 and March 2007, would decline to 8.7 percent (9.0 per cent under scenario II) in March 2006, 9.6 per cent (9.8 per cent under scenario II) in March 2007 and 10.9 per cent (11.1 per cent under scenario II) in March 2008 – another pointer to better interest rate risk management by commercial banks.

		Balance Sheet	Banking Book
1	2	3	4
Scenario I			
System Level CRAR	2008	10.9	11.9
	2007	9.6	10.7
	2006	8.7	10.6
Negative	2008	0(0.0)	0(0.0)
	2007	2(0.05)	2(0.05)
	2006	5(0.8)	3(0.4)
0-6	2008	5(3.3)	2(1.2)
	2007	8(7.4)	4(2.7)
	2006	13(14.2)	5(3.6)
Exceeding 6 but below 9	2008	24(32.4)	14(16.3)
	2007	23(34.6)	13(13.6)
	2006	28(39.8)	17(17.2)
Total	2008	29(35.7)	16(17.5)
	2007	33(42.1)	19(16.3)
	2006	46(54.9)	25(21.1)
Scenario II			
System Level CRAR	2008	11.1	12.1
	2007	9.8	10.9
	2006	9.0	10.8
Negative	2008	0(0.0)	0(0.0)
	2007	2(0.05)	2(0.05)
	2006	5(0.8)	3(0.4)
0-6	2008	4(2.2)	1(0.4)
	2007	7(7.3)	3(2.4)
	2006	13(14.2)	5(3.6)
Exceeding 6 but below 9	2008	24(32.9)	11(12.2)
	2007	21(27.1)	13(12.6)
	2006	23(28.3)	15(16.3)
Total	2008	28(35.0)	12(12.6)
	2007	30(34.4)	18(15.1)
	2006	41(43.3)	23(20.2)

Trading Book		
1	2	3
System Level CRAR	2008	12.0
	2007	11.2
	2006	10.5
Negative	2008	0(0.0)
	2007	1(0.04)
	2006	3(0.4)
0-6	2008	1(0.01)
	2007	2(0.2)
	2006	4(0.5)
Exceeding 6 but below 9	2008	8(8.3)
	2007	11(11.4)
	2006	12(16.3)
Total	2008	9(8.3)
	2007	14(11.6)
	2006	19(17.2)
(Figures in parenthesis indicate per cent share of assets of banks)		

Computed from RBI Data.

Annex 2.6: House Price Index and Housing Starts

Internationally, most countries employ house prices as part of their assessment of the asset price channel of monetary policy. Given the lack of data on housing prices in India, assessing the extent of activity in this segment becomes a challenging task for policymakers. Non-availability of a national housing price index hinders the objective calculation of a loan-to-value ratio for the housing finance sector. Hence the construction of both a national housing price index and local housing price indices is a priority. Initiating the process of having a pricing index for the housing sector, the NHB has developed a housing price index in the pilot phase for five cities, *viz.*, Mumbai, Bhopal, Bangalore, Delhi and Kolkata. Over time, it is expected to cover 63 cities with populations of more than one million. In addition, the Reserve Bank, on its own, undertook two different surveys/ studies to identify real estate price movements in Mumbai which covered the prices of residential and commercial properties including rent and sale/resale transactions of six zones in Greater Mumbai and seven adjacent municipalities. This study developed separate price indices for sale/ resale prices and rent of commercial and residential buildings.

Given the recent developments in the housing market the world over, which have underscored the need for better monitoring of real estate prices, it has been decided to establish an appropriate statistical data collection system within the Reserve Bank for which it has constituted an expert group. The proposed "Asset Price Monitoring System" is expected to cover in a timely manner the key essence of real estate price movements, including the sale/resale/rent of residential/commercial property in representative locations. Keeping in mind the importance of such an indicator for the central bank, the Reserve Bank constituted a Technical Advisory Group (TAG) on Development of Housing Start Up Index. The index will aim to provide insights on the elasticity of property supply to property prices as well as the cost of housing credit. TAG is formulating a feasible methodology for the construction of a housing start-up index in the Indian context and will soon submit the final report giving the road map. Once the methodology and the system of data collection is finalised, the National Buildings Organisation (NBO) under the Ministry of Housing and Urban Poverty Alleviation may play an important role in the compilation of the housing start-up index.

Annex 2.7: Human Resource Issues in Public Sector Banks

An important dimension of manpower profile in public sector banks (PSBs) is their human resource. The available evidence on the structural composition of workforce in public sector banks indicates that, as at end March 2007, out of the 0.73 million employees in these banks, roughly 35 per cent comprised of officers; within this, roughly 7 per cent were in the middle and senior management grade. PSBs face several challenges in their HR management, the salient of which can be highlighted as under:

Seniority-based promotion: In July 1973, the Government appointed a Committee (Chairman: Prof. V.R.Pillai) to standardise the pay scales, allowances and perks of officers. The Committee suggested seven scales in four levels: top management (2 scales), senior management (2 scales), middle management (2 scales) and junior management (1 scale), with a minimum of 7 years at the lower end of the scale and an average of 5 years at the middle management level. Based on the recommendations of the Committee, a Study Group of Bankers was appointed to make suggestions for its implementation. The Study Group suggested that the promotion to Senior and Middle Management positions should be based solely on merit within the years of service required for promotion being an eligibility criterion based on which selections are to be made with weightage given to objective criteria such as service record, professional qualifications, *etc.* The Merit Rule thus replaced the Seniority Rule and this practice, with minor modifications continues even at present. The recruitment in PSBs was standardised with the introduction of Banking Service Recruitment Board by the Government in 1979. The Narasimham Committee had emphasised in 1991 to enable banks to make their own recruitment strategies depending on their skill requirements.

Limited performance incentives: In the early years, much of the time is spent on routine operational functions and as one goes up the ladder, the developmental and policy-making roles assume prominence. Promotion systems do not provide optimal incentives if there is a variation in the abilities of individuals which is more likely since abilities are revealed only over time. Another important part of the compensation of employees comes in form of intangibles such as quality of working environment, leisure, relationship with co-workers and job security. This has the potential of reducing the productivity of employees with low relative ability and as pay is not linked to performance, delinks the connection between outcomes for the organisation and that for employees.

Inadequate compensation policy: There is pay compression and therefore, the incentive of more competent employees has become blunted. In a de-regulated environment, one would expect larger within job pay as performance incentives since competition becomes acute for a skilled workforce in an environment where compensation packages in the financial sector have improved tremendously. This has had the effect that PSBs have been finding it difficult to retain motivated employees, resulting in attrition. With manifold job opportunities having opened up in the financial sector, more and more officers in PSBs have found it increasingly profitable to join alternate jobs, preferring to be rewarded on the basis of performance. Another added dimension to this is the

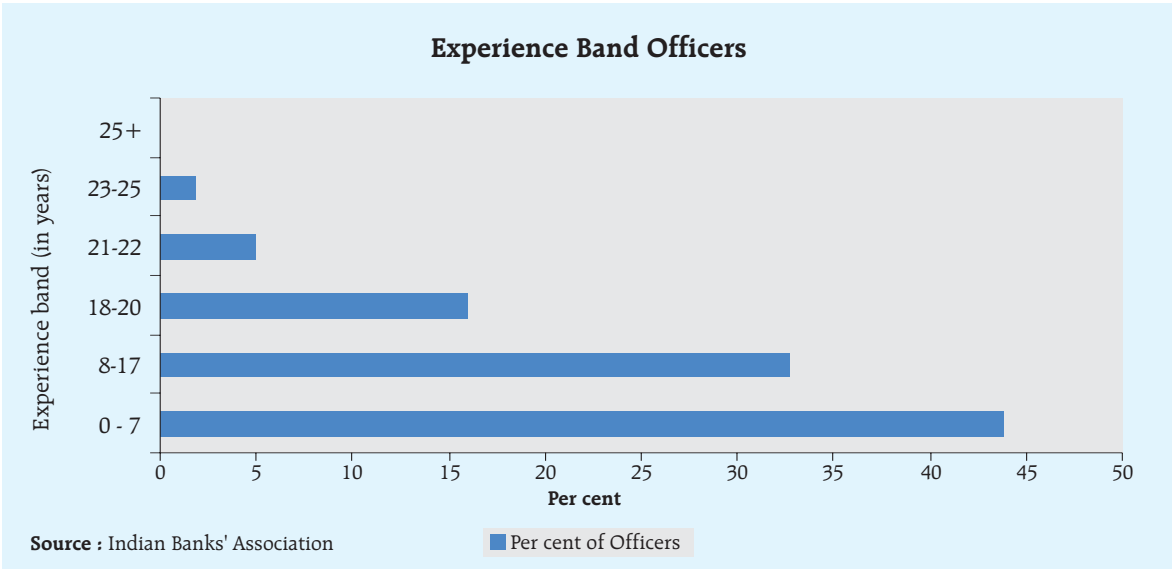
rotation and transfer policy in PSBs, not necessarily linked to a career path. However, with the need to address the skill gap whilst at the same time, incentivising employees to improve performance, the policy needs a re-look.

The centralised wage setting mechanism has also contributed to the process. The salaries are pegged to comparable levels in Government, without reference to the ability and performance of banks as also the employees. There is limited penalty for underperformance, whereas credit decisions gone wrong can have significant repercussions, such as being subject to anti-corruption legislation and other (loan officer being relieved of duties, transferred or passed over for promotion) effects. The pay-performance link both at the employee as also at the bank level is completely severed, constraining operational flexibility in decision-making.

Age and experience profile: The recruitment process in PSBs has stagnated over the years. Over the period beginning 1992, the majority of the recruitment in PSBs has primarily taken place in the sub-staff cadre. The employment growth rate during 1992-97 was less than one per cent which has declined by an average of 3.2 per cent over the next five year period and further by 0.7 per cent per year in the subsequent five years ending March 2007.

In the pre-VRS period, only 12 per cent of the employees were in the 25-35 age bracket, 45 per cent in the 36-45 age group and the remaining in the 46-60 age group. The average age of the employees in PSBs was over 44 years. In nationalised banks, roughly 23 per cent of officers relieved were in the age group below 50 years, whereas the same for State Bank group was less than 1 per cent. As observed earlier, with limited direct recruitment in the officer cadre over the last decade-and-a-half, the junior management posts have predominantly been filled by promotion from the clerical cadre. Therefore, the adverse age profile already existing in the officer cadre is likely to have accentuated over this period.

Alongside, the experience band of people across different management cadres has also become positively skewed (with value 0.96) with less than a quarter of the management cadre in the middle and senior management categories (Graph 1).[53] The evidence indicates that 17.3 per cent



Source : Indian Banks' Association

[53] As reported in the Report of the Committee on Human Resource Management in Banks (May 2000), the minimum eligible service for promotion is 7 years for Scale I, an additional 5 years each (for scales II and III), additional 3 years for Scale IV, additional 2 years for Scale V and additional 3 years for Scale VI. The computations in the table are based on this consideration.

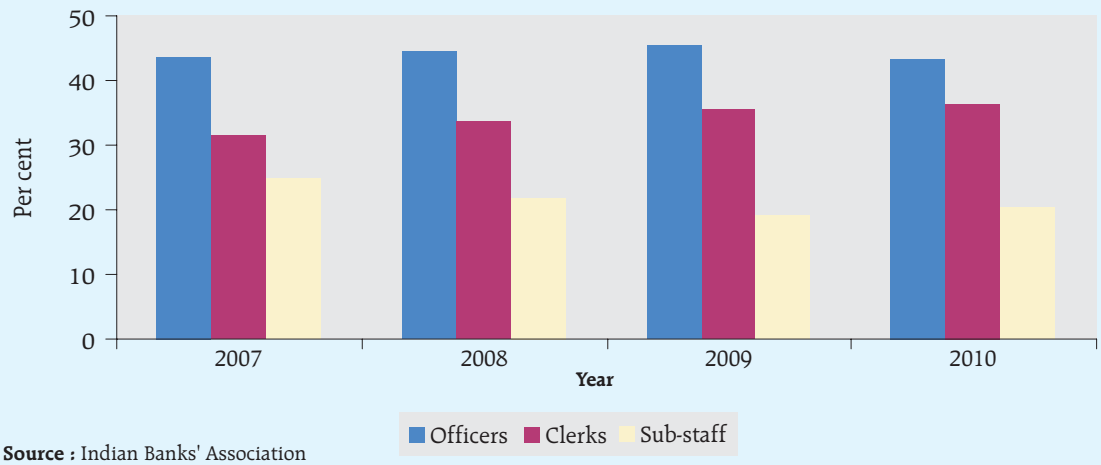
of the present bank staff strength (as at end March 2007) are due for retirement over the next four years, with just over 7 per cent of them being in the officer cadre. Of the over 90,000 retiring employees over 2007-10, over 40 per cent belong to the officer cadre (Graph 2).

More alarmingly, roughly 34 per cent of the officers in middle and senior management are retiring over the four years beginning 2008. As a result, there is likely to be a serious skill and experience gap in the PSBs without any concrete succession plan to fill the breach. Anecdotal evidence suggests that the quality of people retiring in PSBs far outweighs the present quality of intake. As the economy attains a higher growth trajectory and the banking system intermediates a large quantum of funds and becomes more knowledge-oriented than at present, the quality of human resources will become the cornerstone of increasing productivity and efficiency. The lack of a structured skill accumulation, enhancement and its applicability programme in PSBs in crucial areas such as marketing, treasury, product development and technology application could prove to be a major stumbling block to effectively compete in an increasingly competitive financial marketplace. These policies are in contrast to those obtaining in the foreign and private, especially new private sector banks, where human resource policies tend to be pro-active aimed at empowerment and skill acquisition and building. The paucity of adequate skilled personnel to manage bank operations will directly impinge on their bottomlines, posing a challenge to the viability of the operations of the banking systems as a whole with implications for growth and stability.

Addressing these concerns will necessitate action on several fronts.

In the first instance, PSBs would need to undertake a thorough assessment of the competence levels of officers within the organisation and their redeployment tailored to their skill levels in order to address the skill gap in the medium run. In this context, it might be possible for them to

Percentage of Employees Retiring in PSBs



Source : Indian Banks' Association

explore the possibilities of off-shoring of back-office functions (e.g., credit cards processing, data entry, call centres, reconciliation, cheque processing, *etc.*) so as to lower costs, improve productivity and enhance quality, within the prescribed guidelines. Currently, out-sourcing of back-office facilities has not taken off owing to lack of credible players with adequate scale and high-quality service.

Over the medium-run, there is a need to develop a comprehensive human resource policy as opposed to a personnel administration policy for better utilisation and deployment of their resources. This will entail a revamping of the entire eco-system of their functioning including attracting the best talents, empowering them to take decisions that exploit their skill-set, developing structured programmes for upgradation of their skills on a continuous basis and incentivising performance. Developing imaginative ways of retaining the talent including enhanced career opportunities and improving compensation packages would be integral to this process. Bank boards would also need to be empowered to take decisions and provided the freedom for recruitment, empowerment, retention, devising reward structures and appropriate skill development programmes. Finally, issues of continuity in top management and succession planning, particularly at top levels need to be addressed.

Source : Indian Banks' Association

Annex 2.8: Bank Consolidation

Consolidation is now a buzzword in the banking industry worldwide. Experiences of consolidation across the world reveal the following motives:

cost benefits – economies of scale, organisational efficiency, cost of funding, risk diversification;

revenue benefits – economies of scope, enhancing monopoly rents;

economic conditions – mergers after crises or during upswing;

others – defence against takeovers.

In terms of country experiences, the following broad trends are observable:

In the case of Asian economies in particular, the need to strengthen capital adequacy and the financial viability of many smaller banks affected by the 1997-98 crisis prompted the move towards *government-led consolidation.* Thus, in case of Malaysia, a special purpose institution was formed with the twin purpose of recapitalising banks and facilitating consolidation in the banking system. In South Korea, mergers were initiated by the Government to resolve unsound banks. In Philippines, several incentives were offered to merging banks, including better access to rediscount facilities and temporary relief from certain prudential requirements. In Indonesia, four of the seven state banks existing before the crisis were consolidated into a new state bank. There was a sharp decline in the number of domestic banks post-crisis in most of the Asian economies.

Market-driven consolidation, on the other hand, has been a relatively new phenomenon, observed mainly in Central European economies. At the onset of transition, Central European economies licensed a large number of banks, with the belief that liberal licensing rules would promote competition. But after a spate of bankruptcies of large private banks, the Czech Republic, Hungary and Poland ended up with 40-80 commercial banks each, usually with one large retail bank with market share of 20-25 per cent. As building a new branch network became costly, this prompted a wave of market driven consolidation.

Finally, in Latin America, consolidation was a response to *inefficient banking structures* consequent upon the progressive tightening of prudential regulations. In Argentina, bank consolidation was driven by the domestic and external financial liberalisation and the progressive tightening of prudential regulations. Most such mergers occurred between banks having complementary strengths in different regions. In Brazil, bank consolidation was driven by the privatisation of state-owned banks. In Mexico, consolidation was a response to the lack of capital post-1995 banking crisis. Thirteen private domestic banks that survived the crisis were recapitalised by the Government through a scheme that bought their NPAs. As further capital infusions were needed, and domestic

players were not in a position to provide funding, regulations governing the entry of foreign banks were eased.

Indian Experience

Several Committees have suggested consolidation in the banking industry as one of the measures to strengthen its viability and better integration into global markets:

The Narasimham Committee (1991 and 1998) suggested mergers among strong banks both in public and private sectors. Such mergers need to be based on synergies and locational and business-specific complementarities.

The Khan Committee (1997) recommended that management and shareholders of banks and DFIs should be permitted to explore and enter into gainful mergers. The Committee recommended merger not only between banks, but also between banks and DFIs; and not only between strong and weak viable entities, but also between two strong banks or DFIs

The Verma Committee (1998) observed that merger between weak banks and/or strong banks serve no purpose and might be counterproductive. Mergers should take into account synergies and complementarities of merging units and provide opportunities for pooling of strengths. It must lead to an overall reduction in the cost of operations which will increase competitive ability, operational efficiency and better positioning and larger market share.

While the imperatives of consolidation in Indian banking exhibit certain commonalities with global experiences, there are also certain country specific considerations. Salient among the considerations include the following:

Need for large capital base: Capital, representing owners' stake, is critically important in the case of banks since they are highly leveraged institutions. This is also an imperative in view of the impending Basel II Accord wherein large sophisticated banks following the 'IRB' approach for risk assessment may be required to hold less capital than banks following the standardised approach.

Customer growth and larger needs: The need to fund larger financial needs of a growing customer base underscores the importance of attaining critical size. As lending is linked to capital base, a low capital base constrains the bank's capacity to expand. Even without prudential lending limits, a large capital base could improve credibility and risk bearing capacity of banks.

Leveraging information technology and communication networking: This is a recent phenomenon and evolving with amazing rapidity: IT and modern communication entail huge investments which can only be delayed but cannot be avoided. Developments in IT and communication have changed the landscape and the very process of the financial services industry.

Squeeze on spread and profitability: This is a defensive motive which drives a bank to look for a partner.

Blurring of distinction between financial institutions: The days of clear segmentation of financial institutions in terms of financial services provided are over. Increasingly, financial institutions are entering into the domain of others resulting in blurring of the traditional distinction. However this calls for varied infrastructure and expertise which can be achieved through consolidation.

The Indian Scenario

Differences in business process / delivery modules, existing technological platforms of the two organisations: Banks in India are extremely heterogeneous in character and operations. This presents potent problems in integration of infrastructure, business process / delivery mechanism which may lead to increase in costs post-merger.

The bigger entity or the one with greater bargaining power in the merger process may assume the dominating influence which may lead to the following conflicts:

- Resistance to change;
- Communication breakdowns;
- Divided loyalties;
- Increased employee turnover;
- Power play – battle for control and authority.

Legal considerations: In India, prior to 1960, Section 44A of the BR Act 1949 provided only for voluntary amalgamation of banks. After widespread weakness in the banking sector, the Act was amended by adding Section 45 to allow for compulsory amalgamation wherever necessary and on a voluntary basis, wherever possible, in order to strengthen banks. Section 44B further empowers the Reserve Bank in the matter of compromise arrangements between a bank and its creditors. These have to be approved by the Reserve Bank. Under Section 36E of the Act, the Central Government has to act on receipt of a report from the Reserve Bank if a bank has (a) on more than one occasion failed to comply with the directions under Section 21/ 35A or (b) the affairs of the bank are carried out in a manner detrimental to the interests of depositors, banking policy or for better provision of credit. When a bank is placed under liquidation, the High Court can appoint the Reserve Bank, SBI or any other bank as the official liquidator and monitor the speedy disposal of winding up proceedings.

Annex 2.9 : Credit Portfolio Management

Financial institutions are increasingly measuring and managing the risk from their credit exposures at the portfolio level. In this context, Credit Portfolio Management (CPM) helps in lowering undesirable credit risk concentration. The main objective of CPM is to improve the ability of banks to identify risk-return optimal credit portfolios. It promotes a more risk-adjusted and profit-focused culture in the loan origination business units of banks. It can also enhance the stability of banks' earnings and mitigate investor concerns on credit risk and profit drag from loan loss provisioning.

CPM provides banks with better tools for pricing and managing risk as well as for enhanced monitoring of the costs of their loan books. The additional driving factors have been greater emphasis on improving the risk/return profiles of credit portfolios, and making better use of regulatory capital. Opportunities for managing credit exposures proactively, after they have been originated, could be facilitated by improved liquidity in the secondary loan market, increasing the importance of syndicated lending, availability of credit derivatives, and of sophisticated models for evaluating credit risk as well as improved data, and information technologies that facilitate the management of credit risk on a portfolio basis.

Loan products are ultimately seen as strategic tools for optimising the risk/return trade-off in the banking book. CPM can create capacity for new business by distributing credit risk more widely in the financial system and freeing up economic capital. The implementation of CPM in banks should ideally be concentrated in specific business units that operate in-between the loan origination and loan portfolio hedging functions. It creates an internal "market" with the bank that marks loans to market and quotes internal transfer prices that match the shortfall between the revenue that the bank generates from a loan and the price it pays in the market to hedge that loan.

In the coming period, CPM is expected to become an integral part of banks' credit activities for the following reasons:

(i) The development of instruments for credit risk transfer would substantially improve the ability of CPM business units to quote internal prices for hedging credits. For large corporate clients, corporate bond spreads or credit default swaps (CDS) prices can be used as a reference price, while new product innovation such as collateralised loan obligations (CLOs) and loan credit default swaps (LCDSs) would allow banks to obtain prices for hedging loans to entities with no corporate debt outstanding (such as SMEs).

(ii) They will bind regulatory capital to credit quality and because of the recognition of risk mitigation, the rules for calculating risk weighted assets (RWAs) under Pillar I of Basel II may provide additional impetus for developing tools for CPM. This is because under the RWA rules, banks either need to support the riskier part of their loan books with additional capital, or transfer the risk off their balance sheets by means of securitisation, in which case exposures can be deducted from RWA calculations.

Improved credit risk management provides the banks the potential for additional funding and better diversification of their loan portfolios and an optimal use of the capital in their balance

sheets. With the investor base for securitised credits slowly widening, with institutional investors developing a greater appetite for high-yielding credit products, this should lead to a broadening and deepening of capital markets and a greater spread of credit risk through the financial system to those most willing to bear it. The increasing use of credit derivative instruments by large and complex banks (LCBs) should generally improve their risk management practices.

On the flip side, such products could also introduce new risks for banks, foremost of which have been the long backlogs in settlement processes. Since banks are the largest buyers of credit protection, unsettled trades could become a problem if, in the event of a default of a large corporate bond issuer, banks were to discover that they were not covered against the default when the protection was most needed. If such a disruption were to occur, a substantial restating of banks' past earnings and hedging books could become necessary, with potential negative implications for their securities prices.

Annex 2.10: Loan Loss Provisioning

It is widely perceived that the seeds of banking crises are often sown in good times. Both borrowers and lenders tend to be over-optimistic about investment projects and their ability to repay in an upswing. This leads lenders to relax their credit evaluation standards precisely when such risk management practices need to take greater cognizance of borrowers' creditworthiness. The deterioration of the quality of bank loan portfolios, especially in economic downturns, increases banks' risk exposure, and therefore, the quantum of NPAs, causing them to tighten credit extension exactly when capital should be accessible to creditworthy institutions, exacerbating the real effects on the macro-economy.

Given that loan loss provisioning practices varies markedly across countries, a suggestion has been made that regulatory policies should be designed to counter this pro-cyclicality of capital regulation (Table). One such instrument which has been widely discussed is loan loss provisions (LLPs). To the extent banks are able to keep aside sufficient reserves in economic upturns to cover for potential impairment of loans, the magnitude of a credit contraction on the real economy can

Table: Loan Classification and Provisioning for Domestic Loans

Country	Loan categories	Pass	Special mention		Sub-standard		Doubtful		Loss	
			Provision (per cent)	overdue (M)	Provision (per cent)	overdue (M)	Provision (per cent)	overdue (M)	Provision (per cent)	overdue (M)
1	2	3	4	5	6	7	8	9	10	11
G-10										
Germany	4	-	-	-	-	-	-	-	-	-
Italy	5	-	-	-	-	-	-	-	-	-
Japan	5	-	-	Upto 3	15	Upto 6	70	-	100	-
US	5	-	-	-	-	-	-	-	-	-
Non G-10										
Argentina										
Secured	5	1	3	-	12	-	25	-	50	-
Unsecured	5	1	5	-	25	-	50	-	100	-
Brazil	9	-	-	-	-	-	-	-	-	-
Chile	5	-	-	0-5	5-39	-	40-79	-	80-100	-
India	4		0.25 (2.0)*		10-20	3	20-50**	12	100	-
Korea	5	0.5	0.5	2	20	-	50	-	100	-
Mexico	7	-	-	-	-	-	-	-	-	-
Spain	6	0.5-1	-	Upto 3	10	3-6	25-100	Over 6	100	Over 36

* : General provisioning on standard assets (except banks direct advances to agricultural and SME sectors) ranges from 0.25-2 per cent.
** : in case of doubtful assets, provisioning is 100 per cent on the unsecured portion
M : months
Source: World Bank (2002)

be greatly mitigated. Buttressed by appropriate incentives to keep aside such reserves, such loan loss provisions can serve as a useful counter-cyclical device and arrest bank fragility.

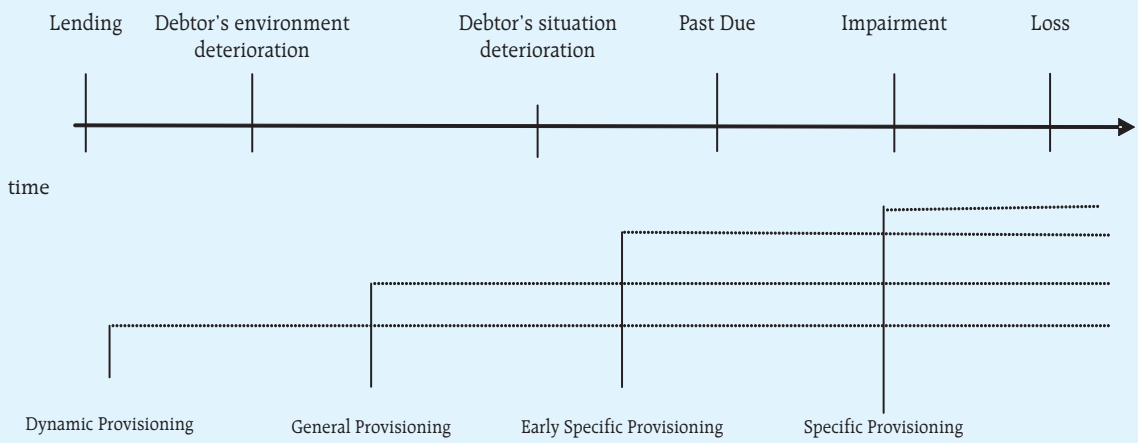
An analysis of the provisioning by Indian banks at end March 2006 indicates that the provisioning levels for the banking sector as a whole was roughly 40 per cent, the highest being for scheduled commercial banks at around 60 per cent.

Clearly, the balance of evidence tends to suggest that there is a need for improved provisioning by the banking sector. In this context, dynamic provisioning as a pattern of general provisioning has

gained currency. The fundamental principle underpinning such provisioning is that provisions are set against loans outstanding in each accounting time period in line with an estimate of long-run expected loss. Such an approach is pursued, for instance, by the Spanish banking sector. In fact, conventional provisioning practices follow a timetable linked to a forecast of a recognised default, belonging to the right hand side of the time line. Pending introduction of such a measure, several countries including India have stipulated a minimum requirement for standard loans - a de facto general provision - as the rudiment of a forward-looking system.

There is also a need to strengthen fiscal incentives for increased provisioning. Under the extant Income Tax provisions, provisions for NPAs are not tax deductible item except for a limited purpose in the case of loss provisions for rural advances. This non-tax deductibility acts as a disincentive for banks in making more provisions. It may be mentioned that in the case of other companies provisions for bad debts are tax deductible item.

Timetable of Events Resulting in Provisioning



Source : Bank for International Settlements (BIS)

Annex 2.11: Off-balance Sheet Activities of Banks

Off Balance Sheet (OBS) exposures of the banking system has recorded a phenomenal growth in recent years. OBS exposures essentially take the form of contingent liabilities and derivatives. Contingent liabilities are the more traditional off-balance-sheet exposures, where a bank underwrites the obligations of a third party and stands behind the risk. Many of these items are direct credit substitutes. Letters of credit, financial guarantees, acceptances and endorsements, underwriting and standby commitments, asset sales with recourse, partly paid up shares, and similar other liabilities are examples of contingent liabilities. Contracts and derivatives essentially are foreign exchange rate agreements and interest rate related contracts.

The spurt in OBS exposures have been fuelled by the phenomenal increase in the derivatives segment. The composition of derivatives portfolio has also undergone a significant transformation. Forward foreign exchange contracts which traditionally dominated the derivatives segment of the banks have steadily yielded place to interest rate contracts essentially single currency interest rate swaps (Table).

(Figures in per cent)

Details	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08
1	2	3	4	5	6
Forward Foreign Exchange Contracts *(including futuristic section)*	62	51	46	43	40
Interest Rate Related Contracts	38	49	54	57	60
Of which Single Currency IRS	37	48	53	57	59

(As per cent of total outstanding amount of contracts & derivatives)
Source : RBI

Although OBS activities engender greater financial innovation and lead to better hedging of risks, they are not without their shortcomings either. For one, OBS exposures carry significant *credit risks*. Problematic derivative exposure could snowball into a potential systemic risk. Second, the wide variety of activities conducted by banks 'off their balance sheets' also has an impact on their *interest rate exposure*. Transactions like interest rate swaps, options and forward rate agreements are entered to hedge against on-balance-sheet interest rate exposures, or as banks see arbitrage opportunities open up between cash and futures markets or between one futures market and another. Where a bank acts as a market-maker in these instruments, this may lead to an increase in interest rate as well as in credit exposure. *Foreign exchange risk* is always an on-going concern, since these products typically involve movements across currencies. And finally, *operational risk* is always a persistent concern, since these products involve high levels of knowledge and are prone to risks like frauds, inadequate book-keeping, management delinquency and other such operational issues.

Another concern which has come to the fore of late is *liquidity risk* associated with OBS products.[54] Financial guarantees and similar commitments, undrawn credit facility of binding nature represent

[54] Such risks can assume two forms, asset liquidity risk and funding liquidity risk. Asset liquidity risk may be encountered in exotic OTC derivatives contracts where any transaction can quickly affect prices. Funding difficulties, on the other hand, may arise when, in order to meet sudden or unusually large withdrawals of funds, a bank is forced to rely on less stable, purchased deposits for a greater than normal proportion of its funding requirements. This may strain the willingness of the market to supply funds at competitive rates and may convey a signal that the bank is facing serious problems (See also the discussion on Liquidity ratios).

significant funding risk to banks. The recent spate of evidence is a testimony to the problems associated with funding liquidity risk. What began as deterioration in credit quality quickly altered the market liquidity of a number of structured credit products. Market liquidity in turn, created uncertainty about product valuations, which manifested in a disruption in the underlying funding markets.

The rapid proliferation of derivatives exposures inevitably poses a challenge to financial stability on account of the immense downside risks associated with them, if not managed properly. While derivatives activities facilitate risk hedging and risk transfer to institutions more willing to bear the risks, there are also risks involved in derivatives activities. Tendency of participants to use derivatives to assume excessive leverage, avoid prudential regulations, and manipulate accounting rules may lead to a gradual build-up of financial system fragilities. One of the potent vulnerability in the Indian derivative market relates to high concentration risk since the number of counterparties (both banks and corporates) is limited: the top 15 banks accounted for over four-fifths of total OBS exposures and within that, foreign banks accounted for over 60 per cent. Knowledge concentration is another risk which stems from the concentration of derivative activity among few players. Thus, both market participants and policymakers must be aware of the risk management challenges associated with the use of derivatives to transfer risk, both within the banking system and outside the banking system.

Chapter III

Aspects of Stability and Performance of Insurance Sector

3.1 Introduction

The insurance sector in India used to be dominated by the state-owned Life Insurance Corporation and the General Insurance Corporation and its four subsidiaries. But in 1999, the Insurance Regulatory and Development Authority (IRDA) Bill opened it up to private and foreign players, whose share in the insurance market has been rising. The IRDA is the regulatory authority in the insurance sector, entrusted with protecting the interests of holders of insurance policies and regulating, promoting and ensuring orderly growth of the insurance industry in India.

This chapter addresses the key financial soundness indicators and the stress-testing framework of the insurance sector. It is divided into seven sections. Section 3.2 deals with the current status of the insurance industry and the various policies initiated recently. Section 3.3 gives a detailed account of the macroeconomic context. Indicators of financial strength which have special significance for the sector are elaborated upon in Section 3.4. Section 3.5 discusses the major risk factors and exposures. Section 3.6 sets out the stress-testing exercise and the findings. The conclusions are given in Section 3.7.

3.2 Current Status

As a part of overall financial sector reforms, the Government set up the Committee for Reforms in the Insurance Sector in 1992. In its report released in early 1994, it recommended the opening up of the sector to private sector participation. This was done in 2000. Since then there has been rapid growth and its share in total financial savings of the economy has improved significantly. In this context, the following developments need a special mention:

- The number of life insurance companies has increased from 13 at end March, 2003 to 18 at end March, 2008. Table 3.1 shows the growth in the number of insurance companies, both life and non- life over the last four financial years. The concentration caused by state owned companies is gradually declining which is reflected from the movement of the Herfindahl[55] indices which worked out to 8,308 for year 2004-05, 7,556 for 2005-06, 7,038 for 2006-07 and 6,190 for 2007-08 for the life insurance sector. Competition in the industry is increasing with new players trying to establish a significant presence.

[55] It is defined as the sum of squares of the market shares of all firms in a sector. The number varies between 0 and 10,000. Higher the number, more the concentration.

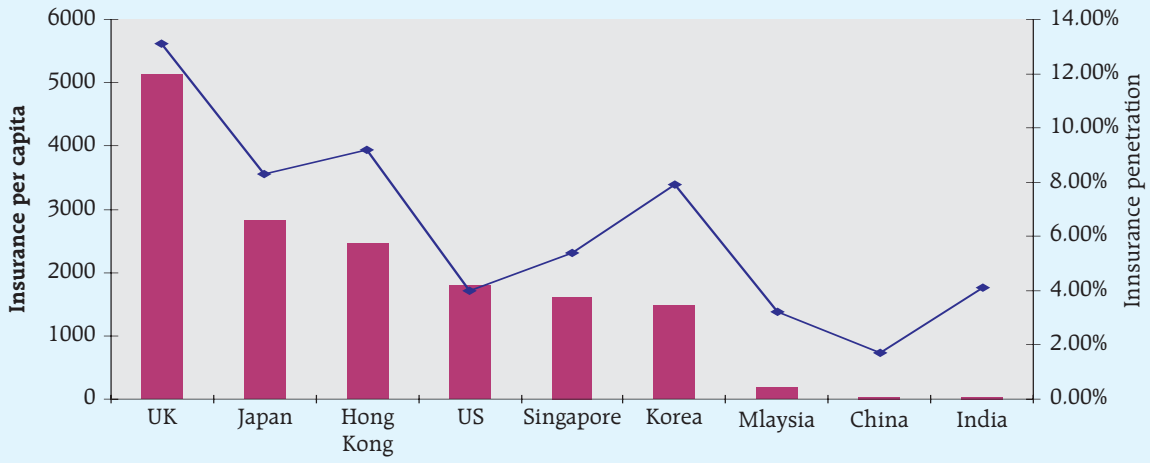
Table 3.1: Number of Registered Insurance and Re-insurance Companies

Category	Year	State owned	Private	Total
1	2	3	4	5
Life Insurance	2007-08	1	17	18
	2006-07	1	15	16
	2005-06	1	15	16
	2004-05	1	13	14
	2003-04	1	13	14
General Insurance	2007-08	6	12	18
	2006-07	6	9	15
	2005-06	6	9	15
	2004-05	6	8	14
	2003-04	6	8	14
Reinsurance	2007-08	1	0	1
	2006-07	1	0	1
	2005-06	1	0	1
	2004-05	1	0	1
	2003-04	1	0	1

Source : IRDA

- The total premium collected reveals a growth of 29 per cent in 2007-08 against 19 per cent in 2003-04 for life. For non-life sector it is 13 per cent and 14 per cent respectively.
- Competition has encouraged insurers to design innovative products. As a result, the product portfolio in the life insurance market has shifted towards linked products. The growth of unit-linked premiums surpassed that of traditional products. Unit-linked products account for nearly 88 per cent of the total premium for private life insurers as at March 31, 2008.
- Insurance penetration in India is lower them in many East Asian countries. But the penetration as a percentage of GDP has improved from 2.5 in 2005 to 4.0 in 2007 for life insurance (Chart 3.1).
- For the non-life sector, penetration has been stable at around 0.60 for the same period.
- Pure protection products have also grown as greater flexibility and transparency in product design has provided momentum. Innovation has also been seen in the distribution channels. The quality of service has improved considerably with most companies actively applying superior technology to provide more options to customers. Table 3.2 shows the growth of life insurance premia during the last three financial years classified into Private Sector, LIC and total industry.
- IRDA has been the first in the world to introduce the concept of micro insurance. This has become prominent

Chart 3.1 : Life Insurance Penetration & Per Capita (2006)



Source: IRDA

and many countries are taking steps to emulate it.[56]

- IRDA has promulgated the Policyholders Protection Regulation, 2002, to protect policyholders. Its regulations have the objective of providing a detailed framework for protecting policyholders interest involved in the entire process of

Table 3.2: Premium Growth Rate in Per Cent (Life Insurance)

(per cent)

Premium	Sector	2007-08	2006-07	2005-06
1	2	3	4	5
Linked (New + Renewal)	Private	99	105	136
	LICI	47	210	145
	Total Industry	68	156	140
Non-linked (New + Renewal)	Private	13	33	31
	LICI	7	19	13
	Total Industry	8	20	14
New Business	Private	72	86	86
	LICI	8	95	41
	Total Industry	24	93	50
Renewal	Private	102	83	123
	LICI	25	15	14
	Total Industry	34	20	18
Total	Private	83	87	95
	LICI	17	41	21
	Total Industry	29	47	28

* Adequate data are not available
(New business premium numbers have been determined by factor adjustment of first year premium income figures). Figures for 2007-08 are unaudited.
Source: IRDA

[56] IRDA has issued the notification on November 10, 2005 which aims at meeting financial needs of the poor by offering affordable insurance products which would not only cover their lives but also property, personal accidents and health. There are 11 individual and five group life micro insurance products as at March 31, 2008 in the market offering both term assurance and endowment assurance benefits. All State Governments were requested to publicise the concept of micro insurance through various agencies with a view to synergiaing the efforts of all State Governments that are promoting property alleviation programs. Needless to say that all these factors play an active role so far as the stability related issues are concerned.

Table 3.3: Segment-wise Growth of Premium in Per Cent (Non-life Sector)

Segment	Sector	2007-08	2006-07	2005-06
1	2	3	4	5
Fire	Public	-(18.0)	6.2	4.4
	Private	11.0	21.2	36.7
	Total Industry	15.4	9.5	13.3
Marine	Public	12.2	13.6	1.9
	Private	12.7	73.8	15.1
	Total Industry	12.4	26.8	4.6
Miscellaneous	Public	-(13.0)	9.0	8.5
	Private	7.8	73.5	63.1
	Total Industry	-(6.2)	25.1	18.4
Total Business	Public	3.8	8.4	7.3
	Private	28.9	61.3	52.9
	Total Industry	12.5	22.3	16.5

Figures within brackets indicate negative growth.
Figures for 2007-08 are unaudited.
Source: IRDA

insurance starting from selling the insurance product and ending with settlement of claims.

- As at end March 2008 there were 18 non-life companies comprising 12 private sector firms and 6 public sector firms. Table 3.3 shows the segment-wise growth of total premium underwritten by the non-life industry classified as public, private and total industry.
- Health insurance is increasingly getting recognised as a powerful means of financing health care. Both life and non-life companies sell health insurance products. Non-life companies sell mainly indemnity type health insurance products. Life insurance companies sell flat benefit type products. However, total health care cover in the insurance sector is insignificant (2 per cent of the total business). Total premium income for health insurance in respect of life insurance companies has shown a growth of 593 per cent during 2006-07 compared to 2005-06. The non-life health insurance premium has grown at the rate of 55 per cent over the year 2007-08.
- Since January 1, 2007 the non-life sector has moved towards a de-tariffed regime. Except third party motor insurance, all products of non-life companies are based on non-tariffed prices since April 1, 2008. This is a significant development paving the way for non-life companies to price the product on the basis of inherent risk and the underwriting capabilities of the companies. The IRDA has introduced a road map for working on issues related to de-tariffing before making it free market in order to help the industry to

move prudently. The road map covers underwriting policies, rate making, policy terms and conditions and corporate governance along with a time schedule for implementation.

- As in other countries, in India also the share of pension products reveals an increasing proportion. As at end March 2007 pension portfolio accounted for about 25 per cent of the total portfolio.
- There is a shortage of specialised skilled professionals, particularly in the areas of actuarial and underwriting in the case of non-traditional areas. It will take a few more years to bridge the gap.

Every insurance company has to follow IRDA's (Obligations of insurers to Rural and Social Sectors) Regulations, 2002. According to the regulation, every insurance company has to fulfil certain obligations based on minimum premium income and number of lives to be covered under the rural and social sectors respectively. The IRDA (Investment) Regulations also require every insurer to invest a minimum percentage of their funds in the infrastructure and social sectors and in government securities.

3.3 Macroeconomic Context

The trends in some of the important macroeconomic parameters that influence the insurance sector are given in Table 3.4.

As is apparent from the table, the insurance sector is in a developing phase and financial stability assessment issues are of paramount importance. It is the endeavour of the insurance regulatory authority to monitor the sector closely which works within the frame-work of its regulations and the Insurance Act 1938 and is guided by the Insurance Core Principles outlined by International Association of Insurance Supervisors. An assessment of its compliance with the IAIS principles by the Advisory Panel on Financial Regulation and

Table 3.4: Insurance Industry Related Parameters

Parameter	2007-08	2006-07	2005-06
1	2	3	4
Premium/GDP (Life Insurance)	4.0	4.1	2.5
Insurance per capita (in USD) (Life Insurance)	40.4	33.0	18.3
Weighted solvency ratio (Life Insurance)			
• Weighted solvency ratio (Private Life Insurance)	224.8	202.3	215.3
• Weighted solvency ratio (Total Industry Life Insurance)	159.5	154.3	134.1
Weighted solvency ratio (Non-life Insurance)	n.a.	329.1	276.2
Lapse ratio – FY			
(Life Insurance – During first three policy years)	n.a.	FY: 12.2	FY: 18.8
	n.a.	SY: 10.2	SY: 12.8
	n.a.	TY: 6.5	TY: 6.2
Expense Ratio (Life Insurance – Financial Yr.)**	17.4	16.6	17.3
Expense Ratio (Non-life insurance- Financial Yr)**	35.4	33.1	37.0

Solvency ratios are as at 31st March of 2008, 2007 and 2006 respectively.
n.a. : Not available.
** : Expense ratio is defined as Expenses/Net Premium, expressed as percentage.
All the above figures correspond to financial years except the first two which refer to calendar year 2007, 2006 and 2005.
Note : All figures in percent terms, unless stated otherwise.
Source: IRDA

Supervision has revealed that five principles are compliant, thirteen are largely compliant and ten are partly compliant. Major areas where gaps were observed included areas relating to corporate governance and internal control in the supervised entity and specific areas in ongoing supervision and prudential requirments. The overall assessment of compliance with the Principles also highlighted the areas where further initiatives are required, or have already been initiated to upgrade from 'partly' or 'largely' compliant to fully compliant.[57]

Initiatives have also been taken to put in place systems to analyse the performance of its supervised entities and also develop early warning systems to initiate action when necessary. A requisite market-wide database needs to be developed for this purpose.

3.4 Indicators of Financial Strength

A number of indicators of the health of the insurance sector have been suggested by the IMF. The indicators selected for this analysis takes into account the specific situation of the country. Bearing in mind the nascent stage of the liberalised insurance market in India, the current rapid growth of the sector with differing product profile coupled with setting up of new companies in the sector, some indicators have been selected. These are given in Table 3.5 for Life Insurance over 2007-08, 2006-07 and 2005-06.

3.4.1 Indicators for Life Insurance

For the life insurance sector, the ratios are calculated separately for the private sector, LIC (Life Insurance Corporation of India) and the total industry (including LIC). LIC is treated separately because it is very large and structurally different.

Capital plus reserves and surplus/total mathematical reserve: This ratio is a key indicator of capital adequacy of the sector. It demonstrates the capital plus reserves and surplus needed to support one unit of the mathematical reserve. From the movement of the ratio over time an indication on change in the mix of business can be seen. Due to domination of LIC, the trend for the total industry exhibits an insignificant variation. While the figures for private sector show a reducing trend possibly towards a stable limit, ratios in respect of LIC exhibit very small values because of the very low amount of capital (Rupees five crores) compared to mathematical reserves.

Equities/Non-linked investment: This ratio reveals potential volatility in the returns on assets held by the life insurers. The percentage is well below the maximum allowable by investment norms. Private life insurers have marginally reduced their equity exposure in 2007-08 relative to preceding two years. The equity exposure of LIC is showing a slightly increasing trend.

Equities/Linked investment: This variable shows the percentage of total linked funds invested in equity. It shows an increasing trend. This gives an important indication of the

[57] Some of these areas where measures have been initiated include the observance status on (i) autonomy of the supervisor; (ii) strengthening the supervisory processes through sanctions and enforcements; and (iii) ability to levy penalties directly in proportion to the non compliances would be strengthened. Other areas include financial independence of the supervisor, ensuring that the exempted insurers are brought within the supervisory ambit *etc.* A clear road map needs to be laid down for the purpose.

Table 3.5: Financial Soundness Indicators for Life Insurance Industry

(per cent)

Category	Indicators	Year	Private Sector	LIC	Total Industry
1	2	3	4	5	6
Capital Adequacy	(Capital+ Reserves & Surplus)/TMR	2007-08	20.1	0.047	2.2
		2006-07	22.2	0.054	1.7
		2005-06	28.7	0.001	1.3
Asset Quality	Equities/Total NL investments.	2007-08	9.2	20.5	20.2
		2006-07	10.4	17.9	17.7
		2005-06	11.0	19.9	19.8
	Equities/Total Linked investments	2007-08	67.5	53.3	60.1
		2006-07	58.7	48.4	53.1
		2005-06	51.6	59.9	55.4
Reinsurance and Actuarial issues	NP/GP	2007-08	99.6	99.9	99.8
		2006-07	99.4	100.0	99.9
		2005-06	99.3	100.0	99.9
	Change in MR/ANP	2007-08	122.0	93.5	103.3
		2006-07	123.0	90.0	95.0
		2005-06	150.0	94.0	100.0
	NLNPNBP/Total NLNBP	2007-08	70.6	20.1	29.4
		2006-07	63.1	34.4	37.7
		2005-06	40.8	2.5	7.0
	Linked premium/Total premium	2007-08	88.4	31.6	46.1
		2006-07	82.0	25.0	35.0
		2005-06	75.2	11.5	20.3
Management Soundness	Operating Expenses/GP	2007-08	23.3	5.6	10.1
		2006-07	23.1	5.5	8.7
		2005-06	23.7	6.7	9.1
Earnings and Profitability	Expenses/NP	2007-08	33.4	12.0	17.4
		2006-07	34.3	12.7	16.6
		2005-06	34.1	14.5	17.3
	NL Investment income/ NL Investment assets	2007-08	6.8	8.7	8.6
		2006-07	6.0	7.8	7.7
		2005-06	6.7	7.8	7.7
	L Investment income/ L Investment assets	2007-08	7.5	7.8	7.7
		2006-07	5.9	6.6	6.3
		2005-06	17.9	8.1	13.4
	Total Investment income/ Total Investment assets	2007-08	7.4	8.6	8.4
		2006-07	5.9	7.7	7.6
		2005-06	13.9	7.8	8.1
Liquidity	Outstanding Claims/ Cash and Bank Balance	2007-08	4.4	4.6	4.6
		2006-07	4.0	5.0	4.9
		2005-06	5.3	3.9	4.0

All figures in percentage
TMR – Total Mathematical Reserves; NL- Non-linked; L – Linked; NP – Net Premium;
GP – Gross Premium; MR - Mathematical Reserves; NLNPNBP – Non-linked non-par new business premium;
NLNBP - Non-linked new business premium;
ANP – Average of net premiums received over the last three years;
Source : IRDA

investment risk borne by policyholders and their general attitude towards risk.

Net premium/Gross premium: This ratio shows the risk retention policy adopted by insurers. The ratio remains almost at a constant level, suggesting that a stable approach has been taken by all insurers towards reinsurance policy. This ratio shows no separate trend for LIC and appears to be consistent with the industry as a whole.

Changes in mathematical reserves/Net premium received over the last three years: This variable is an important indicator of how much additional reserve is required to write one unit of net premium. This gives an overall idea on the macro-financial aspects of the industry. Its movement can give an indication of the direction of change in the mix of business.

Ratio of Non-linked non par new business premium to Non linked new business premium[58]*:* This shows the distribution of the traditional type of insurance business between participating and non-participating products. It can also indicate the trend towards pure-risk traditional products. Higher non-linked non-par business indicates the vulnerability of the sector to changes in interest rates. This ratio reflects the vulnerability of the portfolio to a low interest rate regime. Private sector life insurers are gradually tending to offer more non-par products relative to non-linked participating products. LIC shows a sudden large increase in the non-linked non-par business during 2006-07 compared to previous years. This could be indicative of changes in strategy towards non-linked products. However, this ratio reduced to 20.1 per cent in the year 2007-08.

Linked premium/Total premium: This reveals the trend of the life insurance market in respect of linked products. Private life insurance companies are steadily increasing their linked portfolio. LIC shows a sudden big jump in linked premium income over the year 2006-07 relative to 2005-06 and maintains the increasing trend in the year 2007-08.

Operating expenses/gross premium: This is a measure of efficiency of operations. It shows a reducing trend up to 2006-07 for LIC reflecting an increase in efficiency and probably moving towards a stable situation. The year 2007-08 shows a slight increase in this ratio. However, for an increasing portfolio, it also shows a spreading of overheads.

Expenses/Net premium: This variable is an important indicator of earnings and profitability. The ratio for the private sector exhibits some fluctuations over the last three years, but as a whole shows a reducing trend reflecting a more efficient and active expense management system (At this stage, the reducing trend would be because of overheads getting spread over larger number of policies). Wide differences in the figures for LIC and private sector may indicate the maturity of business portfolio of LIC and hence an indication of the long-term level of expenses relative to net premium.

Non-linked investment income/Total non-linked investment assets: This gives a broad indication of the returns earned by the sector over the 2007-08, 2006-07 and 2005-06. The returns, on average are in line with bond yields as a majority of the non-linked assets are invested in fixed interest securities.

[58] Non par business means the business with no participation in the surplus generated by the company, that is, with no bonus element.

Linked investment income/Total linked investment assets: This shows low growth between 2006-07 and 2007-08. It gives an indication of investment returns net of realised gains. Realised gains are not taken into account at this stage in order to avoid book-based outcomes owing to problems of non-availability of reliable data in this count.

Total investment income/Total investment assets: This is the weighted average of the linked and non-linked investment returns as stated above.

Outstanding claims/Cash and bank balance: This gives an indication of the capability of the insurers to pay outstanding claims out of their cash balance. It appears that the cash and bank balances of each type of insurer are sufficient to meet immediate liabilities towards "claims due for payment but not paid". This comfortably covers the incurred but not reported portion of claims liability.

3.4.2 Indicators for Non-Life Insurance

The key financial soundness indicators for the non-life insurance industry have been identified and the values are given in Table 3.6. (For the purpose of analysis, the indicators are calculated separately for the public and private sector).

Net premium/Capital: This ratio is an indicator of the capital adequacy of the non-life insurance sector. It demonstrates the risks associated with underwriting operations. The ratio shows an increasing trend for the private sector and a reverse trend for the public sector non-life industry mainly because of the smaller capital back up in the case of the former. Capital includes free reserves.

(Capital plus reserves & surplus)/Total assets: This reflects the asset risk of the industry.

Net premium/Gross premium: Both sectors follow a risk-retention policy. Retention has increased in respect of private sector over the year 2007-08 as compared to the previous year. However, the private sector is significantly more inclined to reinsuring risk relative to public sector.

IBNR/Total technical reserves: The progression of the ratio shows that IBNR is set at an almost similar proportion of the net technical reserve. Figures for the two sectors shows a higher ratio for the private sector in 2007-08.

Net technical reserves/Average of net claims paid over last three years: Both the sectors exhibit a slightly reduced trend compared to the previous year.

Operating expenses/Gross premium: This is a key indicator of the soundness of the management of the sector. The ratio shows a slightly increasing trend for the insurance sector.

Operating expenses/Net premium: This ratio seems to be very high for the private sector which is higher relative to the public sector. This is because a significant proportion of the premium written by private insurers goes to the re-insurer.

Net claims incurred/Net premium earned (Loss ratio): The public sector shows very high loss ratios over the last three years. The private sector is in a better position. More attention as to the type and quality of the business written, risk management & reinsurance policies and the adequacy of premia in respect of public sector may be required.

Combined ratio: The combined ratio for both the sectors shows that they are at a disadvantageous position. In particular, private sector ratios are influenced by lower loss ratios, whereas, the higher loss ratios of public sector has been offset, in part, by the lower expense ratio.

Investment income/Net premium: The high figures for the state owned companies reflect its stability and size of assets. The ratios for

Table 3.6 : Financial Soundness Indicators for Non-Life Insurance Industry

(Per cent)

Indicator	Indicators	Year	Private Sector	Public Sector	Total Industry
1	2	3	4	5	6
Capital Adequacy	NP/(Capital+ Reserves & Surplus)	2007-08	160.0	97.0	110.0
		2006-07	153.0	101.0	110.0
		2005-06	136.0	115.0	118.0
	(Capital+ Reserves & Surplus)/ Total assets	2007-08	30.0	20.0	21.0
		2006-07	36.0	18.0	19.0
		2005-06	32.0	15.0	16.0
Reinsurance and Actuarial issues	NP/GP	2007-08	53.5	75.3	67.0
		2006-07	42.6	76.1	64.4
		2005-06	42.5	76.2	67.3
	IBNR/Technical Reserve	2007-08	11.3	7.0	8.0
		2006-07	8.2	8.4	8.3
		2005-06	8.6	9.5	9.4
	Net Technical Reserves/ANC	2007-08	251.9	221.3	227.4
		2006-07	265.8	226.3	231.9
		2005-06	264.5	224.7	228.5
Operating efficiency	Operating Expenses/GP	2007-08	22.6	20.5	21.3
		2006-07	19.7	22.2	21.3
		2005-06	19.7	26.8	24.9
Earnings and Profitability	Operating Expenses/NP	2007-08	42.3	27.2	31.8
		2006-07	46.3	35.8	33.1
		2005-06	46.5	35.1	37.0
	Net claims incurred/NP earned	2007-08	72.2	90.4	84.9
		2006-07	68.0	85.2	81.3
		2005-06	68.0	92.4	88.4
	Combined Ratio	2007-08	114.5	117.7	116.7
		2006-07	114.3	121.0	114.4
		2005-06	114.5	127.6	125.4
	Investment Income/NP	2007-08	12.7	46.4	36.1
		2006-07	11.6	46.8	32.2
		2005-06	12.1	49.1	36.6
Liquidity	Current Assets/Current Liabilities	2007-08	74.1	61.9	64.0
		2006-07	76.3	59.2	61.4
		2005-06	81.5	57.6	59.8

NP – Net Premium; GP – Gross Premium; ANC – Average of net claims paid over the last three years; IBNR – Incurred but not reported.

Source : IRDA

private insurers are almost half of that for the public sector in all previous years. This is an indication of its growth stage. The ratio is higher for the public sector because of larger investment assets compared to the private sector.

Current assets/Current liabilities: It reflects the liquidity position of the whole sector. Both the sectors suffer from inadequate liquidity. This may not be relevant in the context of the life insurance business.

3.4.3 Solvency and Other Indicators

Regulatory solvency ratios in respect of each individual company, both life and non-life are shown in Table 3.7 (Life) and Table 3.8 (Non-life) respectively. Also, the Table 3.4 presented earlier shows *weighted solvency ratios* for the entire life and non-life industry separately to give a feel for solvency at industry level. Both individual and weighted solvency ratios may be considered as important parameters while assessing the financial soundness and stability of individual insurance companies as well as the insurance industry as a whole. The minimum required regulatory solvency ratio is currently set at 150 per cent. The weighted solvency ratios of the life and non-life sector were also significantly higher than the required level of 150 per cent. As on March 31, 2008, all the companies have attained this level and some of them exceeded it by a substantial margin.

The regulatory requirement for submission of a quarterly solvency statement by all life insurance companies - in the case of non-life companies, quarterly submission of IBNR and liability statements - helps the regulator to closely monitor this important indicator. The effect on the solvency ratio as a result of variation in macroeconomic shock variables can be used as a very good guide to decide on the framework for a pro-active policy that can be undertaken at both the micro and macro levels in order to achieve and to maintain the financial stability of the insurance system at all times.

Table 3.7: Regulatory Solvency Ratios of Life Insurance Companies

(Per cent)

Name of the Company	2006	2007	2008
1	2	3	4
Bajaj Allianz Life Insurance Company Ltd.	279	245	234
Reliance Life Insurance Company Ltd.	205	162	165
Aviva Life Insurance Company Ltd.	279	631	429
Birla Sun Life Insurance Company Ltd.	198	180	237
HDFC Standard Life Insurance Company Ltd.	291	205	238
ICICI Prudential Life Insurance Company Ltd.	163	153	174
ING Vysya Life Insurance Company Ltd.	233	287	236
LIC of India	130	150	152
Max New York Life Insurance Company Ltd.	201	208	225
Met Life India Life Insurance Company Ltd.	166	173	170
Om Kotak Mahindra Life Insurance Company Ltd.	175	164	241
SBI Life Insurance Company Ltd.	290	178	330
TATA AIG Life Insurance Company Ltd.	270	259	250
Sahara India Life Insurance Company Ltd.	266	268	432
Shriram Life Insurance Company Ltd.	223	274	285
Bharti AXA Life Insurance Company Ltd.	NA	196	273
Future Generali India Life Insurance Company Ltd.	NA	NA	294
IDBI Fortis Life Insurance Company Ltd.	NA	NA	345

Source : IRDA

Table 3.8: Regulatory Solvency Ratios of Non-life Insurance and Re-insurance Companies

(Per cent)

Name of the Company	As on March 31		
	2006	2007	2008
1	2	3	4
Agriculture Insurance Company Ltd.	216	205	327
Bajaj Allianz General Insurance Co. Ltd	122	156	155
Cholamandalam MS General Insurance Co. Ltd	251	263	200
HDFC Chubb General Insurance Co. Ltd	178	169	202
ICICI Lombard General Insurance Co. Ltd	129	208	203
National Insurance Co. Ltd	108	171	222
New India Assurance Co. Ltd.	309	357	384
Reliance General Insurance Co. Ltd	304	195	164
Royal Sundaram Insurance Co. Ltd	166	164	159
TATA AIG General Insurance Co. Ltd	168	185	191
The Oriental Insurance Co. Ltd	197	217	191
United India Insurance Co. Ltd	223	300	324
ECGC of India	939	1,141	1,891
IFFCO – TOKIO General Insurance Co. Ltd	195	170	151
Star Health and allied Insurance Co. Ltd	NA	191	197
GIC of India (Re-insurance Company)	341	410	336
Apollo DKV General Insurance Company Ltd.	NA	NA	140
Future Generali India General Insurance Company Ltd.	NA	NA	261
Universal Sompo General Insurance Company Ltd.	NA	NA	466

Source : IRDA

In addition to the above measures, an additional framework that could be considered is the RoE (Return on Equity) framework. This measure may not produce meaningful results given the current state of the industry, but it could be considered in the future. A flow diagram detailing the RoE framework is provided in Annex 3.1.

3.5 Major Risk Factors and Exposures

Market risk and interest rate risk are significant risks in the life insurance business, in particular for non-linked business. When stock market conditions are buoyant, savers and investors are likely to earn high returns. This can lead to increasing volumes of new business inflows, particularly in unit linked products and other investment related products. Therefore, stock market movements can pose significant volatility. Changes in interest rates can also impact the stock market. When investment conditions are rough, there can be a shift from investment related products to non linked products.

Longevity risk is another important risk that the Indian life insurance market has to

manage. The annuity liability is showing an increasing trend and is expected to be a major concern. Census mortality data show that life expectancy at age 60 has increased by 3 years in India. Due to self selection annuitant mortality is lower than the general population mortality rates. The proportion of annuitant relative to the working population is gradually increasing and is expected to be significant by year 2020. With increasing longevity, the increase in the annuity portfolio of the life insurance industry will expose the industry to a greater systemic risk.

Insurance risks also have a very significant impact on the stability assessment exercise. Mortality/morbidity, persistency and reinsurance risks are sources of risk under this category. The effect of all these have to be taken into account in stress-testing.

Credit risk and operational risk are two more risks that can affect the shock-absorbing capacity of the insurance sector. These are macro variables that may affect other segments of the financial sector which in turn may impact insurance industry as a whole. The credit risk may not be significant because of the mandatory nature of the investment regulation.

Joint ventures with foreign insurers by new entrants may add an additional dimension to risk assessment in that the financial stability of the parent country affects the stability of the foreign partner which in turn may affect the domestic insurer. Although, the dual supervision situation exists, the possibility described above cannot be totally ignored. There may also be a direct effect of the parent companies' business as the capital intensive nature of insurance business requires a regular injection of funds particularly during the initial years.

With regard to the non-life insurance industry, the major risks stem from market and insurance specific risks. Because a significant proportion of its portfolio is invested in fixed interest securities and liquid investment instruments, variation in interest rates can have a considerable impact on capital requirements. Premium and technical reserve risks are two other important shock variables in non-life sector. The sector is also likely to be sensitive to variations in operating costs. The effect of claims with high frequency, but entailing small amounts, may also be considered an important shock variable.

3.6 Stress Testing

3.6.1 Introduction

The stress tests carried out in this assessment are entirely based on the life insurance sector. The non-life insurance sector, due to its gradual transition to free pricing regime and lack of reliable and adequate data, was not conducive for meaningful stress tests just yet. Complete de-tariffing of the sector is a necessary prior condition.

3.6.2 Stress Testing in Current Environment

Stress testing for the insurance sector is constrained by a number of factors. The availability of adequate data, heterogeneity of the insurance sector in terms of business models, risk exposure and the age of individual companies are some of the difficulties faced in conducting a system level stress test. Also, the insurance companies' financial statements are not as well developed as the banking sector. Further, given the complexity of the contracts underlying insurance companies' balance sheets, it may be difficult to revalue liabilities. This, therefore, would require more detailed contract- by- contract data which is not available at present.

3.6.3 Approach

The current regulatory system does not explicitly prescribe any stress tests. However, the regulation requires mismatch and resilience reserves to be set up. The Indian insurance industry is seeking to move to a risk based capital regime. It will then be mandatory for all

individual insurance companies to carry out stress testing exercises on an individual basis to assess their resilience to various shock variables. Thus, a bottom up approach seems to be the most appropriate methodology that can be used for the insurance sector.

In order to apply the method in the Indian context, the regulator may be required to prescribe specific macroeconomic scenarios, consisting of a combination of plausible shock variables as mentioned above for sensitivity testing and scenario analysis. A possible practical difficulty may be that this may put extra pressure on insurance companies both in terms of cost and time, in particular, during the rapid growth stage.

The credit risk element may be considered by taking into account the average yield-spread over government bonds according to rating class. A very important feature of the analysis is that a short-term variation in insurance risk variables may not affect the mathematical reserves to a significant extent (for example, an increase in mortality experience for a particular age group in a particular year may not alter the mathematical reserves). However, this will affect the financial position and thereby affect the capital requirement. This is because the calculation of reserves is based on a long-term assessment of parameters. Thus a one-off shock in these variables is likely to have an insignificant impact on the robustness of the stability of insurance sector in the long run.

The main shock variables in Indian context can be viewed as market-specific and insurance-specific risk variables. The former include mainly interest rate risk and equity price risk. Mortality risk, expense risk and persistency risk may be included under insurance specific risk variables, though market conditions impact persistency.

In view of the environment in which the sector is operating and the risks which are envisaged in this environment, the above shock variables have been adopted and their sensitivity to statutory solvency ratio been quantified in respect of two model life offices. These are Life Office - A and Life Office - B, with exactly reverse type of portfolio of business.

The Life Office - A has 90 per cent of its portfolio in unit-linked business with 56 per cent of its linked fund and 14 per cent of its non-linked funds invested in equities as at 31st March, 2007. The initial regulatory solvency ratio (SR) is taken as 150 per cent.

Life Office - B has 6.3 per cent of its total portfolio as linked business and 48.4 per cent of its linked fund, and 17.8 per cent of its non-linked funds are invested in equities. The initial regulatory solvency ratio (SR) is 150 per cent.

Life office - A is very new compared to the latter. The following findings are only illustrative in respect of the particular portfolio of business and may not be suitable for use as a basis for taking macroeconomic decisions.

The solvency ratio is very sensitive to interest rate and expense variation. The effect of expenses is more pronounced for Life office - A relative to Life Office - B. This is natural because Life Office - B has achieved the stable state whereas the former is slowly moving towards a stable state. Variations in interest rates

and mortality experience have a more severe effect on Life office - B mainly because of significant proportion of its total portfolio corresponds to non-linked business. For Life Office - A, mortality risk appears to have an insignificant effect on capital requirement criteria (Table 3.9).

A fall in the equity market shows no significant effect on capital requirements in respect of Life Office - A, as the portfolio is skewed towards unit-linked business where the equity risk is borne by the policy holders only. Moreover, the solvency margin requirement under depressed equity market condition releases reserves in case of the unit-linked business instead of creating a strain. But this might have an adverse effect with regard to non-unit funds. In a marked-to-market scenario, the actual fall may not be as revealed in the analysis. Further, despite the larger proportion of the business in the traditional section, a variation in equity prices has a limited impact on capital requirements of Life office - B because of its limited exposure to the equity market.

An increase in withdrawal rates improves the solvency position because the release of reserves outweighs the reduction in assets associated with withdrawals. This improvement is a short-term feature because of the lapse supported nature of the product. A continuation of this trend is likely to have a long-term adverse impact on the financial health of the company. All related issues have to be taken into account when recalculating mathematical reserves for the purpose of testing sensitivity of withdrawal rates and the impact of expenses. Overall, the stress scenarios demonstrate adequate strength of the life insurance industry.

To get a more realistic view, we need to construct scenarios which are combinations of shock variables. However, the relationships among the variables also need to be considered when constructing such scenarios. A fall in equity prices could impact persistency in both linked and non-linked business. Low interest rates may signal a recession, leading to a loss of employment which would impact persistency. Similarly there must be a consistent relationship between expense inflation and interest rate variation, when considered together.

3.7 Concluding Remarks

The Indian life insurance sector has been experiencing robust growth since it was opened up in 1999. This remarkable growth can be seen both in the public sector and in the private sector companies. The nature of the product-mix has changed significantly and today there are, alongside endowment assurance products, pure term and creditor protection products as well, which are prevalent in advanced countries. Also, the need for long-term care products is gradually gaining momentum in the face of increasing life expectancies. The non-life industry meanwhile has moved towards risk-based pricing. Health insurance products are also being introduced. A few non-life companies have introduced weather protection insurance.

Table 3.9: Stress Testing - Results

Shock Variable	Size of the shock (per cent)	Effect on Life Office – A (per cent)	Effect on Life Office – B (per cent)
1	2	3	4
Equity price	Drop by 25	Not Significant	Not Significant
Interest rate	Drop by 2	SR drops to 129	SR drops to 119
Mortality experience	Increase by 20	SR drops to 148	SR drops to 139
Expense experience	Increase by 20	SR drops to 115	SR drops to 134
Withdrawal experience	Increase by 20	Slightly improved	Slightly improved

Note: SR is Solvency Ratio.
Source : IRDA

It takes a minimum of six to seven years for life insurance companies to reach the breakeven point. Hence, in order to enhance their market share and to have a sustainable premium growth, companies have started expanding presence by establishing branches all over the country. They are also bringing other innovative forms of distribution channels. All this is not without a cost. Around 50 per cent of the expenses of the life companies are towards developmental/capital expenses. In the days to come, companies will have to pay more attention in expense management. Also it is important for them to institute an asset-liability management (ALM) framework in order to measure and manage the market risk and the interest rate risk, as these can have a pronounced impact on the financial stability, particularly for life insurance companies which have significant levels of non-linked business.

Life insurance companies also sell health and pension products. So, suitable indicators will have to be developed to capture the risks. With regard to risk factors, pension products are very similar to other insurance products (where the accumulation phase is concerned). More emphasis is needed on the payout structure because that will enable life insurers to share or transfer one or more risks to the annuitants.

Stress testing poses significant challenges at present because of data limitations and the evolving nature of the industry. Both the regulator and the companies have to develop systems to ensure data collection and updating on a continuous basis. The Panel expressed its reservations on the interpretation of the results of stress testing. But after detailed deliberations these results have been submitted in order to evoke a transparent and meaningful analysis. A reasonable degree of comfort is visible in the sector due to the regulatory norms.

The regulatory framework that has evolved so far has served the requirements of preparing a sound base. While it is accepted that the regulator would need to move towards a more sophisticated risk-based capital (RBC) model and risk-based supervision (RBS), such initiatives require changes in the statute as well as the overall approach towards supervision. The number of players is not very large and it would be preferable to supervise all of them on an ongoing basis at the initial stages of sectoral reforms. It would also be beneficial to have supervision based on the individual institution's risk profiles. A precondition for the introduction of RBS would be the development of an adequate data base through the introduction of a robust and risk-focused off-site surveillance and monitoring mechanism.

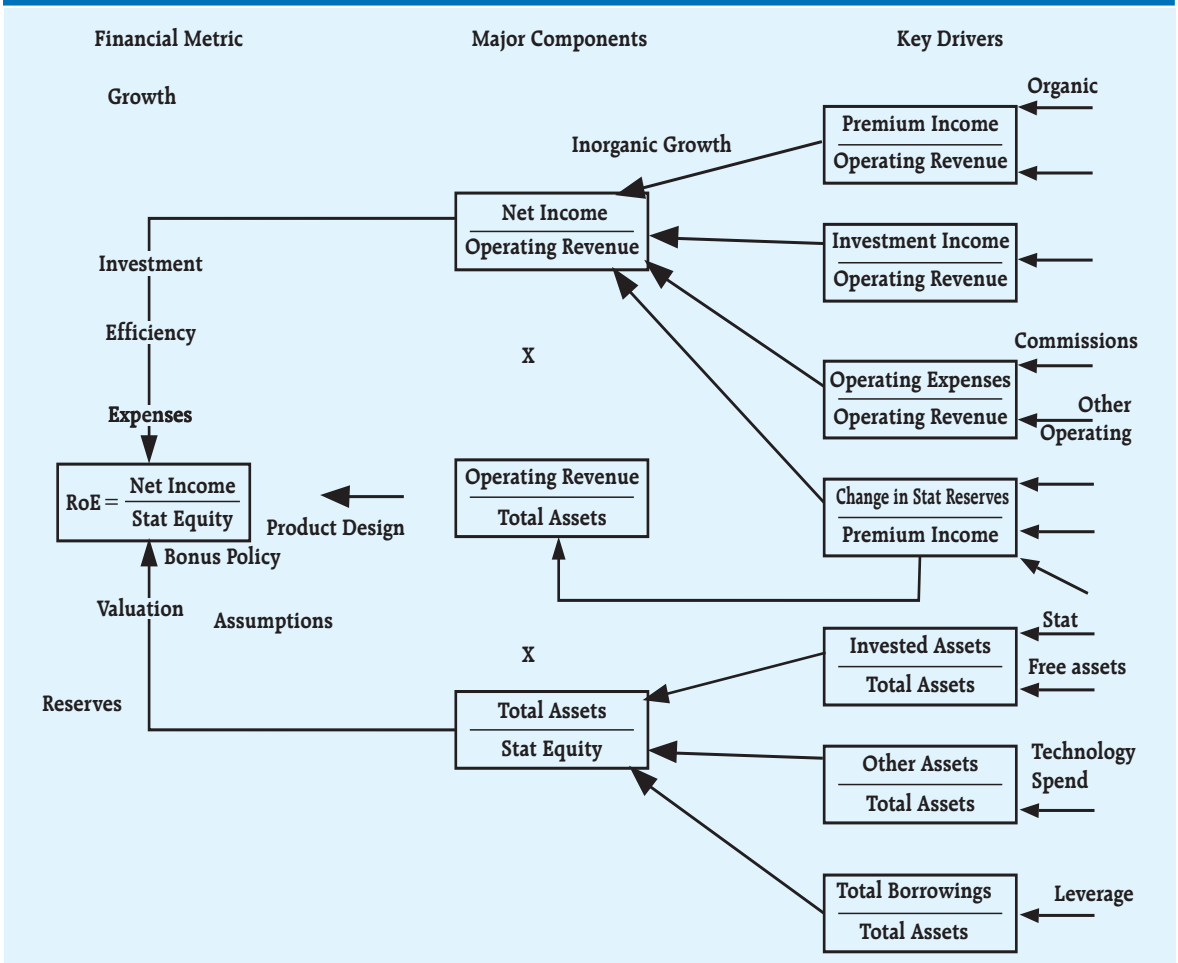
IRDA initiated a number of measures to increase and empower its human resources. The Panel notes in this regard that, the need to develop skills in the treasury functions is acute as the business involves short-term leveraging of funds due to its long-term maturity. In the present market environment, merely obtaining the yield on fixed interest securities may not be sufficient to meet all the commitments and developmental expenses. Hence, the treasury function also must acquire investment management skills. Many life insurance companies have entered into joint ventures with banks to acquire skill from bank treasuries. However, the mandated investment requirements of the insurance sector (approximately 65% of total investments), where

a very significant portion of the insurance funds are to be placed in low risk, low yield securities, act as a disincentive for the companies to develop treasury functions.

Another area of concern is the shortage of actuaries. Given the rapid rate of growth there is an acute need for more trained actuaries as actuarial skills are fundamental to development of risk management capacity.

Finally, though the performance of the insurance companies in India has been satisfactory and to a large extent the outcome of various prudential policies pursued by IRDA it has been argued that the initial capital requirement has been very high. Experience shows that insurance companies need to invest almost ten times of this initial capital in the third/fourth year of operation to increase their market shares. Therefore, the capital criteria followed at the entry level are appropriate, especially since, despite such stringent capital requirements, a number of international players have entered the Indian insurance market. Further opening up and the entry of more players would increase the range of competitive products and the development of human and professional skills which would also help complement the growth of the banking and other financial sectors.

Annex 3.1 RoE Tree Framework for Life Insurance Companies



Notes:

1. Net Income = Profit after Tax
2. Stat Equity = Statutory Equity=Share Capital + Reserves and Surplus – Accumulated Losses – Miscellaneous Expenditure not written off – fictitious assets, if any, not written off
3. Operating Revenue = Premium Income (First Year and Renewal) + Investment Income + Other Miscellaneous Income
4. Total Assets = Net Fixed Assets + Investments + Current Assets
5. Premium Income = First Year Premium Income + Renewal Premium Income
6. Operating Expenses = Commissions + Other Selling, Distribution and Administration Expenses
7. Other Assets = Net Fixed Assets + Current Assets
8. Total Borrowing = Long-Term Borrowings (=Secured Loans + Unsecured Loans) + Current Liabilities and Provisions
9. ROE = Return on Equity
10. The term "statutory equity" has been used in this framework because of this equity which is used to demonstrate statutory solvency is usually different from the GAAP equity that would be reported in the published financial statements.

Chapter IV

Aspects of Stability and Functioning of Financial Markets

4.1 Introduction

The financial services sector has been dominated by bank intermediation. It is only the growth of the equity markets since the mid-1980's and financial liberalisation since the early 1990's that has led to the development of alternatives in the form of financial markets and products. Nevertheless bank intermediation is still predominant.

Efficient and well-functioning financial markets are characterised by liquidity and high turnovers providing investors an opportunity to enter/exit at minimal costs. The creation of a market microstructure and proper regulation are a prerequisite for ensuring this. There is also a need for efficient self regulatory organisations. However, ultimately, financial stability is contingent on effective control systems and the quality of governance within the participating financial institutions and agencies.

The other aspects that have a bearing on financial stability is market-design, the extent of integration of the markets and contagion risk, structural rigidities that could lead to a concentration of an adverse event on a single market or a few institutions and last but not least, the risk management abilities of participants. In view of this, the approach to market development in India has been measured and calibrated, comprising the gradual opening up of various segments of the financial markets rather than following a big-bang approach.

The Indian financial market can be categorised for analytical purposes into the money market, the foreign exchange market, the government securities market, the equity market, the corporate bond market and the credit market.

The foreign exchange, money and government securities markets are within the regulatory ambit of the Reserve Bank. The corporate bond market and the equity market are regulated by SEBI. With its overall regulatory and supervisory powers over all credit institutions, credit markets come under the Reserve Bank regulation.

The Reserve Bank has been regulating the money, foreign exchange and government securities markets through its regulatory and supervisory powers. Under Section 16 of the Securities (Contract) Regulation Act, 1956 (SCRA), in 2000 the Government notified that contracts for sale and purchase of government securities, gold related securities, money market securities and securities derived from these securities and ready forward contracts in debt securities would come under the regulatory

purview of the Reserve Bank. In addition to SCRA, the power of the Reserve Bank to regulate these markets is derived from the Banking Regulation Act 1949 and the Foreign Exchange Management Act 1999. The regulatory power of the Reserve Bank has further been formalised through amendment of the RBI Act in 2006 where a new Chapter III D has been inserted defining and clarifying its role in the regulation of transactions in derivatives, the money market and the securities market. The Chapter has also defined the terms 'derivatives', 'repo' and 'reverse repo' , 'money market instruments' and 'securities' in a clear and unambiguous manner.

SEBI was set up under the Securities and Exchange Board of India Act, 1992 (SEBI Act) with responsibilities to protect the interest of investors and regulate and promote the development of the securities market. It has regulatory power over the securities market and securities market institutions, such as stock exchanges and intermediaries. Its power to regulate the securities market is derived from the SEBI Act 1992, SCRA 1956, the Depositories Act 1996 and certain provisions of Companies Act 1956.

There is some regulatory overlap between the Reserve Bank and SEBI inasmuch as while contracts related to government securities, money market securities, gold related securities and ready forward transactions come under the regulatory purview of the Reserve Bank, the execution of such contracts on stock exchanges is regulated by SEBI.

An attempt has been made in the following sections to analyse strengths and weaknesses of each market segment while delineating, *inter alia*, the observed gaps and perceived vulnerabilities which could impact market development and stability.

4.2 Financial Market Integration

The gradual removal of structural bottlenecks in the Indian financial markets and a shift away from the Government/ the Reserve Bank determined interest rates has led to greater market integration. The gradual easing of restricted inter-sectoral fund flows has removed artificial segmentation and aided the process of integration. A conventional way of assessing the strength of market integration is to study the co-movements in the important markets through a correlation matrix. The first phase of financial sector reforms from early 1990s till 2000 showed only a modest integration of markets. But since then, the process has accelerated. The growing integration of financial markets beginning 2000 can be seen in the cross-correlation matrix as given in Table 4.1.

The matrix shows that there has been greater correlation between the different market segments for the period April 2000 – March 2008 as compared to the period April 1993 – March 2000. Across markets, the money market rates and the government securities rates show a very high degree of positive correlation. This reflects a transmission of signals from the money market to longer term instruments, auguring well for effectiveness of monetary policy transmission (Chart 4.1).

The exchange rate and the stock market index, meanwhile, exhibit a strong inverse relationship reflecting the cross linkages

Table 4.1: Correlation Matrix Across Markets

Panel A: Period April 1993 – March 2000

	Lg BSES	Call	RRepo	CD	CP	Exch	FR3	TB364	TB91	YLD10#
1	2	3	4	5	6	7	8	9	10	11
Lg BSES	1.00									
Call	-0.099*	1.00								
R Repo	-0.366	0.353	1.00							
CD	-0.403	0.316	0.304	1.00						
CP	-0.284	0.537	0.388	0.711	1.00					
Exch	0.347	-0.045*	0.032*	-0.192*	-0.311	1.00				
FR3	-0.279	0.675	0.281	0.575	0.650	0.116*	1.00			
TB 364	-0.343	0.396	0.319	0.408	0.745	-0.379	0.324	1.00		
TB 91	-0.237	0.609	0.441	0.448	0.811	-0.229	0.466	0.898	1.00	
YLD10 #	-0.565	0.055*	0.123*	0.445	0.687	-0.668	0.556	0.588	0.386	1.00

Panel B: Period April 2000 – March 2008

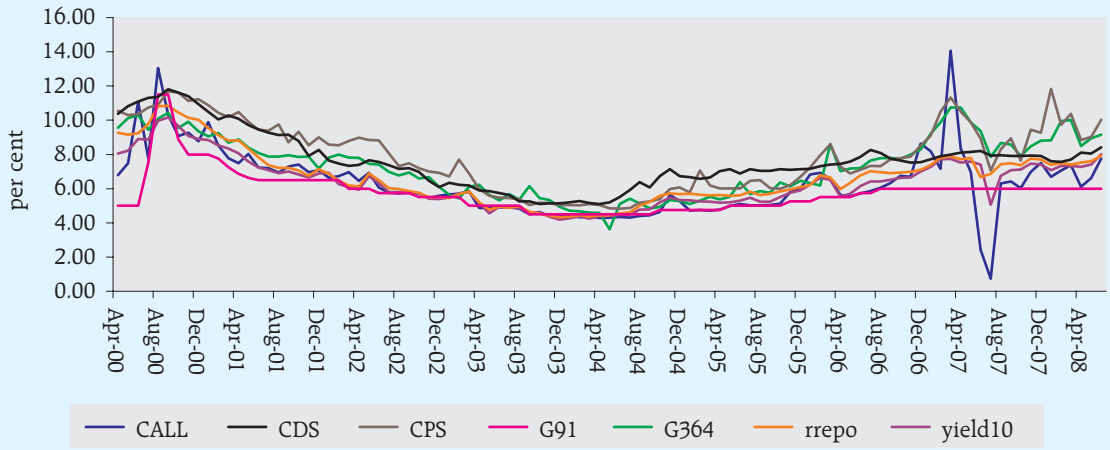
	Lg BSES	Call	RRepo	CD	CP	Exch	FR3	Y364	Y91	YLD10
Lg BSES	1.00									
Call	-0.002*	1.00								
RRepo	-0.094*	0.701	1.00							
CD	0.267*	0.741	0.687	1.00						
CP	0.107*	0.791	0.751	0.930	1.00					
Exch	-0.843	0.053*	0.104*	-0.238*	-0.124*	1.00				
FR3	-0.461	0.529	0.537	0.471	0.587	0.486	1.00			
TB 364	0.098*	0.786	0.827	0.882	0.917	-0.135*	0.467	1.00		
TB 91	0.099*	0.825	0.829	0.904	0.940	-0.124*	0.516	0.982	1.00	
YLD10	-0.037*	0.718	0.791	0.812	0.860	-0.016*	0.498	0.964	0.934	1.00

* : not statistically significance at 5 per cent level
\# : data for April 1996 to March 2000
Ln BSES – Natural logarithm of BSE Sensex
Call – monthly weighted average of inter-bank overnight rates
R Repo – Reverse repo rate
CD – Certificates of deposit rate
CP – Commercial paper rate
Exch : Exchange rate of INR/USD
FR3 – 3 month forward premia
Yield 10 – YTM of 10 year benchmark government securities
TB 364 – 364 day T-bill rate
TB 91 – 91 day T-bill rate
Source : RBI.

between movements in capital flows, exchange rate and the equity market expectations (Chart 4.2).

Money market rates are also significantly correlated to 3-month forward rates in the foreign exchange market reflecting the growing

Chart 4.1 : Movements in Government Securities and Money Market Rates



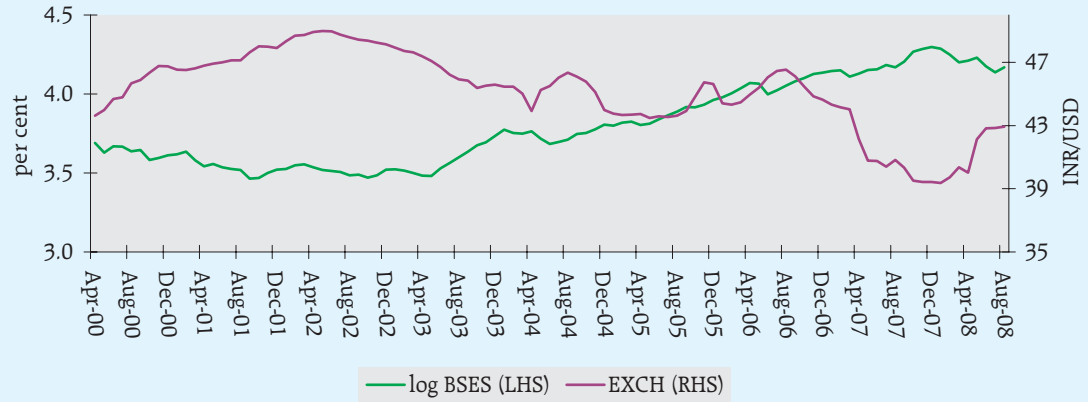
Source : RBI

integration of the exchange and money markets as alternate funding sources (Chart 4.3).

This increased domestic market integration is a direct consequence of a series of policy initiatives taken over time. These include the following:

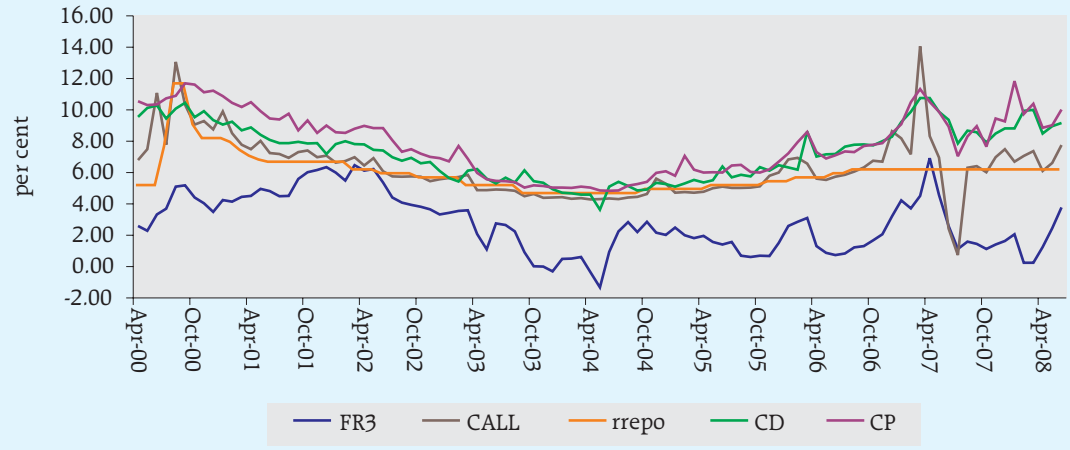
- Enabling market determined price discovery through interest rate deregulation and the introduction of processes such as book building for primary issuance of equity.
- Widening participation across markets by allowing foreign entities to participate in

Chart 4.2 : Movements in Exchange Rate and Stock Market



Source: RBI

Chart 4.3 : Foreign Exchange Forwards and Money Market Rates



Source : RBI

the Indian equity market. Simultaneously, Indian companies have been allowed to raise funds abroad. There has been a significant expansion and diversification of the investor base with mutual funds, insurance companies and pension funds playing a major role. The development of market intermediaries like primary dealers also helped greater market integration.

- The introduction of instruments like repo, t-bills of various maturities, floating rate bonds, futures and options *etc.* Other derivative instruments like rupee-foreign currency swap market, interest rate swaps *etc.* have also been developed.
- An improvement in market infrastructure comprising the replacement of the floor based open outcry trading system in equity markets by order driven trading platforms, the introduction of DVP in government securities market, the development of screen based trading systems like NDS and NDS OM for government securities, the introduction of guaranteed settlement and currency futures in stock exchanges and through CCIL in other market segments, and the introduction of RTGS.

Greater financial integration also increases the risk of contagion as increased volatility in one market can impact others resulting in a domino effect. This is of particular importance in respect of domestic and international integration which increases the risk of transmission with the potential to cause financial instability. In recent times, India has proved to be less 'decoupled' with the global markets than hitherto. Indian imports and exports remain predominantly dollar-denominated and any movement in the USD rate impacts Indian markets. Recent years have also seen an increase in the correlation between the movements in the rupee with other Asian currencies. This is ascribed to the greater integration of the Asian markets arising from large trades and capital flows in the region, thus making the Indian market more sensitive to the developments in these markets.

4.3 Money Market

4.3.1 Introduction

Until the late 1980's the money market remained dormant and lacked depth because of administered interest rates and a paucity of instruments. The dominant part of the market was the overnight call money market. With liberalisation and the introduction of new instruments, the market has diversified and

currently its various segments (besides the call/notice money market) are term money, market repo, collateralised lending and borrowing obligations (CBLO),[59] bill rediscounting, forward rate agreement (FRA)/interest rate swap (IRS), inter-bank participatory certificates, treasury bills, commercial paper (CP) and certificates of deposit (CDs). But the dominance of the overnight market (call, CBLO, market repo) still continues.

4.3.2 Regulatory Backdrop and Market Infrastructure

The Reserve Bank has traditionally regulated the money market, The introduction of Section 45W (Chapter III D) in the RBI Act in 2006 has brought in further clarity to its powers to regulate, monitor and supervise the money market and all its constituents. Transparency has improved with the OTC market being replaced by screen-based trading. The Reserve Bank introduced the Negotiated Dealing System (NDS) in 2002. All NDS members were mandated to report their transactions in call/notice money markets within 15 minutes of a deal conclusion. Furthermore, the NDS-CALL was introduced by Clearing Corporation of India Limited on September 18, 2006. The NDS-CALL is a screen-based order-matching system which also enables instantaneous price dissemination. The trading in Collateralised Borrowing and Lending Obligation (CBLO) operates on an electronic platform and ensures immediate price dissemination to the market. Further advantage of the CBLO segment is that the market is anonymous. This helps in reducing volatility.

The money market plays a critical role in monetary policy transmission. Its potential for contagion is also significant. In the light of this, the Advisory Panel on Financial Regulation and Supervision has made an assessment of the adherence to IOSCO principles in respect of regulation and supervision of the money market. The assessment has revealed that out of the 28 applicable principles[60], 23 are implemented /broadly implemented and five are partly implemented. The principles relating to self-regulation are not applicable. The assessment shows that there are some gaps relating to regulatory independence and accountability as also regulatory co-operation.

4.3.3 Growth and Composition

4.3.3 (a) Cash Segment

The market structure is broad-based comprising banks, primary dealers, insurance companies, mutual funds, provident funds,

[59] Collateralised Borrowing and Lending Obligation (CBLO)", a money market instrument as approved by the RBI, is a product developed by CCIL for the benefit of the entities who have either been phased out from inter bank call money market or have been given restricted participation in terms of ceiling on call borrowing and lending transactions and who do not have access to the call money market. CBLO is a discounted instrument available in electronic book entry form for the maturity period ranging from one day to ninety days (can be made available up to one year as per RBI guidelines).

CBLO is explained as under:

- An obligation by the borrower to return the money borrowed, at a specified future date;
- An authority to the lender to receive money lent, at a specified future date with an option/privilege to transfer the authority to another person for value received;
- An underlying charge on securities held in custody (with CCIL) for the amount borrowed/lent.

[60] Out of a total 30 principles

corporates *etc.* This broad participation has contributed to active interest across all market segments. The Reserve Bank has been focusing on the growth of the collateralised market, limiting call money market participation to only inter-bank dealings.

Table 4.2 shows that the relative importance of call money as an instrument for the institutions to tide over overnight mismatches has been declining and that call money currently constitutes only about one fifth of the total overnight transactions. The share of market repos and CBLO are growing and stood at 39.7 per cent and 40.4 per cent respectively in 2007-08. There has also been a significant increase in outstanding commercial paper (CP) and certificates of deposit (CDs) between 2003 and 2008. While the increase in outstanding CP could be attributed to the ample availability of liquidity and industrial buoyancy during this period, the sharp rise in CDs was a result of the efforts made by banks to mobilise deposits to fund credit growth. The term money market turnover, however, remains insignificant.

The Indian money market appears to be a liquid market (based on overnight data on bid-ask spread from April 1, 2004 to November 25, 2008). Excluding outliers in the data, the bid-ask spread has varied within a range of 4 to 69 basis points with an average of 18 basis points and standard deviation (SD) of 17 basis points (coefficient of variation is 95.6) during the period. The bid-ask spread remained within the 3-SD[61] band around the average during most of the period (Chart 4.4). The gradual shift towards a collateralised inter-bank market, phasing out of non-bank participants from call money market, policy directions towards reductions in statutory reserve requirements[62], introduction

Table 4.2: Activity in Money Market Segments

(Amount in Rs. crore)

	Average daily turnover #				Outstanding amount@		
Year	Call Money Market	Market Repo (Outside the LAF)	CBLO	Term Money Market	Commercial Paper	Certificates of Deposit	Treasury Bills
1	2	3	4	5	6	7	8
1997-98	22,709	-	-	-	1,500	14,296	17,844
2000-01	32,157	10,500	-	-	5,846	771	18,172
2003-04	17,191	10,435	515	519	9,131	4,461	33,316
2004-05	14,170	17,135	6,697	526	14,235	12,078	34,486
2005-06	17,979	21,183	20,039	833	12,718	43,568	52,149
2006-07	21,725	33,676	32,390	1,012	17,838	93,272	73,427
2007-08	27,394	54,736	55,626	704	32,592	1,47,792	98,980

: Turnover is twice the single leg volumes in case of call money and CBLO to capture borrowing and lending both, and four times in case of market repo (outside LAF) to capture the borrowing and lending in the two legs for a repo.
@ : at end-March
Source : RBI

[61] SD - Standard Deviation.

[62] Given the excess money supply situation and inflationary pressures there has been an increase in CRR till September 2008. Subsequently, the CRR has been reduced to tackle the liquidity pressures in the Indian economy.

of new instruments such as CBLO, implementation of RTGS, significant transformation of monetary operations framework toward market based arrangements and facilitating the trading through NDS-CALL are some of the factors that have contributed to the development of a relatively vibrant and liquid money market.

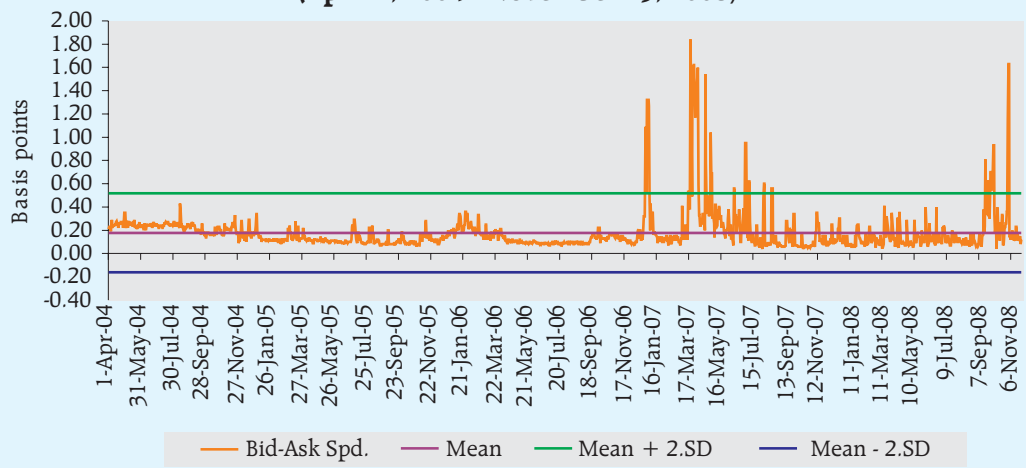
Since the introduction of financial market reforms there has been a significant decline in volatility in the money market (Table 4.3). This can be attributed to a softening of rates, anchoring in inflation expectations, the introduction of LAF and the setting up of an informal corridor of overnight rates, and the introduction of new instruments like market repo and CBLO. The lower volatility, which is a function of stable market expectations, is in consonance with the Reserve Bank's emphasis on financial stability as a key consideration for monetary policy.

4.3.3 (b) Derivatives Segment

While interest rate deregulation has made financial market operations more efficient it has also exposed the participants to increased risks. Interest rate derivative products could be an effective risk mitigant in this regard. Rupee derivatives in India were introduced when, in July 1999, the Reserve Bank permitted banks/FIs/PDs to undertake interest rate swaps/forward rate agreements. Interest rate swaps are the predominant instruments.

The swap market, especially the overnight indexed swaps (OIS) market has been very active in India and is used by banks as well as other entities to manage their interest rate risk more than any other instrument. But the absence of a term money market, and therefore a 3 or 6 month benchmark rate, has led to market concentration on the overnight benchmark.

Chart 4.4 : Bid-Ask Spread in the Inter-bank Overnight Money Market (April 1, 2004 - November 25, 2008)



Source: RBI

Table 4.3 Volatility in Money Market Rates			
	April 1993-March 1996	April 1996-March 2000	April 2000-June 2008
1	2	3	4
Call Money			
Average (Per cent)	11.1	8.0	6.3
SD	6.7	3.7	1.9
CV	0.6	0.5	0.3
Commercial Paper			
Average (Per cent)	13.4	11.7	7.9
SD	2.6	2.2	2.0
CV	0.2	0.2	0.3
Certificates of Deposit			
Average (Per cent)	12.2	11.6	7.3
SD	2.2	2.4	1.8
CV	0.2	0.2	0.2
Term Money*			
Average (Per cent)	-	-	6.3
SD	-	-	4.5
CV	-	-	0.7
Market Repo**			
Average (Per cent)	-	-	5.8
SD	-	-	1.3
CV	-	-	0.2
CBLO**			
Average (Per cent)	-	-	5.1
SD	-	-	1.4
CV	-	-	0.3

SD : Standard Deviation.
CV : Coefficient of Variation.
* : Figures upto December 2006
** : Figures upto December 2007
Note: Calculated on monthly average data.
Source: RBI

4.3.4 Stability and Development Issues

4.3.4 (a) Term Money Market

The non-development of the term money market remains a concern. In spite of all the measures taken by the Reserve Bank, this segment is virtually inactive. One important reason for this is the inability of the market participants to take a term view on interest rates. Other reasons are the skewed distribution of market liquidity, corporates' preference for 'cash credit' over other modes of loan disbursements, and the tendency of banks to deploy their surplus funds in LAF auctions rather than in the term money market. This is the single largest impediment in the way of a short-term yield curve, which is imperative for the development of a smoother rupee yield curve. This has implications for risk pricing of various products across the financial markets. A vibrant term money market is also necessary for the development of the interest rate derivatives market. The following steps should be considered to develop a term money market:

- Develop benchmarks other than overnight rates. This could be achieved by phasing out cash credit and providing regulatory incentives to lending institutions to provide short-term loans

to corporates. This measure, if undertaken, will have the added benefit of improved asset liability management by banks and other lending institutions and would help rectify the skewed lending-borrowing pattern frequently observed in the market.

- A term money market would emerge by developing an active money market futures market with longer than overnight underlying. Appropriate benchmarks could either be t-bills or CP since these are frequently re-priced, and have a liquid market. In addition, banks should be allowed to take trading positions in the interest rate futures market. There is a case for harmonisation of regulations in respect of OTC IRS and exchange traded IRF to develop the IRF market. Also, short-selling of all kinds of money market securities should be allowed, but in a phased manner.
- The Reserve Bank should consider the re-introduction of long-term LAF. The Panel notes that the RBI has exercised the option of doing longer-term LAF and is presently doing so to mitigate the current liquidity pressures.
- The introduction of a term liquidity facility in the form of a general refinance facility by the Reserve Bank subject to prudential safeguards would also help. The Panel notes that the same has already been implemented by the Reserve Bank.

4.3.4 (b) Market Repo

With access to call money being restricted for non-banks, there has been an increase in market repo where the average daily turnover has seen a five-fold increase between 2000-01 and 2007-08. Currently market repo is allowed only in respect of government securities. In order to develop the repo market further, the pool of eligible securities should be made wider and deeper by allowing AAA rated corporate bonds to be repo-able, with appropriate haircuts, if required. This would also require a reasonably well-developed corporate bond market along with a transparent and efficient clearing and settlement system which, in turn, could facilitate the induction of corporate bonds in the pool of eligible securities.

4.3.4 (c) Self Regulatory Organisation

Default risk in the money market has the potential to create contagion in the entire economy and, therefore, needs to be mitigated. Cross-country experiences of the developed economies show that, generally, self-regulatory organisations (SROs) regulate activities of participants in the money market in terms of ensuring the fair conduct of business. Giving a full-fledged SRO status to FIMMDA could be a viable option to streamline money market and related derivatives regulation.

4.3.4 (d) Commercial Paper

The commercial paper market has witnessed vibrant growth in the last three years. Though it is not obligatory on the part of financial institutions to provide any 'stand-by' facility to the issuers of corporate paper, the existence of an appropriate liquidity back-up is imperative for mitigating risks in the commercial paper market. The Panel recommends that all corporate paper should be rated, keeping in view the availability of an

appropriate liquidity back-up. In the interest of market discipline, the Panel further recommends the disclosure of the nature of liquidity back-up by the issuers in their prospectus to prevent liquidity and other contagion risks.

4.4 Foreign Exchange Market

4.4.1 Introduction

The origin of Indian foreign exchange market can be traced to 1978 when banks were permitted to undertake intra-day trading in foreign exchange. Then, in the early 1990's, the exchange rate was pegged to a currency basket. This was an important step in the progress towards current account convertibility, which was allowed in August 1994. The spillover effect of the Asian crises was kept at a minimum through appropriate monitoring and regulatory measures to deter self-fulfilling speculative activities. Since then India has been moving towards fuller capital account convertibility albeit in a cautious and calibrated manner. Over time, this market has acquired depth and has generally remained orderly though the recent global financial turmoil has resulted in some increased volatility. In 2006, the Committee on Fuller Capital Account Convertibility, set up by the Reserve Bank, delineated a recommended path to achieve full capital account convertibility by 2011.

The foreign exchange market comprises the spot and derivatives markets. Foreign exchange derivatives instruments in India are foreign exchange forwards, foreign currency rupee and cross currency swaps and options. Recently currency futures have been introduced in stock exchanges. The players in the Indian market include authorised dealers (ADs), foreign exchange brokers and individuals/corporates.

4.4.2 Regulatory Backdrop and Market Infrastructure

The Reserve Bank monitors the foreign exchange markets under the various provisions of the Foreign Exchange Management Act. It licenses authorised dealers (ADs) including full fledged money changers (FFMCs). The Foreign Exchange Dealer's Association of India (FEDAI) is a self regulatory body whose major functions are framing of rules governing the conduct of inter-bank foreign exchange business among banks *vis-à-vis* public and liaison with the Reserve Bank for reforms and development of the foreign exchange market. With greater liberalisation, the scope of FEDAI's operations has been transformed and it has been focusing more on current developments and international best practices. There is no legal framework stipulating mandatory oversight of FEDAI by the Reserve Bank.

Recognising the systemic impact of foreign exchange settlement risk, Reserve Bank set up the Clearing Corporation of India Limited (CCIL) in 2001 to minimise risks in the Indian foreign exchange settlement. CCIL commenced settlement operations relating to foreign exchange markets in 2002. It undertakes settlement of foreign exchange transactions on a multilateral net basis through a process of novation. The guaranteed settlement of transactions, however, is not extended to all forward trades.

Spot trading takes place on four platforms *viz.*, FX CLEAR of the CCIL, FX Direct launched by IBS Foreign exchange (P) Ltd. and two other platforms, *viz.*, D2 and Reuters Market Data System (RMDS) provided by Reuters. Derivatives' trading takes place on three platforms *viz.*, FXClear, FXDirect and RMDS which provides for both negotiated as well as order matching settlement. They perform activities similar to brokers but use different channels of communication and technology. Most transactions in foreign exchange market, therefore, are either OTC or akin to OTC transactions.

Due to the preponderance of OTC transactions, the level of transparency is not

adequate in the foreign exchange markets, though the world over, OTC is the more popular mode of foreign exchange transactions. There is a need, therefore, to encourage the development of exchange traded foreign exchange operations, both in the cash and the derivatives segments as it would enhance transparency and improve the process of price discovery. Accordingly, trading in currency futures was launched in major stock exchanges during August and October 2008. The day to day trading in currency futures falls within the regulatory ambit of SEBI.

The market infrastructure for spot, forward and swap deals in foreign exchange between authorised dealers involves facilities for direct bilateral screen-based trading as well as brokered trading. The settlement mechanism of CCIL in this regard has performed satisfactorily. Apart from settlement risks, market participants also need to efficiently manage market risk, liquidity risk, credit risk and operational risk to avoid potential losses. Detailed guidelines by the Reserve Bank are in place for banks to manage foreign exchange risks efficiently.

Although IOSCO principles are not applicable to the foreign exchange market, given the size and systemic implications of volatility in their market, the Advisory Panel on Regulation and Supervision decided to undertake an assessment of adherence to IOSCO principles in respect of the regulation and supervision of the foreign exchange market (to the extent the principles are applicable). The assessment revealed that out of the 21 applicable principles[63], 16 are implemented while five are partly implemented. The principles relating to self-regulation, issuers and collective investment scheme are not applicable to this market. The assessment also revealed that there are gaps in areas relating to operational independence, co-operation and detection of manipulation and unfair trading practices.

4.4.3 Growth and Composition

The daily average turnover has seen a substantial increase from about USD 5 billion during 1997-98 to USD 49 billion during 2007-08. The inter-bank to merchant turnover ratio has halved from 5.2:1 during 1997-98 to 2.5:1 during 2007-08 reflecting the growing participation in the merchant segment of the foreign exchange market (Table 4.4).

The compounded annual growth rate (CAGR) between 1997-98 and 2007-08 was close to 25 per cent. The growth has been particularly impressive in the last three years, when it was at, 52.3 per cent, 49.2 per cent and 87.2 per cent, respectively (Chart 4.5)

The spot market remains the most important segment, accounting for 50 per cent of total turnover in 2007-08. In the derivatives market, foreign exchange swaps account for the largest share of the total derivatives turnover, followed by forwards. Options launched in 2003, have remained insignificant despite being in existence for more than five years. With restrictions on direct participation in foreign

[63] Out of a total of 30 principles.

Table 4.4: Indicators of Indian Foreign Exchange Market Activity				
Indicator	**April 1997-March 1998**	**April 2005-March 2006**	**April 2006-March 2007**	**April 2007-March 2008**
1	2	3	4	5
Total annual turnover	1,306	4,404	6,571	12305
Average daily Turnover	5	18	27	49
Average Daily Merchant Turnover	1	5	7	14
Average Daily Inter-bank Turnover	4	13	19	35
Inter-bank to Merchant ratio	5.2:1	2.6:1	2.7:1	2.5:1
Spot/Total Turnover (per cent)	51.6	50.5	51.9	49.6
Forward/Total Turnover (per cent)	12.0	19.0	17.9	19.3
Swap/Total Turnover (per cent)	36.4	30.5	30.1	31.1

Note : Amount in USD billion
Source: RBI

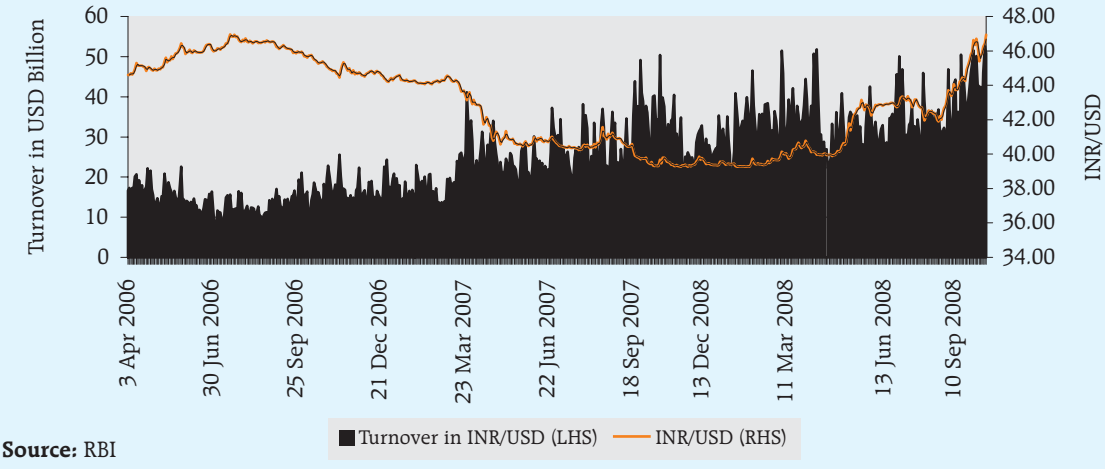
exchange swaps and options by corporates in India, the turnover in these segments reflects mainly inter-bank transactions.

Another segment that is growing fast is the off-shore, non-deliverable forwards (NDF) market. NDFs are synthetic foreign currency forward contracts on non-convertible or restricted currencies traded over-the-counter outside the direct jurisdiction of the authorities. The demand for NDFs arises principally out of regulatory and liquidity issues of the underlying currencies. These derivatives allow multinational corporations, portfolio investors, hedge funds and proprietary foreign exchange accounts of commercial and investment banks to hedge or take speculative positions in local currencies. Onshore financial institutions are not allowed to transact in the NDF markets. Domestic banking entities are allowed specific open positions and gap limits for their foreign exchange exposures. Rupee NDFs have grown in volume and depth over the last decade. While these are largely concentrated in Singapore, they are also traded in Hong Kong, London and New York (Chart 4.6).

4.4.4 Liquidity and Market Integration

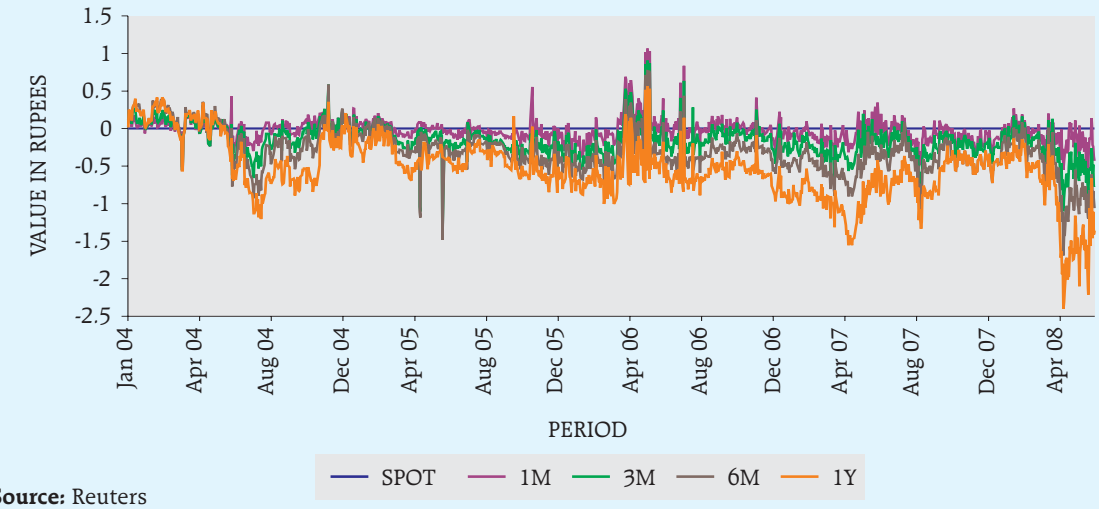
There has been a perceptible increase in the efficiency/ liquidity of the foreign

Chart 4.5 : Daily Turnover in the INR/USD Market



Source: RBI

Chart 4.6: NDF Movement



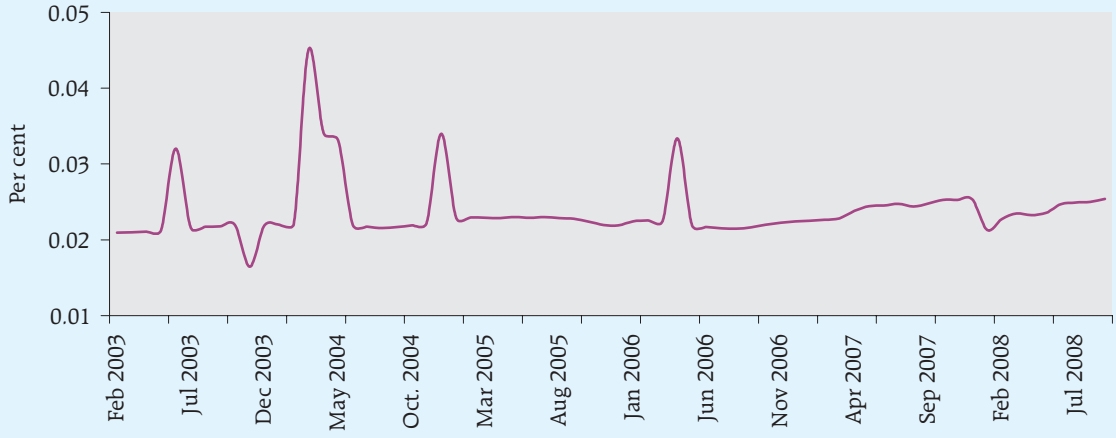
Source: Reuters

exchange markets as seen from the increased turnover and low and stable bid-ask spreads in recent years. This suggests that the market is efficient, with underlying high liquidity and less of information asymmetry (Chart 4.7).

The period since 2002 has, in fact, shown a sharp co-movement between forward premia and exchange rate (Chart 4.8).

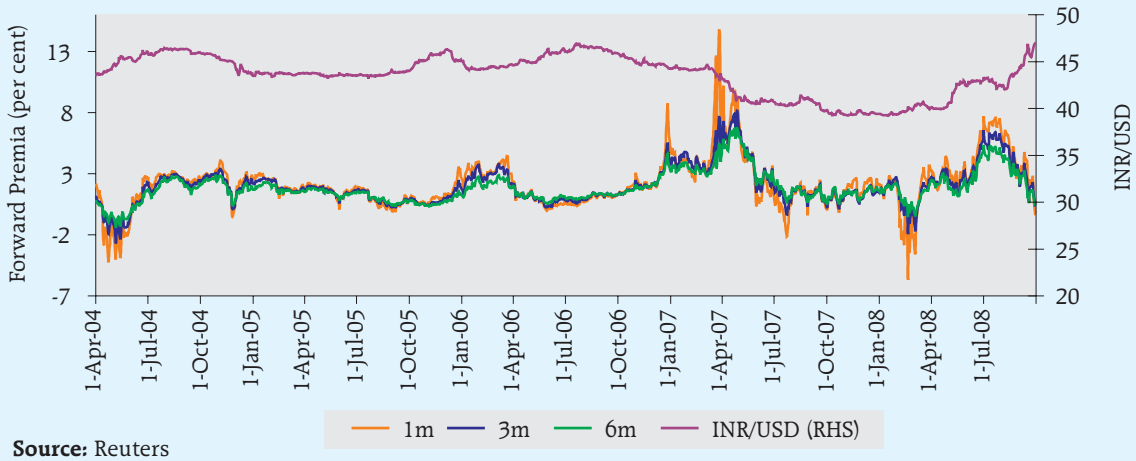
In recent years the upward movements in call rates have generally got transmitted into upward movement in the short-term forward

Chart 4.7: Bid-Ask Spread (INR/USD) in Spot Foreign Exchange Market



Source: Reuters

Chart 4.8 : Movement of Forward Premia and INR/USD Exchange Rate



Source: Reuters

premia (There is some evidence to the contrary in 2008-09) (Chart 4.9).

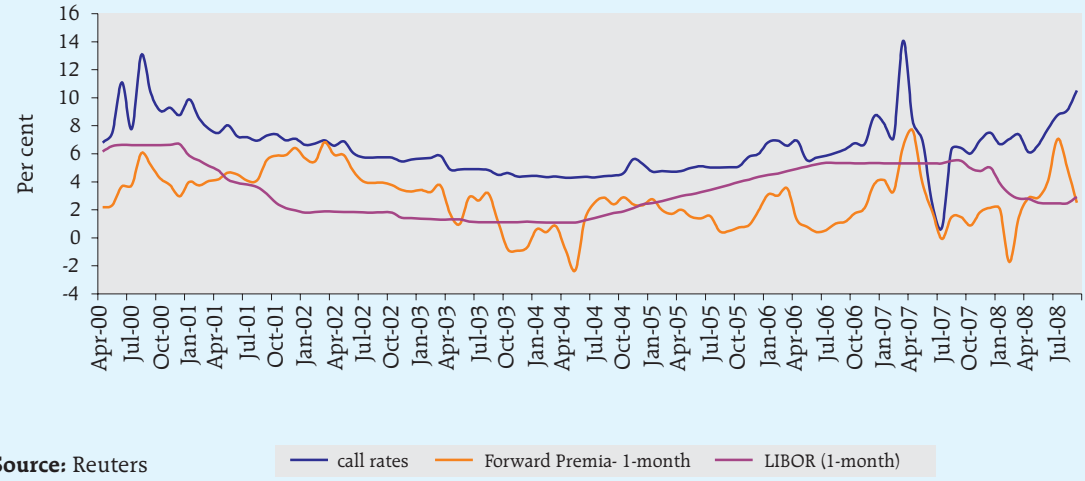
4.4.5 Stability and Development Issues

4.4.5 (a) Price Discovery

There are inadequacies in the infrastructure for OTC derivatives. Price discovery is opaque. There is no mechanism for dissemination of dealt price in real time. Brokers have a presence in this market and are regulated by FEDAI. It is, however, not very clear whether they are subject to ongoing surveillance and how brokerage is paid. The Panel is of the view that putting in place a process of on-going surveillance and monitoring with suitable disincentives for breach/violation of the code of conduct could be considered.

There was a proposal made by the Committee on Fuller Capital Account Convertibility (2006) that an electronic trading platform for the conduct of all foreign exchange transactions (including derivatives) be introduced. The Annual Policy Statement for the Year 2008-09 had announced the constitution of a RBI-SEBI Standing Technical Committee on Exchange Traded Currency Futures to advise on operational aspects in regard to trading of currency futures on recognised exchanges.

Chart 4.9: Transmission from Call Money Market to Foward Market



Source: Reuters

Based on the report of the RBI-SEBI Standing Committee, currency futures were launched from August 2008 in INR/USD contracts in major stock exchanges. This will aid transparency and efficiency in price decision.

4.4.5 (b) Accounting and Disclosure

The reporting/disclosure of information on derivatives by non-bank entities is currently neither uniform nor adequate, and it is difficult to ascertain the exact quantum of market and credit risks that corporates are exposed to on account of derivatives. Current practices for derivatives accounting also differ across corporates, resulting in either understating losses or overstating profits. A uniform accounting regime across banks and corporates would discourage the current practice of 'accounting arbitrage' and place the responsibility for risk containment squarely on the managements of the entities taking/holding such risks. A matter of even greater concern is the fact that several SMEs are also assuming derivative exposures, and in many cases, without fully understanding them. In its effort to attain convergence with international accounting standards, the Institute of Chartered Accountants of India has issued AS 31 on the lines of IAS 32 (disclosures and presentation of financial instruments) and AS 30 on the lines of IAS 39 (recognition and measurements of financial instruments). These will be adopted for voluntary implementation effective April 1, 2009 and should help address the problems stated above.

The Panel is of the view that disclosure of foreign exchange derivative transactions by non-bank entities need to be introduced soon to enable market participants (banks, regulators, rating agencies, equity analysts *etc.*) to assess the risks assumed by them. Recent disclosures by a few large corporates about losses in derivative transactions highlight the need for such disclosure. Pending ICAI disclosure guidelines being made mandatory, the Reserve Bank could explore the possibility of collating and disclosing derivatives transactions between banks and corporates above a certain volume.

4.4.5 (c) Settlement Risks

The guaranteed settlement of transactions offered by CCIL is not extended to forward trades which, when extended, could reduce risks and consequently capital charge. Guaranteed settlement by CCIL in forward contracts would result in a reduction in both credit and capital usage and leading to an improvement in systemic efficiency and reduction in default. The Panel feels that CCIL should consider extending guarantees to settlement of forward trades.

4.4.5 (d) Trading in Off-shore Locations

The significant increase in traded volumes in the foreign exchange markets has resulted in a substantial increase in foreign exchange derivatives products, mostly in response to greater demand for such instruments by corporates, occasioned by their higher engagement with the rest of the world and buttressed by build-up of skills in their treasury departments. In spite of a pro-active regulatory response, like the amendment to the RBI Act, 1934 in early 2006 by adding a new chapter (Chapter IIID) on regulation of derivatives in foreign exchange, currency and interest rates in India, and the comprehensive

guidelines issued recently by the Reserve Bank on dealing in derivatives by banks, there are reports of derivatives on Indian credit, interest rate and equity being traded on offshore locations, apart from INR/USD NDF contracts. The extent to which these products are being accessed by residents is not immediately known. But it is nonetheless clear that economic demand for such products exists, as a consequence of the expanded interest among global investors over the last few years in the 'India' asset class. Offshore investors' trading and hedging demands are being met outside India. To the extent there is a paucity of information on the participants trading in such products, and coupled with the resulting inadequate disclosure and transparency, the domestic markets and policies have been exposed to uncertainties, creating a source of risk for the regulatory agencies. The Panel thinks there is a need for more pro-active regulations and the development of products in this regard.

Within the gradual advent of capital account convertibility, the Reserve Bank can consider at an appropriate stage allowing onshore banks to trade NDFs directly with ADs in India (as South Korean banks are allowed to do), because the onshore market is now much deeper than the offshore market. This can act as a means of reducing incentive to arbitrage between offshore and onshore points. It can also act as a means of reducing observed spikes in volatility from one 'close' to the next 'open' which are attributable to the illiquidity and lack of depth of the NDF market having an impact on INR/USD well beyond the extent justifiable by its small size.

4.4.5 (e) Carry Trade

Indian corporates are currently permitted to enter into cross-currency swaps and interest rate swaps. This is done both on INR and foreign currency liabilities, provided the tenure and notional of the swap is not higher than the tenure and notional of the underlying liabilities.

Accordingly, several Indian corporates have entered into INR /JPY, INR /CHF, USD/ CHF and USD /JPY swaps. They have swapped their INR and USD liabilities into liabilities denominated by lower interest rates such as JPY and CHF to benefit from the difference in interest costs, and to secure cost reductions. In order to hedge the currency risk, clients purchase options which allow them to lock in the currency rate at the entry level itself, provided a barrier denominated in the same currency is not reached. The cost of the option is absorbed into the cost reduction from the swap and amortised along with the cost reduction. In the event that the barrier is reached, the option protection expires and the corporate is again fully exposed to the exchange rate risk. In short, there is protection only up to a point.

Several such swaps were done during 2004 - 2006 when USD/JPY was in the region 113 - 123 and USD/CHF in the region 1.13 - 1.33. The options had barriers typically around the range 90 - 105 in USD/JPY and 1.00 - 1.13 in USD/CHF. The barriers were of several types - anytime barrier, at -expiry barrier and windowed barriers. Barriers were typically chosen around multi-year lows. Due to the movement in the exchange rates since mid-2006, several of these barriers have come under threat and many of them have already been broken. Corporates are therefore exposed to the total currency risk on their swaps.

In response, the following steps could be considered for risk mitigation:

- At the point of sale, banks should determine a credit limit on losses on carry-trades, at which point the customer is expected to crystallise losses. The credit limit would be pre-agreed with the customers and based on parameters such

Box 4.1 Carry Trade

Defined as borrowing in low interest rate currencies to invest in high yielding assets, carry trades have proliferated in recent years. This however results in the entities being exposed to currency risk. Historically, carry-trades have been popular with investors during periods of low volatility in the financial markets, with a typical rush for the exit scenario playing out when volatility picks up and finds all investors positioned on the same side.

The period 2003-2007 has been conducive for carry trades as investors rushed to borrow in low yielding currencies like JPY and CHF and invest the proceeds in high yielding assets that ranged from emerging market equity to art. These trades were integral to the whole process of leveraging that took place as low inflation, low interest rates and low volatility prompted a chase for yields. This strategy was popular with private equity firms, hedge funds and banks as they all levered up to increase returns for their investors

India has not been immune to the carry-trade mania. Not limited to foreign investors, the past few years have seen Indian corporates and financial institutions raising funds in low yielding currencies as well. Corporates utilised the external commercial borrowing route to raise funds abroad for their INR denominated expenditures. Local banks have been active in raising debt denominated in low yielding currencies to be used for INR lending. For entities with INR liabilities, derivatives have been used to swap these liabilities into low yielding currencies with the aim of saving interest cost for the period of the loan.

Currency volatility triggered by the sub-prime crisis and the following credit market fallout has caught investors positioned on the same side yet again. As hedge funds and other investors have moved to shrink their balance sheets by selling assets and de-leveraging, their carry trade unwinds have caused a sharp currency appreciation of the low yielders, such as the yen.

Local corporates are no doubt feeling the pinch too, as the appreciation in the yen adds to their borrowing costs. The same holds true for those who have swapped their liabilities into yen, as each yen repayment has to be covered at market rates which are much higher than when the trades were initiated.

Sceptics have warned that carry trades are equivalent to 'picking pennies off the highway' - a string of decent returns followed by a couple of disastrous years when losses threaten to wipe out many years' earnings. 2008 looks to be no different.

as their credit rating, balance sheet strength and purpose of entering the trade. This would help prevent run-away mark-to-market exposures and disputes between the corporate and banks. It would also help ensure that suitability and appropriateness exercises are conducted diligently as the potential size of expected loss would have explicitly been made part of the credit monitoring framework .

- The restructuring of open Rupee derivative trades (restructuring is tantamount to cancellation and rebooking which is not allowed currently) to embed risk mitigants like caps can be allowed.
- The move to stricter accounting norms, which force corporates to mark to market losses on their books can be speeded up. IAS-39 (through its local equivalent, AS-30) should be implemented, with a 2-year grace period to enable Corporates to

restructure their derivatives portfolios into clearly demarcated 'trading' and 'hedging' transactions. The disclosure discipline accompanying such regulation acts as a strong incentive to corporates not to allow positions to drift uncontrollably out of the money.

4.4.5 (f) Appropriateness and Capacity Building

The existence of a significant diversity in the derivatives products brings up issues relating to product appropriateness and capacity building. Despite guidelines being in place for the same, there appear to be gaps in implementation by the banks. The Panel feels that high priority should be given on 'customer suitability' and 'appropriateness standards' as also capacity building among both the market participants and the regulators.

4.4.5 (g) Aggregate Gap Limits

Currently, banks submit a report of Aggregate Gap Limit (AGL) to the Reserve Bank on a daily basis. This report monitors the mismatches in the banks balance sheets in currencies other than INR. These mismatches are aggregated through absolute summation across a series of time buckets, across products (deposits, swaps, option positions, and outright currency positions) for all balance sheet items. A USD equivalent is calculated for all other currencies (given its role as an intermediary currency) and a final single AGL position is arrived at. The limit set on the AGL concentrates its focus on that one final number against a Reserve Bank determined limit. A breach arises if the final absolute summation of the bucket-wise cash-flows exceeds the limit set. The Panel feels that this approach has several limitations.

At present, most banks monitor rate-risk through PV01 (Present Value Impact of 1 Basis Point Movement in Interest Rate) and Value at Risk (VAR), the latter applying historical or implied volatilities to PV01 figures. A PV01 monitor coupled with VaR model captures both open interest rate risk as well as the potential losses that may arise. VaR measures - based on historical simulations or implied volatility to arrive at a possible distribution of losses - help to quantify the actual risks banks run in interest rates. Basle II recommendations are also aligned to the use of such numbers. The Panel recommends that the Reserve Bank should abandon AGL and replace it with a flexible system of reporting based on these criteria, with bank managements held accountable for implementing the principles thereof to market standards, and these may be considered adequate to ensure that ADs are correctly recognising, recording, reporting and managing interest rate risk along with currency risk. This process, if implemented, would require supervisory validation of VaR and related models. Supervisory capacity-building, therefore, is essential.

4.5 Government Securities Market

4.5.1 Introduction

The debt market is divided into two segments: government securities market and corporate bonds market. The government securities market, consisting of government bonds and treasury bills issued by the Central Government and government bonds issued by the State Governments, is by far the larger and more active of the two. Recognising the need for a well developed government securities market, the Reserve Bank, in co-ordination with the Government, initiated a series of measures from the early 1990s to free the market of administered price and portfolio restrictions. Consequently, the government securities market has witnessed a significant transformation in its various dimensions, *viz.*, market-based price discovery, widening of investor base, introduction of new instruments, establishment of primary dealers and electronic trading and settlement infrastructure.

4.5.2 Regulatory Backdrop and Market Infrastructure

The Reserve Bank plays a dual role - as a debt manger and as a regulator of the government securities market. Recently the debt

management office (DMO) has been set up by the government to manage public debt (Box 4.2). For a detailed analysis of DMO please see the Advisory Panel Report on Transparency Standards. A comprehensive legal framework defines the role of the Reserve Bank in the government securities market. Its operations are governed by Sections 17(8), 20, 21 and 21A of the RBI Act 1934. The Reserve Bank derives its regulatory power from Section 16 of the Securities Contract (Regulation) Act 1956 and the newly inserted Chapter III D in the RBI Act.

As these instruments are listed on stock exchanges, SEBI can also take action in respect of issues relating to listing and trading. Further, these securities can be traded through brokers and as brokers are regulated by stock exchanges which are in turn regulated by SEBI, any regulatory issue relating to brokers falls under the purview of SEBI.

An element of self-regulation is also in place through the Fixed Income, Money Market and Derivatives Association of India (FIMMDA) and Primary Dealers Association of India (PDAI) - but neither is formally recognised as an SRO. The Reserve Bank engages them in a consultative process as part of its developmental and regulatory functions. These two associations have served as a crucial interface between the regulator and the market, and have contributed to developing new benchmarks and products in addition to providing training and development support to the market participants. They have developed standard practices and codes of conduct for market players. FIMMDA has been associated with the Reserve Bank in bringing about uniform accounting practices for repo / ready forward contracts and master repo agreements used by participants. It is also involved in the task of valuation of all Central Government securities.

Box 4.2: Setting up of Debt Management Office (DMO)

The general recommendation for separation of monetary and debt management functions is essentially premised on the inherent conflicts between monetary policy and debt management because of the possible discordant pressures on the direction of interest rates. In the Statement on Monetary and Credit Policy for the year 2001-02 issued on April 19, 2001, it was indicated that the separation of debt management from monetary management would be dependent on the fulfilment of three pre-conditions, *viz.,* development of financial markets, reasonable control over fiscal deficit and necessary legislative changes.

Since then, some progress has been made on the matter of fulfilment of the three pre-conditions. The matter has been under continuous discussion between the Reserve Bank and the Government of India. In the Union Budget 2007-08, it was announced that the fiscal consolidation achieved in the recent years is an enabling factor to separate debt management from monetary management. It has been proposed to set up an autonomous DMO and, in the first phase, a Middle Office will be set up to facilitate the transition to a full-fledged DMO.

The functional separation is expected to improve the independence of monetary management, besides strengthening the debt management objective of the Government in one roof, encompassing besides internal market borrowings, other internal liabilities of the Government and the external debt portfolio.

Source: RBI

The assessment of adherence to IOSCO principles for regulation and supervision of the government securities market has been attempted for the first time. The Advisory Panel on Financial Regulation and Supervision observed that of the 30 principles, principles relating to self-regulatory organisations and those related to treatment of holders of securities and accounting and auditing standards are not applicable. Of the remaining 26 principles, 21 are implemented/broadly implemented. Major gaps were observed in areas relating to operational independence and co-operation between regulators.

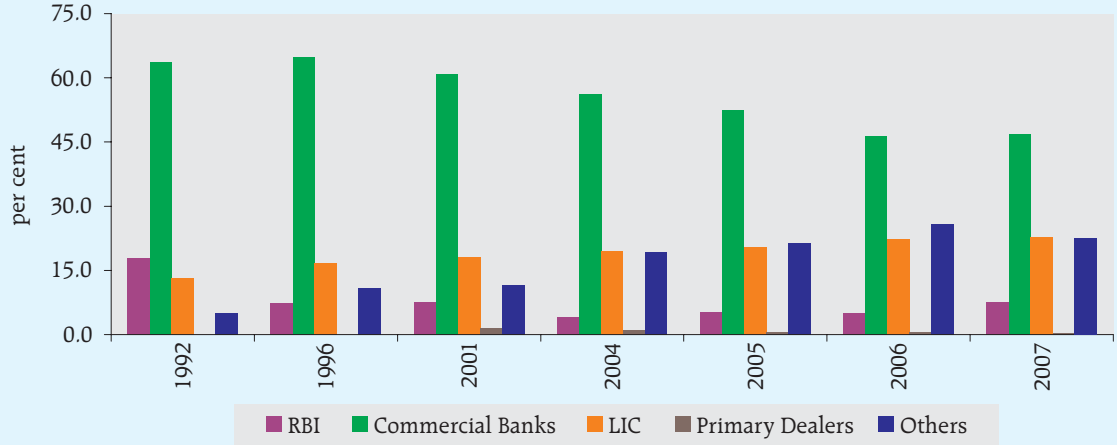
Though investment in government securities is open to individuals, it largely remains a wholesale market. The investor base comprises banks, insurance companies, primary dealers, pension funds, other financial institutions and companies including debt funds set up by foreign institutional investors. In order to promote retail holdings in government securities, mutual funds (gilt funds), with mandate to invest exclusively in government securities were set up. In spite of various initiatives taken by the Reserve Bank, retail participation in the government securities market remains low.

Earlier, the Reserve Bank was also a participant in primary government securities auctions. However under the stipulations of the Fiscal Responsibility and Budget Management Act, 2003, it has withdrawn from participating in the primary issuances of government securities (from April 1, 2006). Though there has been a reduction in its relative share, the Reserve Bank still holds around 4.8 per cent (as at end-March 2008) of the total outstanding of the central government securities in its portfolio and uses it for monetary operations. The holding pattern of central and state government securities is given in Chart 4.10.

The first major initiative taken by the Reserve Bank to develop the market was the introduction of auctions which ensured that government borrowing was at market related rates. Over time, it has diversified the products to encourage participation by varied investors. In addition to the regular fixed coupon securities, zero coupon bonds, floating rate bonds, capital indexed bonds and bonds with call and put options have been issued by the Government at various times.

A system of market intermediaries in the form of Primary Dealers (PDs) was made functional in 1996 with the objectives of supporting primary auctions of government securities and improving secondary market liquidity in them. PDs were also expected to

Chart 4.10 Holding Pattern of Central and State Government Securities (Outstanding as at end-March)



Source: RBI

encourage the voluntary holding of government securities amongst a wider investor base. To discharge their obligations effectively, PDs have been given privileges in terms maintaining of current account and SGL facilities with the Reserve Bank. They also have access to liquidity support from it.

The provisions of the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 prohibited the Reserve Bank from participating in the primary issues of government securities, effective April 1, 2006. Responding to the provisions in the Act, the Reserve Bank formulated a new incentive structure for PDs to ensure 100 per cent underwriting in auctions. Banks were also allowed to undertake PD business. Standalone PDs were given revised liquidity support by the Reserve Bank depending on their performance in the primary auctions and secondary market turnover. They were also allowed to undertake other diversified activities to enhance risk mitigation.

To differentiate liquidity absorption of the more enduring kind by way of sterilisation from the day-to-day normal liquidity management operations, the Reserve Bank introduced the market stabilisation scheme (MSS) in 2004. The bills/bonds issued under MSS are treasury bills and dated securities. To begin with, the total outstanding obligations of the government under market stabilisation bonds were fixed at Rs. 60,000 crore. This limit has since been enhanced and now stands at Rs. 2,50,000 crore. Though the objective of issue of MSS is system liquidity management, the issue of market stabilisation bonds has significantly bolstered the stock of tradable government securities. The Reserve Bank is also persisting with the policy of re-issuance of securities to develop liquid benchmark securities.

To improve the price discovery process, a 'when–issued' (WI) market was introduced in 2006. Transparency was enhanced by the publication of a half-yearly issuance calendar for dated securities beginning April 2002. Dissemination of market information received an impetus when price information on trades, was made available on the Reserve Banks' website on a real-time basis. The FIMMDA website contains information about market yields on a daily basis. In a bid to keep the market liquid and active during bearish times, as also to allow market participants to better manage their interest rate risk, short selling was allowed for five trading day period from January 2007.

In the early 1990s trades in government securities were concluded over the counter through telephones. The first initiative in developing a transparent trading platform was taken by the National Stock Exchange (NSE) which introduced a fully automated screen-based trading system known as National Exchange for Automated Trading (NEAT) in the wholesale debt market (WDM). Though it had the facility to match trades, this platform was used mostly for reporting negotiated deals intermediated by brokers registered with the exchange. The settlement procedure did not involve the stock exchanges.

The Reserve Bank introduced a negotiated dealing system (NDS) in February 2002, which however, became popular more as a reporting platform for trades conducted bilaterally in OTC markets than as a trading platform. To overcome this shortcoming, NDS OM (NDS – Order-matching) was operationalised in August 2005.

This is an anonymous order-matching system which allows straight-through processing (STP). The settlement cycle of the government securities market has been standardised to T+1 from 2005.

Almost the entire stock of government securities in value terms is held in a dematerialised subsidiary general ledger (SGL) form. The SGL accounts are maintained in the Reserve Bank. Secondary market transactions settle through DVP-III where both funds and securities are settled on a net basis. CCIL acts as a clearing house and as a central counterparty through novation and guarantees settlement of trades.

While government securities issued in domestic currency are devoid of credit risk, they are susceptible to market risk. In terms of the existing guidelines, banks, which are the largest investors in government securities, are required to classify their investments into, held to maturity (HTM), available for sale (AFS) and held for trading (HFT) categories for the purpose of valuation. While investments placed in AFS and HFT categories are marked to market (MTM), investments categorised as HTM are allowed to be carried at an amortised cost in the banks' books, immunising this portion of the portfolio from the impact of MTM valuation. Banks are thus required to provide capital charge for market risk only in respect of investments held under their trading book (AFS & HFT). The accounting norms relating to financial instruments however are not fully in line with the international standards (IAS 32 and IAS 39). To attain convergence with the international standards ICAI has approved the accounting norm AS 30 and AS 31 which are expected to be operational on a voluntary basis from April 2009.

4.5.3 Growth and Composition

Since the 1990s, there has been significant growth of the market in terms of both volumes and liquidity. The outstanding stock of government securities has increased significantly, both in absolute terms and in relation to GDP, in tandem with the growing financing requirement of the Government. The system of PDs has emerged as an important element, both in primary and secondary market for government securities (Table 4.5).

Table 4.5: Government Securities Market – A Profile

(Amount in Rs crore; ratios in per cent)

Indicator	1991-92	1995-96	2000-01	2004-05	2005-06	2006-07	2007-08
1	2	3	4	5	6	7	8
Outstanding stock (as at end-March)	76,908	1,69,526	4,53,668	8,24,612	9,29,612	10,32,296	13,32,435
Outstanding stock/GDP (in per cent)	11.8	14.3	21.5	26.2	26.0	26.3	28.3
Settlement volumes*/GDP	..	..	..	85.5	71.5	86.3	118.9
Average maturity (in years) of securities issued during the year	..	5.7	10.6	14.1	14.1	16.9	14.9
Weighted average cost (in per cent) of securities issued during the year	11.8	13.8	11.0	6.11	7.3	7.9	8.1
Share of Primary Dealers in government securities market							
Primary issuance	..	..	..	53	40	44	46
Secondary market turnover	..	..	..	28	31	29	19.5

*: Settlement Volumes from CCIL (Outright + Repo).
Source: RBI

The reasons for the large size of the government debt market are three fold. Firstly, from the supply side, the persistently high government deficit has translated itself into high public borrowings. Secondly, the mandated requirement for banks, insurance companies, pension funds and other financial institutions to invest a significant portion of their liabilities in government securities has buttressed demand. It must also be stated that in view of the zero credit risk weight for government securities, the institutions had a tendency to hold a higher percent of government securities than the mandated minimum during the consolidation phase, transiting to tighter prudential requirements. Third, the Market Stabilisation Scheme (MSS) from 2004-05 has also contributed to growth in outstanding stock of government securities in recent years.

With the phasing out of *ad hoc* treasury bills and earmarking of small savings collections for the states, the Central Government has been financing its deficits largely through market borrowings. Accordingly, the share of market borrowings (net) in financing the Central Government's gross fiscal deficit increased to more than 77 per cent in 2007 -08 from around 21 per cent in 1991-92. The share of market borrowings in financing the gross fiscal deficit of State Governments, also, showed an increase from 17 per cent to 59 per cent during the same period. Market borrowings (net) financed around 67 per cent of combined gross fiscal deficit of the Centre and States in 2007-08 as compared with around 20 per cent in 1991-92 (Table 4.6).

In order to reduce bunching of repayment at the short end, the Reserve Bank has elongated the maturity profile of the outstanding stock of government securities by issuing securities of longer maturity. The weighted average maturity of primary issuances of the central government securities increased to 14-15 years during the current decade as compared with 5.7 years in 1995-96. The process of maturity elongation was facilitated by the benign interest rate regime

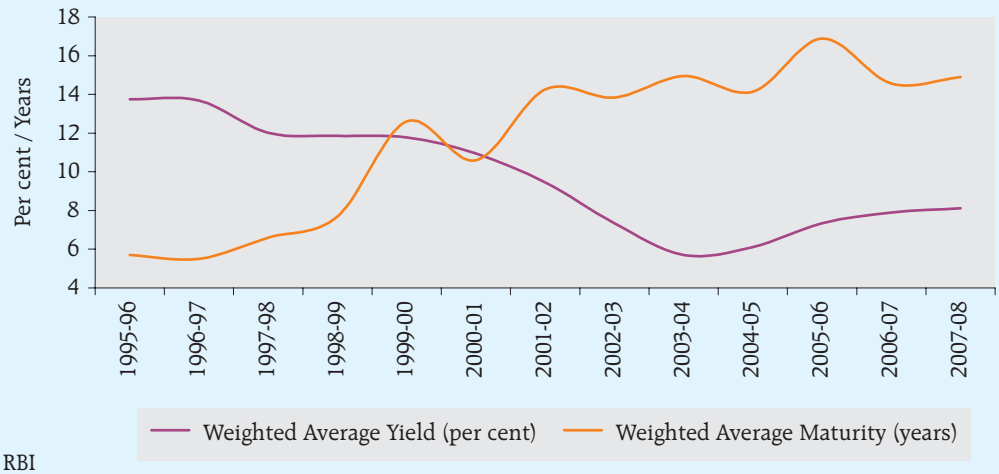
Table 4.6: Funding of Gross Fiscal Deficit Through Market Borrowings

(Amount in Rs. crore; ratios in per cent)

Year	Gross Fiscal Deficit	Net Market Borrowings	Ratio (Column 3 as per cent of column 2)
1	2	3	4
1991-92	55,225	10,865	19.7
1995-96	91,113	32,721	35.9
2000-01	2,06,739	86,667	41.9
2004-05	2,33,568	80,028	34.3
2005-06	2,36,519	1,13,692	48.1
2006-07	2,28,754	1,25,549	54.9
2007-08	2,45,116	1,65,728	67.6

Source: RBI

Chart 4.11: Yield and Maturity of Central Government Dated Securities



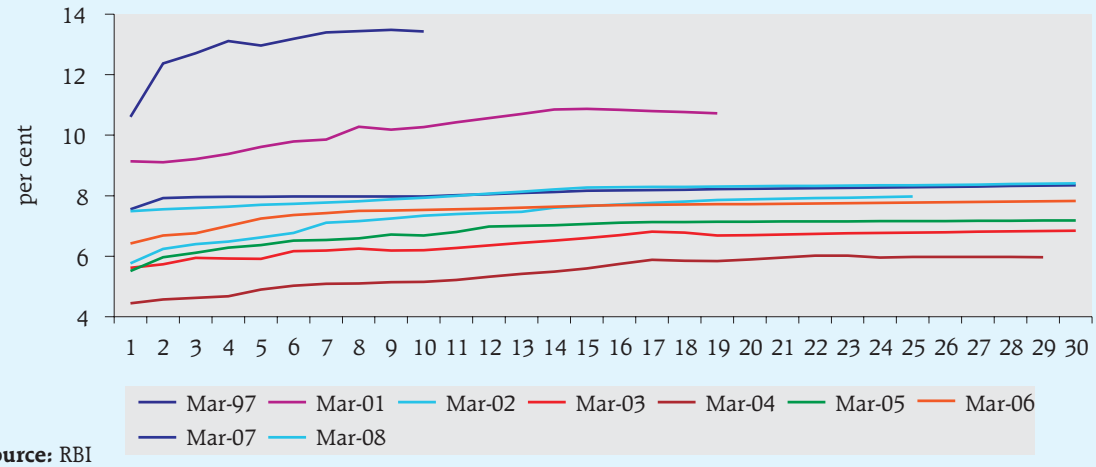
Source: RBI

which prevailed during the first half of the current decade (Chart 4.11). While it brought down the risk of refinancing of government debt, the end-investors faced higher interest rate risk owing to the elongation in maturity of their investment portfolio. The weighted average yield on both the central and state government securities, which started moderating from 1996-97, declined to 6.1 per cent, by 2004-05. Reflective of increasing yields, it stood at 8.1 per cent in 2007-08 (Table 4.5). This was on account of the hardening of interest rates due to monetary tightening.

4.5.4 Yield Curve

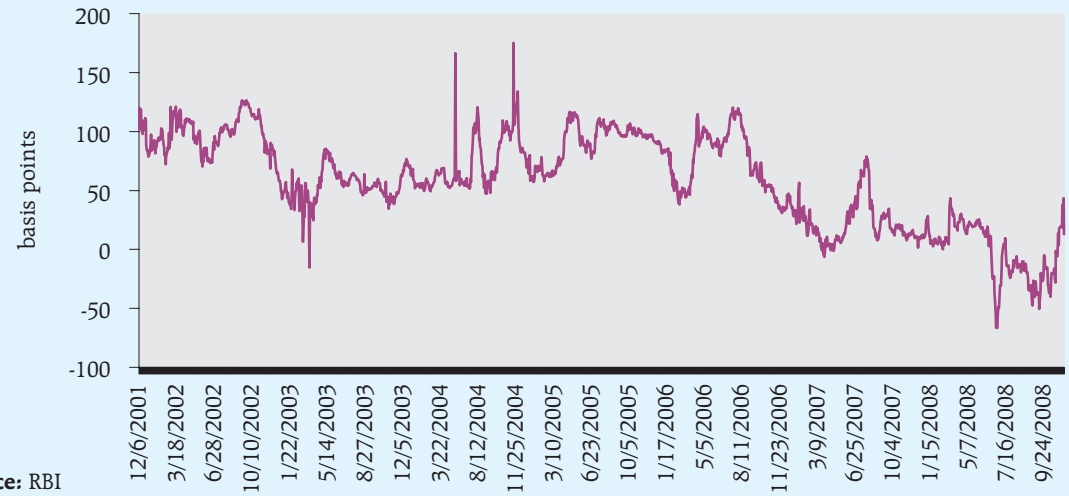
The yield curve in India has generally remained flat. The response of the short-term rates to changes in the monetary policy rates has been quicker and more pronounced than long-term rates, reflecting the ripple impact of policy changes. However, during periods when interest rates were low, yield on longer maturity declined more than that at the shorter end on account of active trading and one way bets at the long-end. In fact, there were occasions when the yield curve inverted in respect of some maturities (Chart 4.12).

Chart 4.12: Yield Curve Movement - SGL Transactions



Source: RBI

Chart 4.13 : 2-10 Year Spread in Government Securities Market

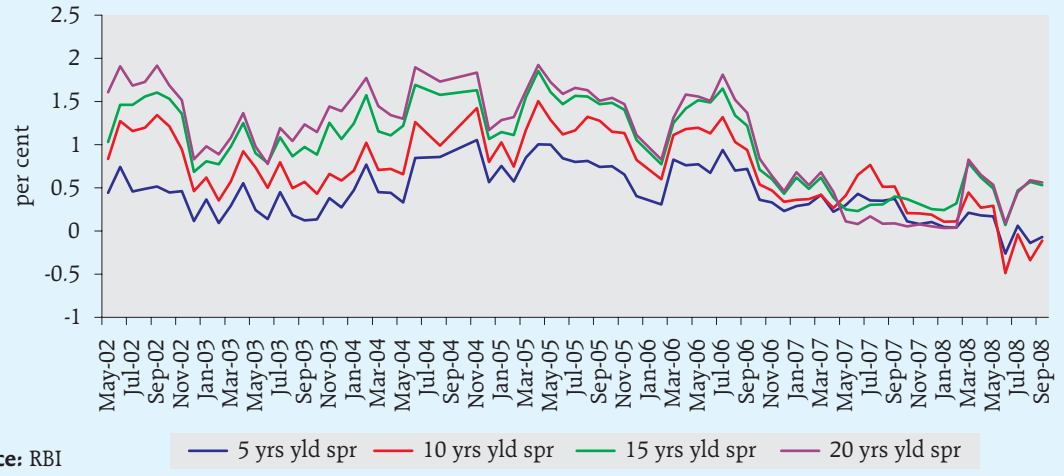


Source: RBI

The yield curve has become flatter over time as is seen from the declining 2-10 year spreads on government securities yields between 2001 and 2008 (Chart 4.13).

Though co-movements are observed across maturities, yield spread has shown considerable volatility. The yield spread between 1 year and longer maturity securities had declined somewhat along with the rise in yields from 2004, due to tightness in liquidity, which pushed up the short-term rates. The yield-spread between one year and five year, as also one year and 10 year benchmark securities turned negative in periods between July and September 2008. (Chart 4.14).

Chart 4.14: Movements in Yield Spread



Source: RBI

4.5.5 Interest Rate Derivatives

Rupee derivatives in India were introduced when the Reserve Bank permitted banks/FIs/PDs to undertake interest rate swaps/ forward rate agreements in July 1999. These entities could offer the products to corporates (expanded to include mutual funds in November 1999) who want to hedge their interest rate risk as well as undertake these derivatives for their own balance sheet hedging and trading purposes. Interest rate swaps based on Mumbai Inter-bank Offer Rate (MIBOR) (Call rate) and MIFOR (implied rupee interest rate from foreign exchange forward rates) benchmarks dominate the market although INBMK (government securities rates) are also used as benchmarks. In June 2003, NSE introduced interest rate futures based on 10-year notional government security with 6 per cent coupon rate, on 10-year notional zero coupon government security and on 91-day Treasury Bill Rates. This market did not take off because of unconventional pricing (based on zero coupon rates derived from government securities yield curve) and also because banks were allowed only to hedge their government securities holdings in Available for Sale (AFS) and Held for Trading (HFT) portfolio and not allowed to take trading positions. Subsequently, FIMMDA and SEBI in consultation with exchanges and market participants finalised a 10-year government securities futures product based on a basket of three liquid securities in the 9-11 year tenor bucket. Though SEBI has issued a circular on the new product in January 2004, the exchanges are yet to introduce the same. This is because they are apprehensive that unless the Reserve Bank permits banks, who are the major investors in the government securities market, to trade in futures, there would not be adequate two-way interest in the product.

While the swap market, especially the OIS and MIBOR swap market, has been very active and used by banks as well as other entities to manage their interest rate risk more than any other instrument, the absence of a term money market, and therefore a 3 or 6 month benchmark rate, has led to the entire market concentration on the overnight benchmark. This is an area of concern from the long-term market efficiency point of view (Table 4.7).

Table 4.7: Commercial Banks: Interest Rate Swaps – Outstanding Notional Principal (Benchmark-wise Details)

(Amount in Rs. crore; growth in per cent)

Item	Mar 2005	Mar 2006	Mar 2007	March 2008
1	2	3	4	5
Total	10,81,867	18,29,700	37,07,342	80,18,647
Growth		69	103	116
MIBOR/OIS	4,76,744	10,75,917	27,37,244	66,93,065
Growth		126	154	145
MIFOR	5,64,262	7,01,305	8,72,000	12,54,255
Growth		24	24	44
INBMK	20,070	34,110	82,103	48,574
Growth		70	141	-41
Others	20,792	18,369	15,995	22,753
Growth		-12	-13	42

MIBOR: Mumbai Inter-bank Offer Rate;
MIFOR: Mumbai Inter-bank Forward Offer Rate;
OIS: Overnight Index Swap;
INBMK: Indian benchmark
Source: RBI

Trades in the entire swap market are over-the-counter (OTC). Inadequate transparency in this market has prompted the Reserve Bank to introduce a reporting mechanism which has taken off in August 2007 and this is expected to improve the pricing transparency and consequently the volume significantly. A Working Group constituted by the Reserve Bank has examined the ways of activating the interest rate futures market. The RBI-SEBI technical Committee is considering operationalisation of the recommendations of the report and it is expected that products as per recommendations of the Group shall be introduced in early 2009 along with supporting changes in regulatory/ accounting framework. (Box 4.3).

4.5.6 Stability and Developmental Issues

4.5.6 (a) Cash Market

The volume of transactions has increased manifold over the past decade. However, markets are active and liquid when rates fall, but generally turn lacklustre and illiquid when rates rise. This had resulted in the slowdown in the turnover between 2004 and 2007 apart from impeding the efficient price discovery as well as the smooth conduct of debt management (Chart 4.15).

The secular decline in interest rates till 2003-04 had seen an increase in trading, particularly in securities with longer residual maturities. The general upward movement in interest rates since 2004 and the consequent shift in the participants' preference for short-term securities has resulted in a shift to shorter duration bonds, which are less sensitive to interest rate fluctuations.

The regulatory accommodation since September 2004 of allowing banks to hold a higher portion of their investment portfolio in the HTM category to immunise them from MTM losses in the increasing yield scenario, has resulted in rapid depletion of trading stock in the government securities market. At end March 2008, only around 30 per cent of the banks' holding in government securities were in their trading books (Table 4.8).

The modest activity in the secondary markets for government securities has impeded reliable price discovery and the development of the sovereign yield curve, off which the credit risk is priced. The regulatory accommodation has given banks a false sense of comfort on the premise that their bottom lines are not affected in the short run as 70 per cent of the banks' interest sensitive assets were not being marked to market in an increasing interest rate scenario. The Panel notes that the banks could be carrying a significant amount of risk in their balance sheets because of embedded losses in their investment portfolios.

As per existing accounting norms, the appreciation and depreciation in individual government securities classified under AFS and HFT are netted out. The net depreciation in securities in the trading book is charged to the profit and loss account while appreciation is ignored. Further, depreciation in respect of securities held under AFS is not permitted to be charged to capital and reserves in line with international accounting standards (IAS 39). Convergence to IAS 39 would allow the banks to recognise both MTM gains and losses in their trading book as also let the banks charge

Box 4.3: Working Group on Interest Rate Futures - Recommendations

The Reserve Bank of India had constituted a Working Group for making recommendations for activating the interest rate futures (IRF) contracts, with particular reference to product design issues, regulatory and accounting frameworks for banks and the scope of participation of non-residents, including FIIS. The Working Group submitted its Report in February 2008 and some of the major recommendations of the Group are:

In order to improve the depth, liquidity and efficiency of the IRF market, banks be allowed to take trading positions in IRF subject to prudential regulations including capital requirements. Further, the current approval for banks' participation in IRF for hedging risk in their underlying investment portfolio of government securities classified under the Available for Sale (AFS) and Held for Trading (HFT) categories should be extended to the interest rate risk inherent in their entire balance sheet – including both on, and off, balance sheet items – synchronously with the re-introduction of the IRF.

With the availability of IRFs as hedging instruments to manage interest rate risk, the present dispensation that banks classify their government securities portfolio held for the purpose of meeting SLR requirements as HTM as a risk mitigating measure be reviewed synchronously.

The Reserve Bank, using the powers conferred on it through the RBI Amendment Act, 2006, mandate appropriate accounting standards for IRS, IRF and the underlying government securities as envisaged in AS 30 to ensure that these are symmetrical and aligned with the internationally accepted accounting practices.

The time limit on short selling be extended so that term / tenor / maturity of the short sale is co-terminus with that of the futures contract and a system of transparent and rule-based pecuniary penalty for SGL bouncing be put in place, in lieu of the punitive regulatory penalty currently in force.

The success of a physically settled IRF market depends upon a well functioning and liquid repo market. Therefore, the success of IRF, it would be necessary to improve the liquidity and efficiency of the repo market.

Considering the Reserve Bank's role in, and responsibility for, ensuring efficiency and stability in the financial system, the broader policy, including those relating to product and participants, be the responsibility of the Reserve Bank and the micro-structure details, which evolve thorough interaction between exchanges and participants, be best left to respective exchanges.

FIIs may be allowed to take long position in the IRF market, subject to the condition that the total gross exposure in the cash and the IRF market does not exceed the extant maximum permissible cash market exposure limit. They may also be allowed to take short position in IRF only to hedge the actual exposure in the cash market up to the extent maximum permitted limit. The same may also apply, *mutatis mutandis*, to NRIs participation in IRF.

As a critical mass of liquidity is essential for the survival of any financial product; it would not be desirable to fragment the potential liquidity in the IRF market in the early stages. As the most liquid tenor of the underlying market is the 10-year government security, to begin with, one IRF contract based on a notional, coupon bearing, 10-year government security be introduced in the bond futures segment. Depending upon the market response and appetite, the exchanges concerned may consider introducing contracts based on 2-year, 5-year and 30-year government securities or those of any other maturities or coupons.

As physical delivery is the fundamental mode of settlement in all mature, time-tested, futures markets, the IRF contracts should be physically settled and whatever micro-structure changes are necessary including improvements in the liquidity of the underlying market to support such a contract must be carried out.

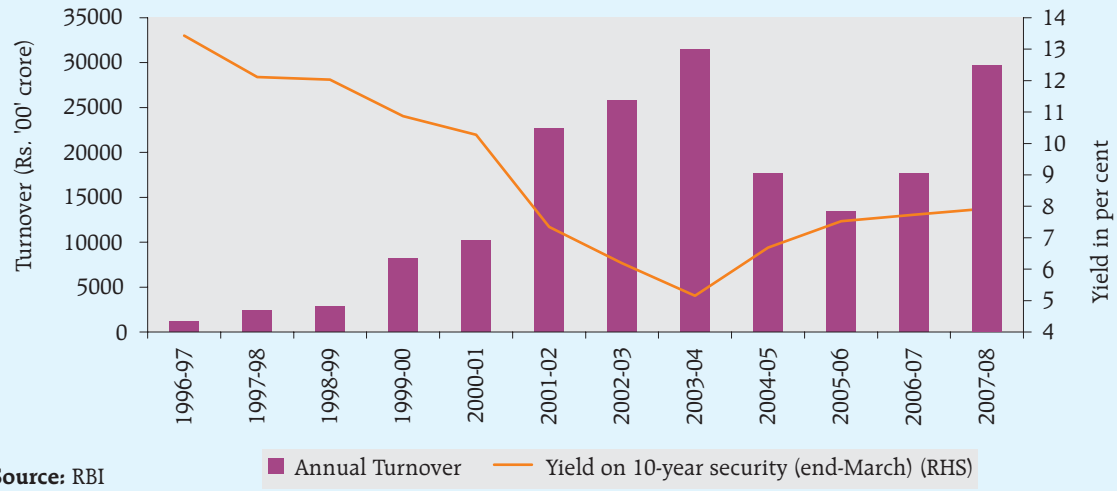
Existing contract on 91-day Treasury bills futures may be retained but with settlement price based on the yield discovered at the weekly the Reserve Bank auction. Besides, a contract based on an index of traded / actual call rates may also be considered.

Delivery-based, longer-term / tenor / maturity short selling in the cash market may be allowed only to banks and PDs and Interest Rate Futures may be exempt from Securities Transaction Tax (STT).

With a vibrant IRF market in place, introduction of options on interest rates should follow as a natural sequel and exploratory work may be initiated.

Source: Report of the Working Group

Chart 4.15 : Yield and Annual Turnover (Dated Central Government Securities)



Source: RBI

depreciation in the AFS category to the equity account. This flexibility could incentivise banks to hold a higher portion of their investment portfolios in the trading book in the periods of both rising and falling interest rate scenario. ICAI has already issued AS 30, which, is to be implemented voluntarily from 2009. This would mandate fair value accounting for the balance sheet of institutions.

The yield curve is still in the early stages of development. Though the issuances/re-issuances of securities in key maturities is being undertaken to develop the yield curve as a fair and reliable risk-free benchmark, liquidity is confined only to a few maturity buckets. The lack of securities – particularly the long-ends – in the trading book of the institutions has also impeded the development of the yield curve. Non-development of the term money market, particularly due to the market participants' inability to take a medium to long-term view on interest rates, is another reason for the lack of development of the yield curve.

Table 4.8: Classification of Government Securities in Banks' Investment Portfolio

(in per cent)

End-March	Held for trading	Available for Sale	Held to Maturity
1	2	3	4
2004	2.86	83.17	13.97
2005	1.33	55.91	42.77
2006	2.15	41.64	56.21
2007	2.10	29.47	68.42
2008	3.72	25.72	70.56

Source: RBI

As a result, at the system level, some corporates employ the swap curve (and not the Government securities curve) to evaluate price/ risks of borrowing. Typically, one would expect risks to be priced in relation to the risk-free interest rate, which is expected to be embodied in the Government securities yield curve. However, the imperfect nature of the government securities curve means that the swap-curve is used in preference to the former for pricing of risk, creating not only a cleavage between the two but also complicating the transmission of policy signals on interest rates.

Various measures have been suggested to develop the government securities market. Some of them are given below:

- Mandated investments in government securities should be scaled down. This would result in an increase in tradable assets. If there is a phased reduction in SLR and other statutory pre-emptions, there is a need to diversify the investor base to non-banks and retail segments. Broadening of the investor base by developing the retail and mid-segment, long-term investors would also make the market more diverse and less unidirectional.
- The development of new instruments should cater to the needs of diverse market participants. Among others, inflation indexed bonds which provide an assured real return *i.e.*, full inflation protection irrespective of the product structure, needs to be reintroduced. Also, secondary market trading in floating rate bonds is stunted. One of the reasons for this is the lack of proper valuation norms. FIMMDA/the Reserve Bank need to provide explicit guidelines for the valuation of floating rate bonds.
- The development of separate trading of registered interest and principal of securities (STRIPS) allowing investors to hold and trade the individual interest and principal components of eligible treasury notes and bonds as separate securities, needs to be expedited.

The following actions can also be considered:

- The primary issuance framework should include the book-building as an additional method. This could mitigate bidding risks particularly in the context of the Reserve Bank's non-participation in primary auctions. Select PDs could be the arrangers.
- The development of the risk free yield curve across maturities through active secondary market trading is a priority. This would necessitate the development of a term money market (See Section 4.3.4(a)). Also, further proactive regulatory initiatives are required for the development of when issued/short sale of government securities (See Section 4.5.6(f)).
- The downward trend in the prices of government securities has made investors turn risk averse which has resulted in lower turnover in the government securities markets. This has impeded the development of a secondary market risk-free yield curve. There should be regulatory disposition to encourage banks and institutions to increase the size of their trading book.

4.5.6 (b) Derivatives Segment

The availability of varied hedging instruments for an effective mitigation of interest rate risk across the gamut of market participants is a necessity now. The development of the exchange traded derivatives market by activating the interest rate futures market would also help banks mitigate interest rate risks better.

The interest rate swap market has witnessed phenomenal growth with overnight

rates and MIBOR being the predominant benchmarks. In the absence of a term money market, and therefore a 3 month or 6 month benchmark rate, the entire market concentration is on the overnight benchmark.

The interest rate futures market, however, has not developed quite as well. The main reason for this is not allowing banks to be market-makers. In addition to allowing market-making by banks, the development of this market also requires the development of an efficient, deep and liquid cash market comprising investors with diverse views. An appropriate underlying security for the pricing of interest rate futures could be commercial paper as these are liquid and frequently repriced. The interest rate on CPs should be appropriately stripped of corporate risk. 91 day treasury bills could also be a viable underlying instrument for the futures market. As suggested by an earlier Working Group on interest rate derivatives, there should be harmonisation of regulations in respect of OTC IRS and exchange-traded IRF. In this context, the Panel looks forward to the early implementation of the recommendations made by the recent 'Working Group on Interest Rate Futures' (Box 4.3).

With regard to banks, the market for derivatives is highly concentrated. A few players account for over three-quarters of the volumes. As in most markets, the distribution of skills and expertise is uneven. The absence of adequate trained personnel to understand the exact nature and quantum of risks that are embedded in such products affects the smaller banks, especially smaller public sector banks, where risk management is also weak. They often buy such products without being certain about their suitability and appropriateness, thereby compounding the risk intrinsic in the balance sheet.

4.5.6 (c) Liquidity of State Government Paper

Though state government securities constitute around 16 per cent of the total outstanding government securities, their share in traded volume is only around 3 per cent. Given the discontinuance of Central Government's loans for state plans, there will be an increase in states' market borrowings. Greater liquidity of their paper could minimise their borrowing costs. In order to activate secondary market activity in state government securities, the Panel has taken into account the recommendations of the Working Group on Liquidity of State Government Securities and suggests early implementation of the same. The important recommendations of the Working Group are as under:

(i) Passive consolidation of securities which would require an improvement of the fiscal position of State Governments and rating of their paper.

(ii) PDs to provide two way quotes for state government loans.

(iii) State government securities auctions to be of a minimum size.

(iv) Introduction of short sales.

(v) Introduction of non-competitive bidding in the primary auction of securities.

(vi) Alignment of tax structure on small savings with government securities.

4.5.6 (d) Capital Account Convertibility

The government securities market is now driven largely by domestic macroeconomic

conditions, financial market development and market sentiment. A fuller capital account convertibility regime would result in a higher degree of integration of domestic financial markets with the rest of the world, and also an increase in foreign exchange flows. FIIs can also be expected to play a greater role in the government securities market once the limit of FII investment in government securities is progressively enhanced. The limits of FII investments in government securities markets currently stands at USD 5 billion per year. In such an environment, the stability of the market would depend on the evolving external macroeconomic situation as well. The resilience of the market would then depend on the depth of the market and the diversity of domestic participants. An expansion of the investor base to non-resident investors, especially longer term investors like foreign central banks, would need to be undertaken carefully so that market development is carried forward without greater volatility and destabilisation. However, one can expect that the greater diversity in perceptions would help in promoting the stability of the government securities market.

Investment in government securities by foreign entities would require, among other things, the accurate and timely disclosure of financial and non-financial matters which are material for investment decisions. Accounting and auditing standards would have to be comprehensive, relevant and reliable and incorporate international best practices.

The Panel urges that a relaxation in rules in FII investment may be considered consistent with other policies and complemented by an appropriate strengthening of market conduct regulations.

4.5.6 (e) Self-Regulatory Organisations

Though some self-regulatory functions are performed by FIMMDA/PDAI, these organisations are not designated as SROs. The Panel thinks that a SRO status to FIMMDA could be considered by a statutory delineation of its regulatory jurisdiction and the delegation of appropriate powers. FIMMDA should also be brought within the ambit of RBI regulation. This could impart further stability to the government securities market by augmenting regulatory resources, and at the same time, permit a quicker and more flexible response to market conditions.

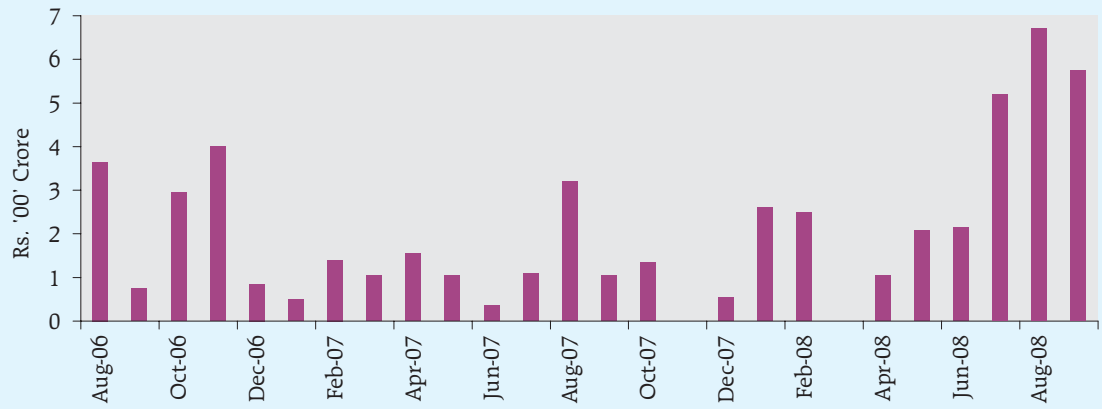
4.5.6 (f) Short-selling and 'When-Issued' (WI) Markets

Some of the recent steps taken to enhance the efficiency, depth and liquidity of the government securities market are yet to give the desired results. The activity in 'WI' market is still low as seen from the low number of trades and volumes (Chart 4.16). The main reason is the fear of regulatory action in the event of settlement failure. The probability of this is higher in 'WI' trades than normal trades. Other reasons are operational, and a lack of appetite on the part of participants in the nascent market. Similarly, short selling in government securities, which currently allows for 5 trading days, needs to be gradually increased to encourage more market players. Since securities are mandated to be invariably delivered on the settlement date, there is a need for appropriate borrowing/ lending mechanisms in government securities to be in place.

4.5.6 (g) Liquidity Requirement in the Clearing and Settlement System

All CCIL operated clearings are settled through the multilateral net settlement batch (MNSB) mode in the RTGS in Mumbai. In addition to government securities, CCIL acts as a central counterparty to foreign exchange (INR/ USD) and the collateralised borrowing lending obligation (CBLO) transactions. The settlement of the funds leg for each segment is carried out independently. In order to address liquidity issues, CCIL has a dedicated line of credit (LoC) from a few commercial banks. As transactions have now increased manifold, the available LoC could be found to be inadequate for completing the settlements on some occasions, which could

Chart 4.16 : Trading Volumes in 'When Issued' Market



Source: RBI

be a potential threat to market stability. To reduce the probability of such a risk, a limited-purpose bank licence can be accorded to CCIL.

Overall, the Panel believes that the continued development of government securities and treasury bills markets, including the interest rate futures market, both supported by adequate infrastructure, prudential controls and the Reserve Bank operations to manage the liquidity of the markets at the short end, would allow an appropriate yield curve to emerge, thereby facilitating the further complementary development of the corporate bond market.

4.6 Equity Market

4.6.1 Introduction

The equity market in India has undergone a significant transformation, particularly after the initiation of reforms in the early 1990s. These include the establishment of the Securities and Exchange Board of India (SEBI) in 1988 and granting it statutory status on January 30, 1992, to protect the interest in securities and to promote the development of, and to regulate securities markets; the repeal of the Capital Issues (Control) Act, 1947, paving the way for free pricing of issues and allocation of resources; strengthening public disclosure norms for listed companies; rationalising settlement procedures by abolition of '*badla*'[64] and shortening of settlement cycle in phases from 14 days to the present T+2 rolling settlement; setting up of National Stock Exchange of India Limited (NSE) as a corporatised and demutualised stock exchange of the country; introduction of a variety of derivative products on Indian exchanges;

[64] *Badla* was an indigenous carry-forward system invented on the Bombay Stock Exchange. It involved buying stocks with borrowed money with the stock exchange acting as an intermediary at an interest rate determined by the demand for the underlying stock and a maturity not greater than 70 days. Like a traditional futures contract, badla is a form of leverage; unlike futures, the broker-not the buyer or seller-is responsible for the maintenance of the mark-to-market margin. It was finally banned in 2001 after the introduction of forward trade in 2000.

demutualisation and corporatisation of all the stock exchanges and improving the corporate governance practices. In addition to the two national stock exchanges with nationwide network *i.e.* Bombay Stock Exchange Ltd. (BSE) and NSE, there are 17 other stock exchanges. In addition to brokers and sub brokers, there were 155 merchant bankers and 15 custodians operating in the Indian equity market as on March 31, 2008.

4.6.2 Regulatory Backdrop and Market Infrastructure

The powers and functions of SEBI have been laid down in SEBI Act, 1992. It also exercises powers under the Securities Contract (Regulation Act), 1956, Depositories Act, 1996 and certain provisions of the Companies Act, 1956 in respect of listed companies and those proposed to be listed. It regulates the securities markets, institutions and intermediaries such as the Stock Exchanges, Depositories, Mutual Funds and other Asset Management Companies, Brokers, Merchant Bankers, Credit Rating Agencies and Venture Capital Funds *etc.*

An assessment of the IOSCO principles for Securities Regulations[65] by the Advisory Panel on Financial Regulation and Supervision has revealed that 20 principles are implemented, eight are broadly implemented and two are partly implemented. The assessment revealed that while the compliance level was satisfactory, there were some gaps with regard to assistance provided to foreign regulators, internal organisation and operational conduct as also information on market intermediaries. There is also a need for prescribing risk related capital requirement and guidelines regarding internal control as part of good practices for market intermediaries.

To bring and sustain confidence in the clearing and settlement of securities, NSE set up the National Securities Clearing Corporation Ltd. (NSCCL) in August 1995. NSCCL carries out the clearing and settlement of the trades executed in the equity and derivatives segments and operates Subsidiary General Ledgers (SGL) for settlement of trades in government securities. It assumes the counter-party risk of each member and guarantees financial settlement. The BSE also has its own clearing house.

Trading infrastructure in the stock exchanges is anonymous and order-driven with all orders from market participants being matched based on strict price/time priority. Two depositories, *viz.*, National Securities Depository Ltd. (NSDL) and Central Depository Services (India) Ltd. (CDSL) were established in 1996 and 1999 respectively to enable electronic record of ownership of securities and paperless trading.

The core of the risk management system is the liquid assets deposited by members with the exchange/clearing corporation. These liquid assets cover or satisfy the four requirements, *viz.*, MTM (mark-to-market) losses on outstanding settlement obligations of the member), VaR Margins (VaR margins to cover potential losses for 99 per cent of the days), Extreme Loss Margins (margins to cover the expected loss in situations that lie outside the coverage of the VaR margins) and Base Minimum Capital (capital required for all risks other than market risk). Trade / Settlement Guarantee Fund has been set up to ensure the smooth settlement of transactions. Recognised Stock Exchanges (RSEs) have established Investor or Customer Protection Fund to take care of investor or customer claims which may arise out of default by a trading member. In addition, an Integrated Market Surveillance System (IMSS) was put in place by the SEBI across the exchanges (NSE and BSE) for monitoring exposure across market segments (cash and derivatives) with effect from December 2006. Also, NSE and BSE have in place their own surveillance system to generate appropriate alerts and prevent market manipulation.

[65] IOSCO Principles for Securities Regulations have 30 principles.

4.6.3 Growth and Composition

As at end September 2008, 4,926 companies were listed on BSE. The number of listed companies on NSE was 1,424. The improvement in macroeconomic fundamentals, congenial investment climate and sound business outlook have resulted in an increase in the size of the market. A vibrant secondary market had *inter alia* contributed to increased stock market returns upto end-2007 as observed from the key indices of BSE and NSE (Table 4.9). In the year 2008, returns have been negative mainly on account of weak global fundamentals and concerns in the global financial market.

The size of the market as measured by market capitalisation had increased sharply between April 2004 and March 2008 signifying a sharp rise in stock prices, new listing of companies as well as further issuance of equity shares. (Table 4.10).

In fact, India was one of the fastest growing in terms of domestic market capitalisation of major stock exchanges worldwide in 2007-08. (Chart 4.17(a)). However, due to the global financial meltdown, the current year has witnessed a sharp decline in the domestic market capitalisation of major stock exchanges worldwide (Chart 4.17 (b)).

The rise and decline is also evident from Chart 4.18 on comparative movement of World Indices.

With the introduction of free pricing and enhancement in disclosure standards, initial public offers (IPOs) have gained in popularity. Between 2003-04 and 2007-08, 267 IPOs amounting to Rs. 86,471 crore were floated. In 2007-08, 82 IPOs amounting to Rs. 39,894 crore were floated in the market.

Simultaneously, the secondary market in equity – both in cash and derivatives trades – has become more active. The reduction in transactions costs and the development of derivatives market have aided the process.

The introduction of index futures and options as also stock futures and options have aided in increased liquidity leading to more efficient price discovery. Impact cost which quantifies the impact of change in stock prices has been showing a declining trend as observed from Table 4.11.

Between April 2004 and March 2008, the liquidity in the cash segment (both BSE and NSE) as reflected in the value traded ratio (turnover to GDP) has increased sharply. The turnover in derivatives segment (BSE and NSE) has also risen sharply during the same period

Table 4.9: Annual Index Returns*

Per cent

Index	2004-05	2005-06	2006-07	2007-08
1	2	3	4	5
BSE SENSEX	27.8	44.2	48.3	35.0
CNX NIFTY	26.5	39.2	42.1	37.1

* : Annual index returns in per cent on average basis.
Source: SEBI / RBI

Table 4.10: Trends in Market Capitalisation

Per cent

End March	Market capitalisation	
	BSE	NSE
1	2	3
2005	54.3	50.7
2006	88.4	78.6
2007	85.5	81.2
2008	109.0	103.5

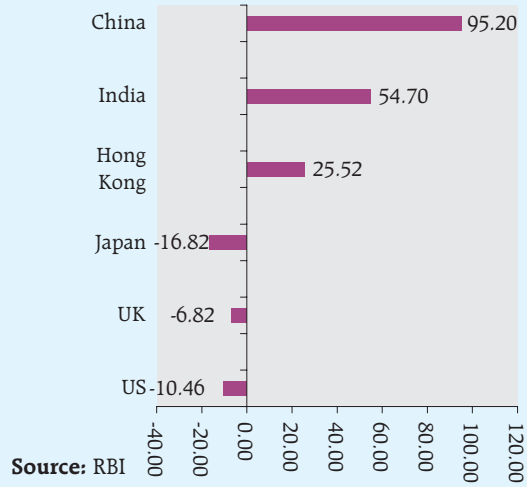
Note : Figures are as ratios to GDP (per cent)
Source: SEBI /RBI

(Table 4.12). The total cash and derivatives transaction in 2008-09 (April to August 2008) is to the tune of Rs.5,86,180 crore and Rs.61,09,667 crore respectively.

In sharp contrast to the other markets, retail participation in the stock market (particularly the cash segment) is significant. This is clear from the small average trade sizes in the NSE spot market (Rs.24,790 crore in 2006-07). India's household investment in shares and debentures is around 10 per cent[66] of their total financial savings. There is, therefore, a potential for further growth in this segment. The breakup of gross turnover in NSE shows that proprietary trades by brokers and FIIs are the two biggest components in securities market turnover (Charts 4.19, 4.20).

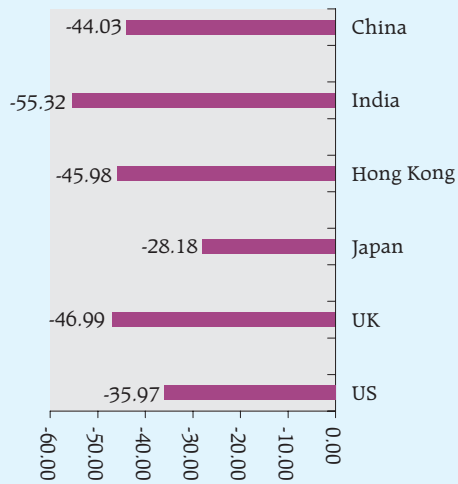
As part of its market development initiatives, SEBI has amended the SEBI (Mutual Funds) Regulations, 1996 on April 16, 2008, to permit mutual funds to launch real estate mutual funds, introduced short selling for all classes of investors with effect from April 21, 2008 and has also allowed a full-fledged securities lending and borrowing scheme for all participants in the market under the overall framework of the 'Securities Lending and Borrowing Scheme', 1997. In order to reduce the time duration for a rights issue, SEBI has decided to amend the SEBI (Disclosure and Investor Protection) guidelines and the Listing Agreement. Reduction in timeline approved include; the number of days for the notice period for a board meeting will be reduced to 2 working days from 7 days; the notice period for record date will reduced from 15/21/30 days to 7 working days for all scrips; issue period will be reduced from minimum 30 days to minimum 15 days with a maximum of 30 days and the time period for completion of past issue actively will be reduced from 42 days to 15 days. These changes would enable a rights issue to be

Chart 4.17 (a) : Per Cent Variation in 2007-08 Domestic Market Capitalisation In Equity Market



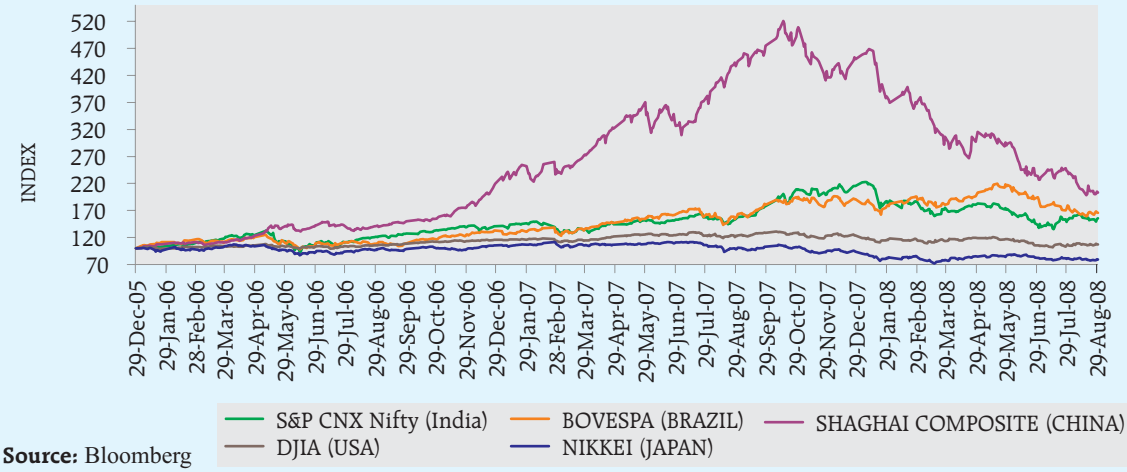
Source: RBI

Chart 4.17(b) : Per Cent Variation in 2008-09 (up to 11.11.08) Domestic Market Capitalisation In Equity Market



[66] Source: RBI Preliminary estimates and CSO quick estimates

Chart 4.18 Comparative Movement of World Indices (Normalised to end-December 2005=100)



Source: Bloomberg

completed within 43 days as against 109 days currently available for a rights issue.

In order to safeguard the interests of shareholders, SEBI has ordered both the listed and unlisted companies which are getting merged to appoint independent merchant bankers for giving a fairness opinion on valuation done by valuers. In tune with the reforms in foreign investor participation in the Indian capital market, SEBI has excluded sub-accounts falling in the categories of 'foreign corporate' and 'foreign individual' from the definition of Qualified Institutional Buyers (QIBs). To facilitate raising of resources through Qualified Institutional Placement (QIP) route by companies that have been listed in the preceding one year pursuant to approved scheme of merger/demerger/arrangement entered into by such companies with companies that have been listed for more than a year, they have been allowed to take into account the listing history of the listed companies for availing the QIP route to resource mobilisation. The pricing guideline for QIP has also been

Table 4.11: Equity Spot Market Liquidity

	Calendar Year					
Portfolio	**2003**	**2004**	**2005**	**2006**	**2007**	**2008***
1	2	3	4	5	6	7
NIFTY						
NSE impact cost at Rs. 50 lakh (per cent)	0.10	0.09	0.08	0.08	0.08	0.10
NIFTY Junior						
NSE impact cost at Rs. 25 lakh (per cent)	0.32	0.31	0.16	0.16	0.14	0.16

* : January to July 2008

Source: SEBI

Table 4.12: Total Turnover in Cash and Derivatives Segments of Equity Markets

(Rs. in crore)

Year	BSE		NSE		Total		Cash Market Value Traded Ratio (per cent)*
	Cash	Derivatives	Cash	Derivatives	Cash	Derivatives	
1	2	3	4	5	6	7	8
2004-05	5,18,717	16,112	11,40,071	25,46,982	16,58,788	25,63,094	53.1
2005-06	8,16,073	9	15,69,556	48,24,174	23,85,629	48,24,183	66.6
2006-07	9,56,185	58,938	19,45,285	73,56,242	29,01,489	74,15,180	69.9
2007-08	15,78,856	2,42,338	35,51,038	1,30,90,477	51,29,894	1,33,32,815	109.3

* : Value Traded Ratio = Total Turnover (Cash)/GDP.

Source: SEBI / RBI

modified to bring the issue price of securities closer to their market price.

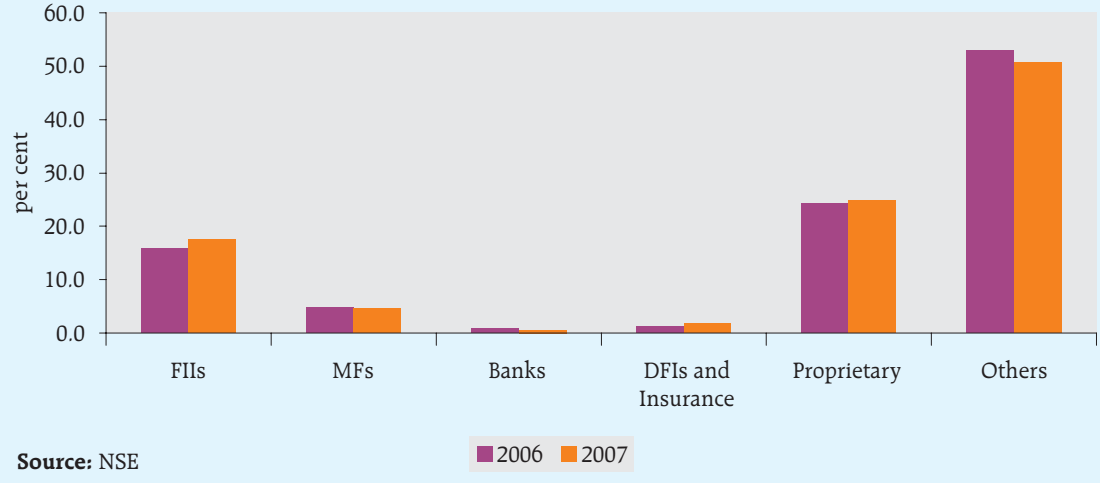
4.6.4 Stability and Development Issues

4.6.4 (a) Public Issue

Though the average size of public issues has increased from Rs. 296 crore in 2001-02 to Rs. 703 crore in 2007-08, the size of the public issue segment of the capital market has remained small, which reflects the relatively insignificant role the public issues have in the capital formation in the country. Although the private placement segment of the market has increased sharply (due to increase in the corporate debt segment), it is not fully transparent and a large number of investors are left out of the market (Chart 4.21). The issues relating to corporate debt market has been addressed separately in Section 4.7. The growth in the Indian economy needs increased risk capital, which can only be provided by the capital market.

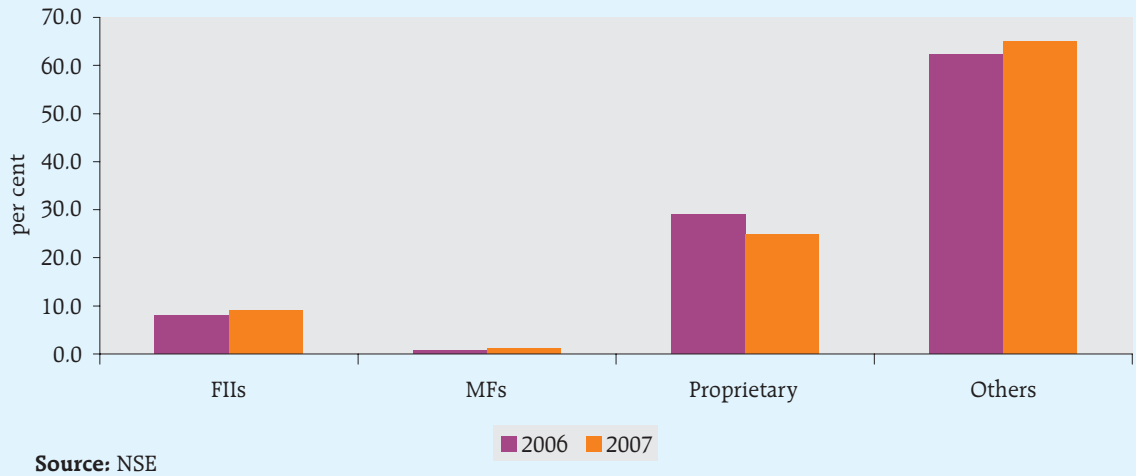
The book building process has become the preferred mode of IPO issuance in Indian stock markets. As per the existing norms, the QIBs are required to pay upfront at least 10 per cent of the total commitment. It is observed that the

Chart 4.19: NSE - Breakup of Gross Turnover in Cash Segment (Per Cent)



Source: NSE

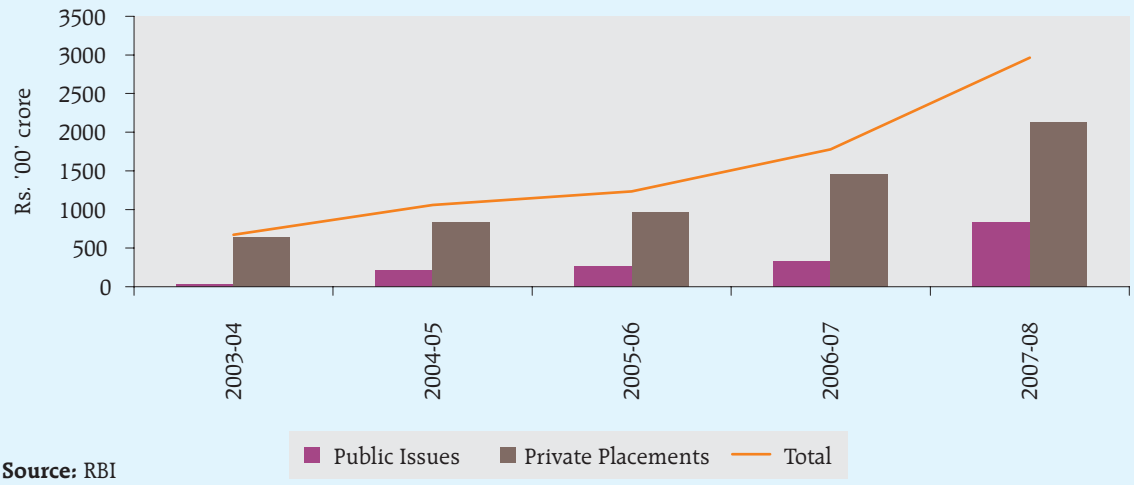
Chart 4.20: NSE - Breakup of Gross Turnover in Derivatives Segment (Per Cent)



Source: NSE

payment upfront by QIBs is only to the extent of the minimum requirement[67].This leads to hype about oversubscription upfront which has an adverse impact on retail investors. Under the circumstances, the Panel feels that there is a strong case for getting institutional bidders to pay upfront the total amounts bid and not a small percentage thereof.

Chart 4.21: Resource Mobilisation from the Primary Capital Market



Source: RBI

[67] As per the Disclosure and Investment Protection Guidelines, the broker may collect an amount to the extent of 100 percent of the application money as margin money from the clients and investors, before he places an order on his behalf. An amount not less than 10 per cent of the application money is to be collected from Qualified Institutional Buyers (QIBs) in respect of bids placed by them as margin money.

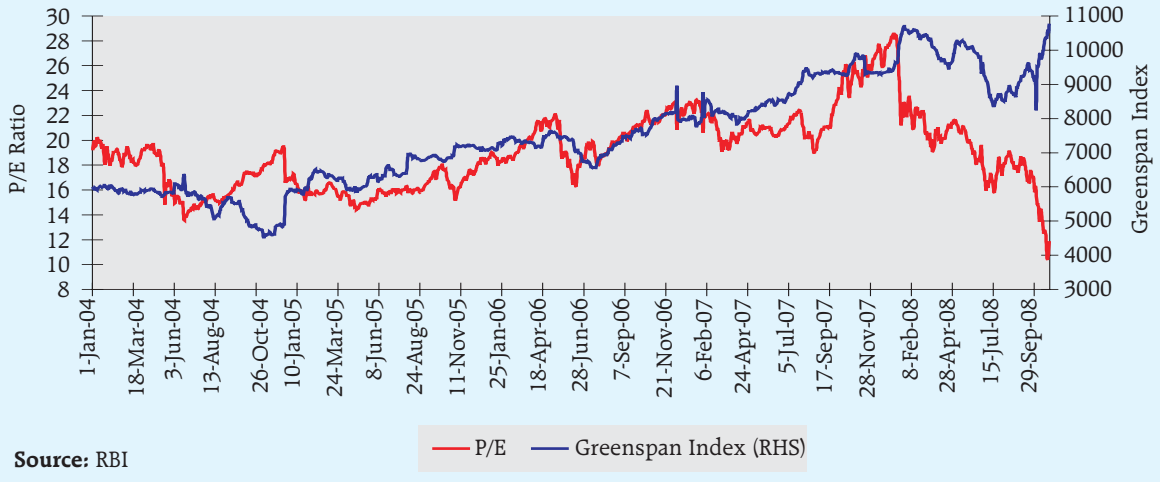
4.6.4 (b) Equity Valuation

An area of concern relates to valuation in the equity market which has become very expensive, driven largely by substantial increase in FII investments. On an average basis, price-earnings (P/E) ratio for the last 10 years (1997-98 to 2007-08) was at 17.74. On a point-to-point basis, P/E ratio rose from 20.65 (SENSEX)[68] on January 1, 2004 to 28.51 (SENSEX) on January 08, 2008. The average P/E ratio was, however, 22.65 during 2007-08. This ratio in India was higher than that in most of the developing markets (barring China) such as Indonesia, Turkey and South Korea. Both in a historical and cross-country perspective, the Panel considered that these valuations appear stretched. Even on one-year forward earnings basis, the current valuations look expensive. These high valuations may be attributed to demand and supply gap and/or excess liquidity in the market. The current reversal of capital flows have brought the P/E ratio sharply down to 11.89 as on October 31, 2008.

According to the Greenspan formula[69], forward earnings yields for stocks (the ratio of forecast earnings to current valuations) should equal long-term government bond yields. Any deviation/divergence between the two underscores acceleration/deceleration. The Chart 4.22 presents daily movements in equity valuations in BSE based on the Allan Greenspan formula and the P/E ratio for the last 4 years from January 1, 2004 to September 29, 2008.

- There is a broad co-movement of valuations based on Alan Greenspan formula and the P/E ratio till early 2008.
- Valuations based on both Alan Greenspan formula and P/E ratio underscore acceleration, particularly in the recent past (till January 08, 2008) (Chart 4.22). Recent decelerations has resulted in some divergence of the ratio.

Chart 4.22: Equity Valuations in India



Source: RBI

[68] Source: BSE

[69] Alan Greenspan formula $[(\frac{Earnings/Price}{Benchamark\ yield\ (e.g.,10\ year\ G\text{-}Secs)})^{*}\ IndexValue]$ for equity valuations appears to have first been mentioned in a July 1997 Federal Reserve Monetary Policy Report to Congress. The formula is based on what is called Fed Model. The model suggests that aggregate stock market valuations equal the ratio of forward earnings to long-term risk-free rates. The two fundamental variables underlying the Fed model are expectations of future earnings and interest rates. While the former represents growth effect, the latter signifies risk effect. The Fed model holds only if growth-effect and risk-effect cancel out each other. Growth-effects outweighing risk-effects lead to acceleration of equity valuation, while risk-effects outweighing growth-effects result in deceleration of equity valuations.

FIIs have generally maintained positive net investments in the Indian equity market reflecting the strong macroeconomic fundamentals of the country and good corporate results (Chart 4.23). However, there have been net outflows since beginning of the year 2008. Net FII investments in the Indian equity markets rose from USD 9.1 billion during 2004-05 to USD 10.9 billion during 2005-06 and further to USD 12.7 billion during 2007-08. In 2008-09 net FII outflows have been to the tune of USD 11.9 billion (up to January 9, 2009), FIIs have resorted to net sales of USD 9.7 billion in the Indian equity market due to deepening of credit crisis in the advanced economies.

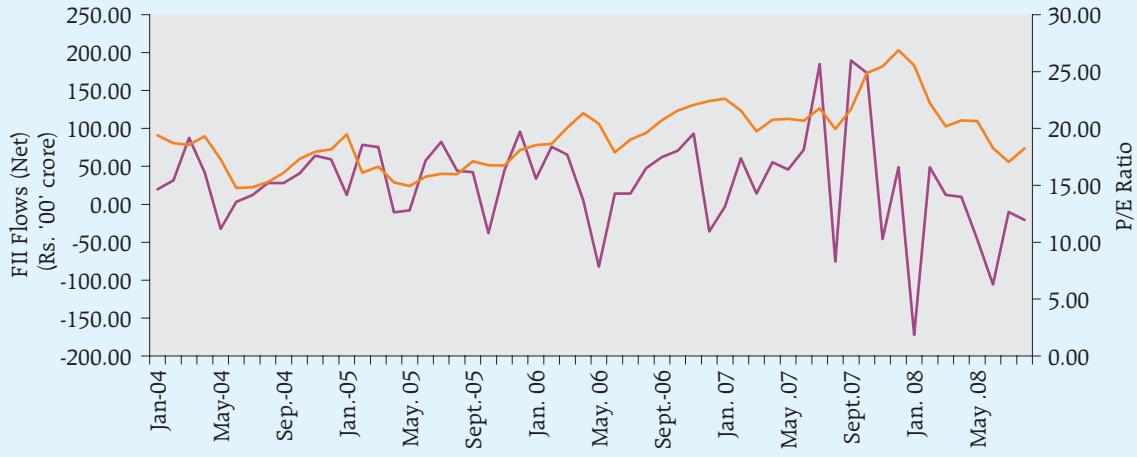
4.6.4 (c) Volatility

Though volatility is an inherent feature of the equity market, the Panel recognises that increased volatility would have an adverse impact on market sentiment and may impact the corporates' capacity to raise capital.

In order to strengthen risk management of market intermediaries, SEBI has prescribed capital adequacy requirements and it is conditional for granting registration that the intermediary has to continuously maintain its capital adequacy requirement at all times, during the currency of the certificate of registration or renewal thereof. The establishment of trading systems, including securities exchanges, is subject to regulatory authorisation and oversight. There are regulations in place which promote transparency in trading and detect and deter manipulation and other unfair trading practices. The systems for clearing and settlement of securities transactions are subject to regulatory oversight. The regulatory framework also ensures proper management of large exposures, default risk and market disruption.

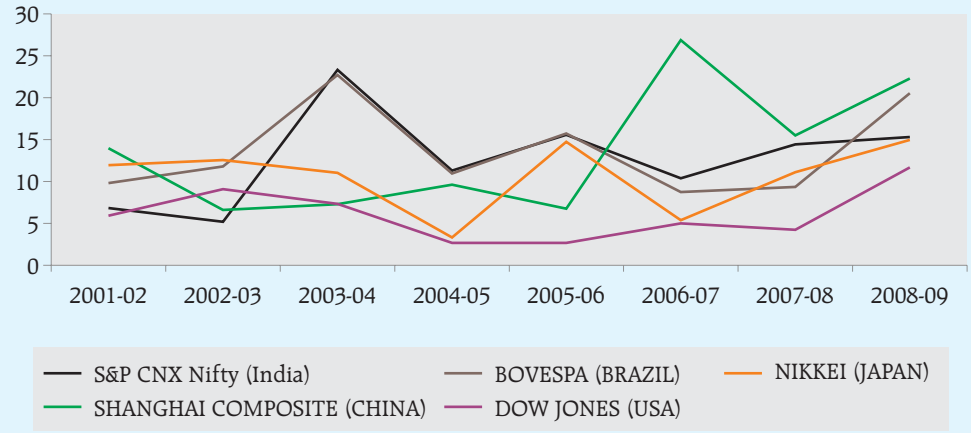
Over the years, though the Indian stock markets have become less volatile because of the robustness of risk management practices at

Chart 4.23: Net FII Inflows and P/E Ratio



Source: RBI and SEBI

Chart 4.24: Volatility of World Indices (Co-efficient of Variation)



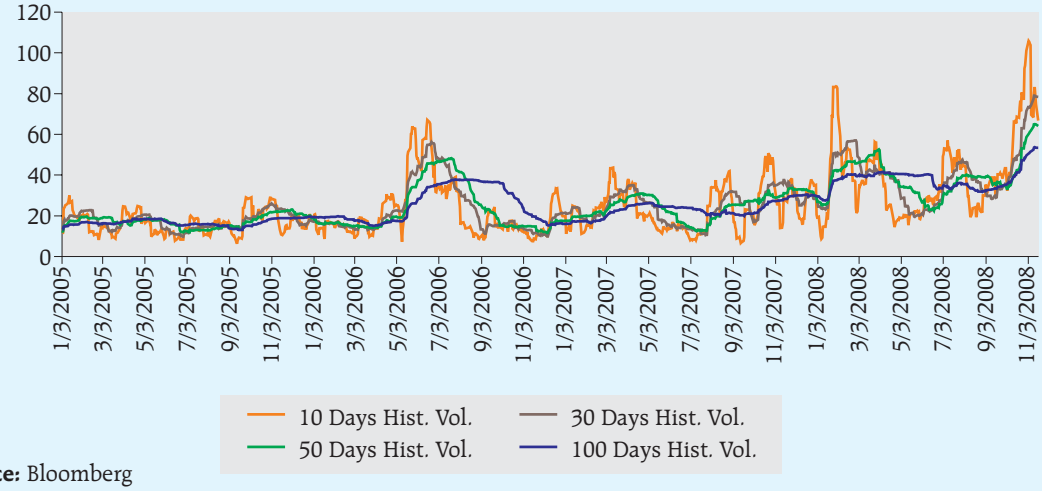
Source: Bloomberg

the stock exchange level and strengthening of the market design, it remains more volatile than other developed markets and some other EMEs. A comparative chart of volatility of select world indices is given in Chart 4.24.

Beginning 2003, the integration of Indian stock markets with global markets has strengthened. It has also shown high correlation with Asian stock markets, barring China and South Korea. The recent market volatility is because of the fears of US economy heading towards a recession, a situation aggravated further due to the sub-prime crisis (Chart 4.25). The CNX NIFTY saw an increase in annual volatility from 10.3 per cent in 2006 to 11.5 per cent in 2008[70] .

Implied volatility, one of the important determinants of option pricing, has been low for most part of the last four years reflecting a bullish sentiment. The recent stock market declines have also not resulted in an increase in implied volatility for both put and call options in the current financial year till August 2008. (Charts 4.26, 4.27).

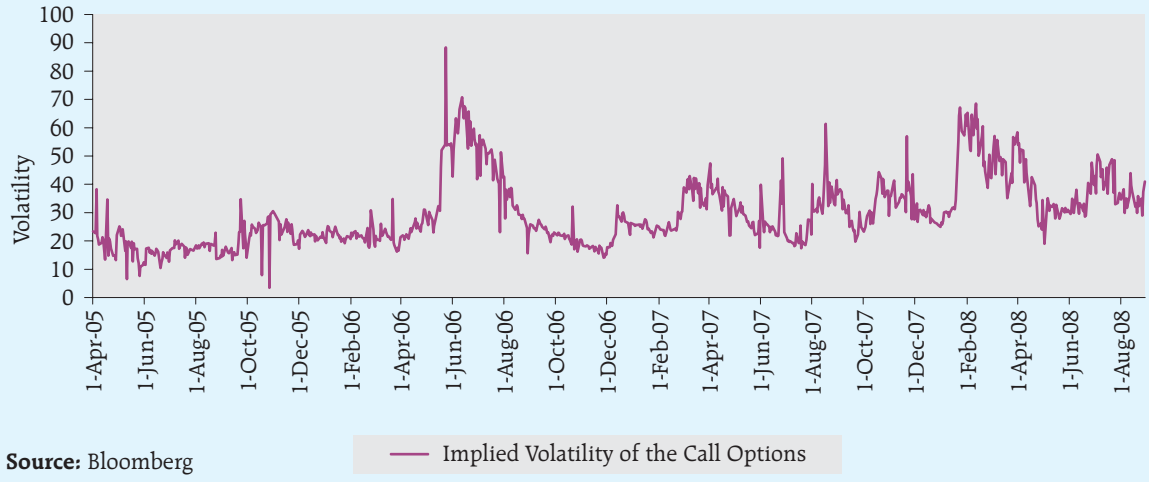
Chart 4.25: Volatility Index of S&P CNX Nifty



Source: Bloomberg

[70] From January 01, 2008 to July 31, 2008.

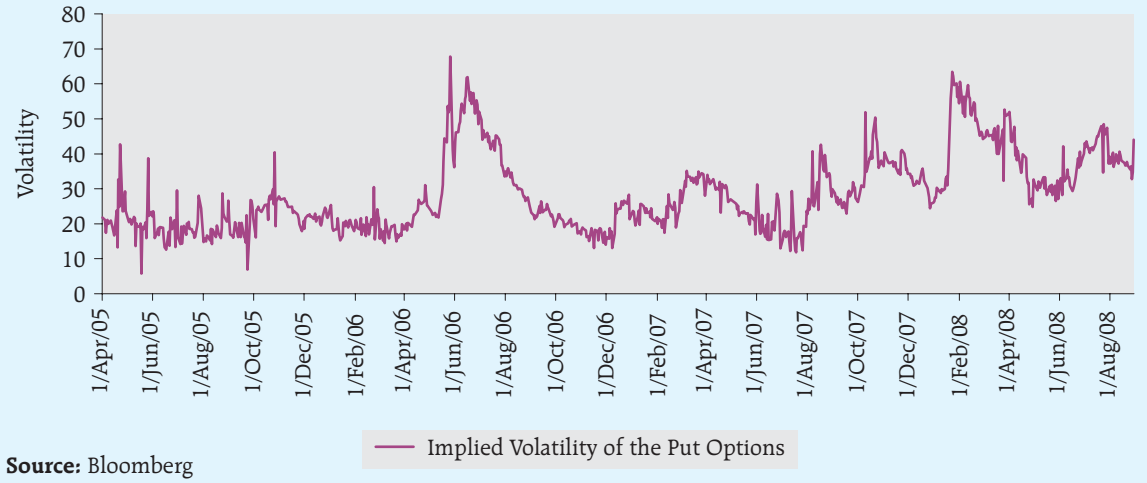
Chart 4.26: Implied Volatility of the Call Options - NSE



Source: Bloomberg

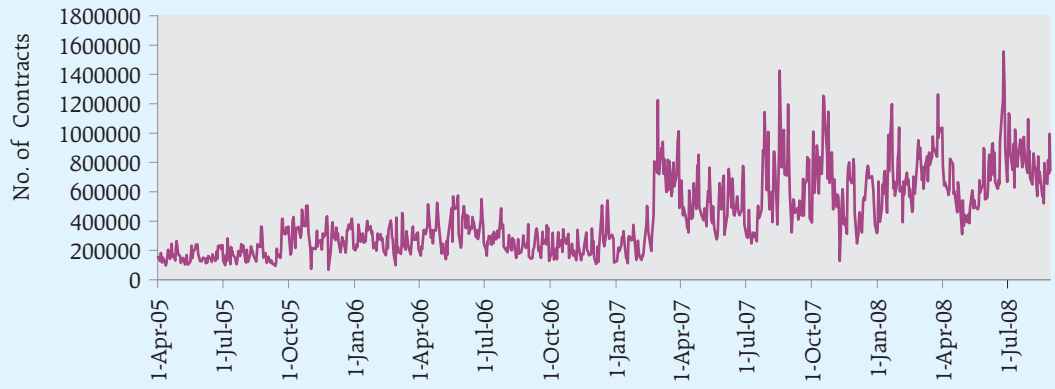
The derivatives market has witnessed a sharp increase in open interest in stock futures, *i.e.*, outstanding contracts that are not yet squared up, possibly due to optimistic expectations about future trend in stock prices. A very high open interest can be potentially destabilising and can instil volatility in the spot markets. If the markets do not move on expected lines, the market players start liquidating open positions in the futures market, even before the expiry date. While the number of contracts traded has not shown any significant declining trend, the value of open interest has witnessed some decline between June 2008 and August

Chart 4.27: Implied Volatility of the Put Options - NSE



Source: Bloomberg

Chart 4.28: Open Interest in Nifty Index Futures (No. of Contracts)



Source: Bloomberg

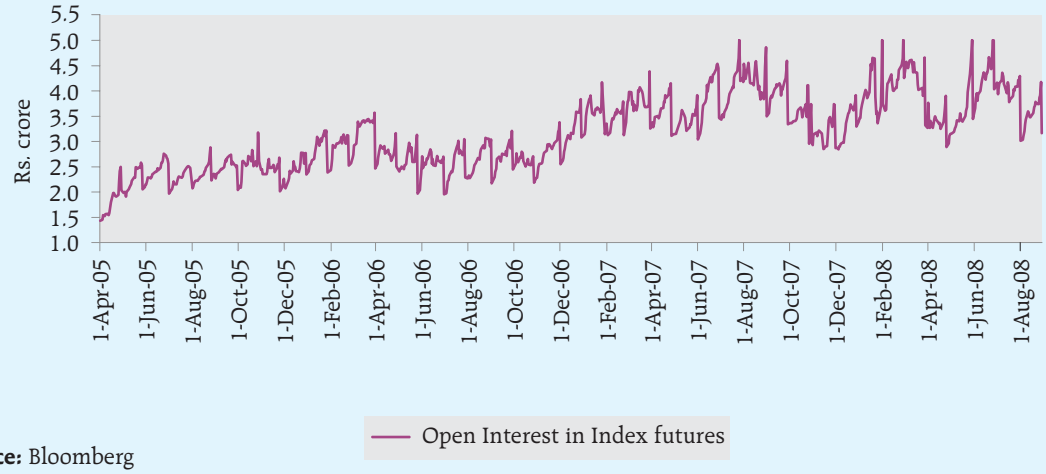
2008 due to the bearish sentiments prevailing in the equity market (Charts 4.28, 4.29)

Many equity houses fix their daily VaR levels as a measure of risk management. The Panel feels that given the volatility (as witnessed in recent times) there is a need for stress testing of VaR limits to consider any revision. The confidence level used for computing VaR may also need some stress tests. Further, many of the equity houses set their 'stop loss' triggers by aligning them with these 'VaR' levels. This practice may exacerbate the decline in equity prices as a breach in value below this level may result in large scale selling, further depressing the values. Simulation models needs to be developed to assess the impact of such market practices, and mitigation measures could be adopted at the stock exchange level.

4.6.5 Further Measures for Development

The Indian capital market has come a long way and regulatory / supervisory environment as also risk management processes employed in the market are comparable to the world standards. The market can sustain momentum by promoting competition, stimulating institutional innovation, promoting

Chart 4.29: Open Interest in Nifty Index Futures (Value)



Source: Bloomberg

communication and co-operation among regulators, improving transparency and accountability, while expanding retail investor base and introducing pension reforms. To add further impetus to the market the following could be considered:

- For the purpose of reducing the time taken in IPO process, wide network of brokers could be leveraged. A Central Integrated Platform (CIP) connecting multiple nodes including the Internet and broker terminals could be set up for enabling investors to apply in public issues electronically. Simplification of debt issuance process and amendment of Section 60A of Companies Act 1956 with a view to rationalise public issues are required to be considered.
- Regulatory and supervisory issues include need for SROs (other than stock exchanges) as front line regulators of market intermediaries as the exchanges get demutualised. Organisations such as Association of National Exchanges Members of India (ANMI), Association of Mutual Funds of India (AMFI), Association of Merchant Bankers of India (AMBI) and Financial Planning Standards Board of India (FPSBI), at present function primarily as trade associations could be considered for according SRO status with clear and statutory delineation of delegated regulatory jurisdictions. Since complex governance issues could arise in managing the conflicts of interest between commercial objectives and the developmental/regulatory role, this would require a strong oversight by the primary regulator.
- The exchanges have been corporatised and demutualised, which has brought into focus new conflicts. The demutualised exchanges have to cater to the needs of their shareholders besides discharging functions under SCR Act, such as market and member regulations. To enable an exit option to the shareholders, some demutualised exchanges could also seek listing in the exchanges. There should therefore be strong oversight of demutualised exchanges to address potential conflict of interest that may arise due to its commercial objectives and regulatory role. The Panel recognises however that, consolidation of small demutualised stock exchanges (other than NSE and BSE) would be dependant on emerging market forces.
- Enhancement of knowledge standards of the current and future market participants through national investor education and financial literacy should be strengthened.
- Faster convergence of Indian Accounting Standards (IAS) with International Financial Reporting Standards (IFRS). The Panel notes that detailed recommendations have been made in this regard by the Panel on Institutions and Market Structure.

4.7 Corporate Bond Market

4.7.1 Introduction

Economic buoyancy combined with the enhancement in financial infrastructure in the form of well developed trading, clearing and

settlement systems have contributed to a rapid growth in the equity market. In the debt market, reforms in issuance procedures, trading and settlement mechanisms and the burgeoning borrowing requirement of the Government have contributed to the growth in the government securities market. Compared to these, the corporate bonds market has not witnessed a similar growth. The need for strengthening this market is paramount in the context of financing the long term needs of corporates. The development of a corporate bond market will have the followings advantages.

- Diversification of markets to enable corporates to access an alternate funding source.
- Endowing borrowers with greater efficiency in managing the cost of capital.
- Addressing large funding needs of the Indian economy, particularly in social overhead capital. The Planning Commission has estimated that investments requirement for the infrastructure sector is to the order of Rs.20,56,150 crore between 2007-08 to 2011-12. As percentage of GDP this would mean increase of infrastructure investment from 5.4 per cent of GDP to 7.6 per cent during the Plan period.
- As external commercial borrowings are gradually drying up due to global liquidity concerns, additional funding needs could be met by corporate debt.
- Given the regulatory limits on banks' exposure to NBFCs, the growth of NBFCs could be constrained. Development of corporate debt market could be an alternate funding source for NBFCs.
- Constraints of banks to fully cover the growing demand for corporate debt particularly in view of the long tenure of the loans.
- Diversification of risks spreading the credit risk from banks' books through the broader financial system.
- Development of a deeper interest rate market which would be more responsive to monetary policy signals.

4.7.2 Regulatory Backdrop and Market Infrastructure

The regulatory roles for different segments of the corporate debt market have been clearly delineated. While the Reserve Bank is responsible for reverse repo/repo deals in corporate debt, SEBI would be responsible for all primary and secondary market activities in corporate bonds issued by listed entities.

Several initiatives have been taken by SEBI, in co-ordination with the Reserve Bank for strengthening the development of corporate bond market. In December 2007, the provisions pertaining to issuances of corporate bonds under the SEBI (Disclosure and Investor Protection) Guidelines, 2000 were amended. SEBI has formulated the SEBI (Issue and listing of Debt Securities) Regulations, 2008 on June 6, 2008 for issue of debt securities by companies and other entities and listing thereof in RSE. This amendment introduced the following changes:

- For public/right issues, issuers need to obtain a rating from only one credit rating agency so as to reduce the cost of issuances.
- In order to facilitate the issuance of below-investment grade bonds to suit the risk/return appetite of investors, the stipulation that debt instruments issued through public/rights issues shall be of at least investment grade has been removed.
- In order to afford issuers with desired flexibility in structuring of debt instruments, structural restrictions such

as those on maturity, put/call option, conversion, *etc.*, have been done away with.

Some of the other steps taken include:

- Compulsory reporting of all trades in corporate bonds to any one of the reporting platforms set up by BSE, NSE and FIMMDA.
- Setting up of trading platforms by BSE and NSE which are operational from July 2007.
- Reduction in the lot size in case of corporate bonds from Rs.10 lakh to Rupees one lakh in April 2007 to encourage retail participation.
- Reduction in shut period in corporate bonds aligning it with the government securities and introduction of standardised practice of actual/actual day count convention.
- Amendments to the listing agreement to ensure that services of ECS (Electronic Clearing Service), Direct Credit, RTGS (Real Time Gross Settlement) or NEFT (National Electronic Funds Transfer) are used for payment of interest and redemption amounts.
- Making it mandatory that the companies issuing debentures and the respective debenture trustees/stock exchanges shall disseminate all information regarding the debentures to the investors and the general public in the event of default by issuer company, failure to create a charge on the assets, and revision of rating assigned to the debentures.
- Making it mandatory to make public, information/reports on debentures issued including compliance reports filed by companies and debenture trustees.
- Enabling some agencies to establish electronic systems to facilitate OTC trades, which will help display of buy and sell quotes of counter parties enabling deals at best prices.

A commitment has been made by the Reserve Bank for permitting market repos in corporate bonds, once assured of availability of fair prices, and an efficient and safe settlement system based on DVP III and straight-through processing are in place. BSE and NSE have confirmed that they have systems in place for risk-free clearing and settlement similar to the mechanism prevalent in the cash and derivatives market and are prepared for the introduction of repos in corporate bonds. SEBI is in dialogue with BSE and NSE for putting in place systems for DVP III based clearing and settlement.

4.7.3 Growth and Composition

The issuance of corporate debt accounted for around 72 per cent of the total resource mobilisation by corporate sector. Corporates raised resources through the bond route equivalent to 83 per cent of the gross borrowing by the Central and State Governments in 2007-08 (Table 4.13).

The preferred mode in the corporate bonds market is private placements. This does not provide full transparency in the bond market as these issues are not listed and there is no screening mechanism for an assessment

Table 4.13: Resource Mobilisation by the Corporate Sector

(Amount in Rs crore)

(April – March)	Equity Issues	Debt Issues			Total Resources (2+5)	Share of Private Placements in total debt (4/5*100) (per cent)	Share of Debt in total resource mobilisation (5/6*100) (per cent)
		Public Issues	Private Placements	Total (3+4)			
1	2	3	4	5	6	7	8
2004-05	18,000	3,870	83,410	87,280	1,05,280	95.6	82.9
2005-06	26,700	250	96,320	96,570	1,23,270	99.7	78.3
2006-07	31,589	850	1,45,809	1,46,659	1,78,248	99.4	82.3
2007-08	83,808	1,309	2,11,158	2,12,467	2,96,275	99.4	71.7

Source: RBI

of risks. Also, this has resulted in lesser transactions in the secondary market activities of corporate debt, impacting the liquidity of such instruments.

Secondary market transactions in corporate debt have been much lower than the other segments of the capital market. As compared to total transactions of Rs. 56,27,396 crore in government securities market (including repo transactions) in 2007-08 and Rs. 51,29,894 crore in the equity market between April 2007 and March 2008, the total trading in corporate bond market in 2007-08 was only Rs.96,119 crore. The month-wise details of total secondary market transactions in corporate bond markets (both exchange traded and OTC) for 2007-08 is given in Table 4.14.

The increase in the spread between corporate bonds and government securities in

Table 4.14: Secondary Market Transactions in Corporate Bonds (2007-08)

BSE Months	BSE		NSE		FIMMDA		Grand Total	
	No. of Trades	Amount (Rs. crore)	No. of Trades	Amount* (Rs. crore)	No. of Trades	Amount** (Rs. crore)	No. of Trades	Amount (Rs. crore)
1	2	3	4	5	6	7	8	9
Apr-07	2,855	3,897.7	171	1,176.9	0	0	3,026	5,074.6
May-07	2,958	4,156.7	96	1,221.0	0	0	3,054	5,377.6
Jun-07	2,499	3,271.5	207	1,523.5	0	0	2,706	4,795.0
Jul-07	2,581	6,411.1	833	7,205.6	0	0	3,414	13,616.7
Aug-07	1,923	4,275.4	416	3,044.9	0	0	2,339	7,320.3
Sep-07	1,845	2,118.4	292	2,045.0	277	1,567.6	2,414	5,731.0
Oct-07	2,246	6,219.4	436	3,579.0	563	4,421.3	3,245	14,219.6
Nov-07	1,815	2,188.6	229	1,660.2	444	2,045.0	2,488	5,893.8
Dec-07	2,215	2,342.2	226	1,728.2	490	2,908.9	2,931	6,979.3
Jan-08	2,864	3,244.0	460	4,739.8	952	6,563.4	4,276	14,547.2
Feb-08	1,773	1,216.4	260	2,176.9	632	2,875.3	2,665	6,268.6
Mar-08	2,123	1,845.5	161	1,352.3	731	3,097.5	3,015	6,295.4
Total	27,697	41,186.7	3,787	31,453.1	4,089	23,479.0	35,573	96,118.9

* Comprises OTC trades and trades done on exchange.

** Trade reporting on FIMMDA reporting platform w.e.f. September 01, 2007.

Source: SEBI

recent years is reflective of the lack of liquidity in the corporate bonds market (Table 4.15).

4.7.4 Development Issues

The size of the secondary market in corporate debt is not yet large enough to have any significant impact on systemic stability. Household savings in India are mainly parked in bank deposits, real estate, gold and recently in equity. Corporate bonds are not a preferred channel of investment for the household sector. However, with the current focus on the development of a corporate bond market some key stability concerns that could arise out of other markets, particularly the credit market need to be addressed. Though the benefits of a developed and vibrant corporate bond market are manifold, the reasons for its relative inactivity are demand constraints, supply inadequacies and lack of market infrastructure.

4.7.4 (a) Demand Constraints

The lack of demand for corporate bonds can be attributed to the following factors:

- Lack of buyers of such bonds because of fear of default and inability to enforce contracts;
- Lack of transparency and liquidity of corporate bonds.

The principal institutional investors in India are commercial banks, insurance companies, pension schemes, provident and mutual funds, and foreign institutional investors. The ability of the commercial banks and insurance companies to invest in corporate bonds is constrained by statutory pre-emptions which mandate these entities to invest a substantial part of their resources in government paper. Further liberalisation is a precondition for the corporate bond demand from pension schemes and provident funds sector to grow. Foreign institutional investors are subject to an annual aggregate corporate debt investment limit of USD 15.0 billion on prudential considerations.

4.7.4 (b) Supply Inadequacies

Supply responses are inadequate because of the following reasons:

- Large fiscal deficits resulting in large issuance of credit risk-free government securities and issuance of low risk subordinate debts by banks as part of their tier II capital at attractive interest rates.

Table 4.15: Spreads Between Corporate Bonds and Government Securities

Rating	Tenor	Mar-05	Mar-06	Mar-07	Mar-08
1	2	3	4	5	6
AAA	1-yr	50 bps	142 bps	235 bps	172 bps
	2-yr	66 bps	98 bps	175 bps	165 bps
	5-yr	62 bps	97 bps	162 bps	161 bps
AA	1-yr	50 bps	163 bps	256 bps	216 bps
	2-yr	126 bps	133 bps	199 bps	221 bps
	5-yr	130 bps	140 bps	189 bps	212 bps

Source: RBI

Other corporate debt issuances do not reflect an adequate spread.

- Increased access to offshore (euro-issuance and loan) market for Indian Corporates, improving offshore spreads/ risk perception for Indian entities resulting in greater liquidity offshore than onshore (till 2007-08), all part of the vicious cycle.
- The economic buoyancy resulting in meeting of a significant portion of the corporate funding through internal accruals.

4.7.4 (c) Market Infrastructure

While SEBI has initiated steps for the simplification of issuance procedures and reduction of costs of public issuance, the relative ease in raising corporate debt through private placements has resulted in the large share of private placement issuance of corporate bonds. This has rendered the corporate bond market less transparent, which has in turn impacted the liquidity of such bonds. The secondary market in corporate bonds is limited to highly rated securities (AA and above). The wholesale debt segments of the stock exchanges have not picked up. The absence of DVP is another obstacle in market development. The tax deducted at source (TDS) system for corporate bonds acts as an impediment to development of secondary market activities especially in view of government securities not being subject to TDS. The difficulties in contract enforcement are also a key factor hampering market development.

4.7.4 (d) Recommendations for Development of the Corporate Bond Market

Corporates have traditionally relied on borrowings from banks and financial institutions. Corporate bond market, which was reasonably vibrant in mid-eighties, has shrunk in size. Some of the reasons are the lack of buying interest, low transparency and absence of pricing of spreads against the benchmark yield curve. Only when there is a large pension fund market and the risk spreads are attractive will the corporate bond market get a strong impetus from the demand side. Current corporate risk spreads do not fully reflect risks and therefore do not attract demand. With the opening up of the capital account, the growth of the corporate bond market could become quite large as there may be demand from foreigners. The Panel notes that the High Level Committee on Corporate Debt and Securitisation had recommended a series of measures to activate both primary and secondary market in 2005 (Box 4.4). While some of the recommendations have been implemented, the remaining need to be adopted expeditiously. The Panel recommends that the following reforms can be taken up:

- Corporate bonds should be made repo-able. This could be introduced in a phased manner. A beginning could be made by allowing AAA rated corporate bonds to be repo-able and only for market repos. Over a period of time, other highly rated bonds (AA and above) could also be included in the list of repo-able securities. At a later stage the facility of repo could be extended to LAF.
- Consolidation of all trades reported in the different reporting platforms could be disseminated through SEBI or any other centralised agency to enhance transparency.
- Allowing shorting within specified limits for banks and primary dealers. This would also help enhance liquidity in the Credit Default swap markets.
- Simplification of the debt issuance process. Introduction of an integrated disclosure regime with the help of an electronic platform would provide

Box 4.4: Recommendations of High Level Committee on Corporate Debt

The key recommendations of the High Level Committee on Corporate Debt and Securitisation, which submitted its report in December 2005, pertaining to the corporate debt market, are summed up below:

Primary Market

1. The stamp duty on debt instruments be made uniform across all the States and linked to the tenor of securities.
2. To increase the issuer base, the time and cost for public issuance and the disclosure and listing requirements for private placements be reduced and made simpler. Banks be allowed to issue bonds of maturities of 5 year and above for ALM purpose, in addition to infrastructure sector bonds.
3. A suitable framework for market making be put in place.
4. The disclosure requirements be substantially abridged for listed companies. For unlisted companies, rating rationale should form the basis of listing. Companies that wish to make a public issue should be subjected to stringent disclosure requirements. The privately placed bonds should be listed within 7 days from the date of allotment, as in the case of public issues.
5. The role of debenture trustees should be strengthened. SEBI should encourage development of professional debenture trustee companies.
6. To reduce the relative cost of participation in corporate bond market, the TDS rule for corporate bond market should be brought at par with the government securities market. Companies should pay interest and redemption amounts to the depository, which would then pass them on to the investors through ECS/warrants.
7. For widening investor base, the scope of investment by provident/pension/gratuity funds and insurance companies in corporate bonds should be enhanced. Retail investors should be encouraged to participate in the market through stock exchanges and mutual funds.
8. To create large floating stocks, the number of fresh issuances by a given corporate in a given time period should be limited. Any new issue should preferably be a reissue so that there are large stocks in any given issue and issuers should be encouraged to consolidate various existing issues into a few large issues, which can then serve as benchmarks.
9. A centralised database of all bonds issued by corporates be created. Enabling regulations for setting up platforms for non-competitive bidding and electronic bidding process for primary issuance of bonds should be created.

Secondary Market

1. The regulatory framework for a transparent and efficient secondary market for corporate bonds should be put in place by SEBI in a phased manner. To begin with, a trade reporting system for capturing information related to trading in corporate bonds and disseminating on a real time basis should be created. The market participants should report details of each transaction within a specified time period to the trade reporting system.
2. The clearing and settlement of trades should meet the standards set by IOSCO and global best practices. The clearing and settlement system should migrate within a reasonable timeframe from gross settlement to net settlement. The clearing and settlement agencies should be given access to the RTGS system. For improving secondary market trading, repos in corporate bonds be allowed.
3. An online order matching platform for corporate bonds should be set up by the stock exchanges or jointly by regulated institutions such as banks, financial institutions, mutual funds, insurance companies, *etc.* In the final stage of development, the trade reporting system could migrate to STP-enabled order matching system and net settlement.
4. The Committee also recommended: (i) reduction in shut period for corporate bonds; (ii) application of uniform coupon conventions such as, 30/360 days count convention as followed for government securities; (iii) reduction in minimum market lot from Rs.10 lakh to Rupees one lakh, and (iv) introduction of exchange traded interest rate derivative products.

Source: Report of the Committee

updated details for each listed company on an ongoing basis and thereby facilitate listed entities to go for issuances with transactional information as additionally required. A beginning has already been made in this regard, but needs to be further developed.

- Trading platforms have been developed in both BSE and NSE. These are order driven with essential features of the OTC market. There should be phased movement towards anonymous order matching trading systems if there is a demand from the market.
- Introduction of DVP in corporate bonds.
- Gradual reduction in the statutory pre-emptions in respect of banks and some rebalancing in favour of corporate bonds.
- Further opening up of the insurance sector and reduction in the mandated investments in government securities.
- Expedite the development of hedging instruments like credit default swaps.

There are some other reforms which require legal changes:

- Speedy rationalisation of stamp duties. The matter has already been taken up by the SEBI with the Government.
- Abolition of TDS on corporate bonds. This would bring corporate bonds at par with government securities and facilitate secondary market trading. The process could be initiated in a phased manner by covering the municipal bond/ infrastructure bond markets in the first phase before taking it forward to cover the entire corporate bond segment. This has been announced in the Budget of 2008-09 but needs to be expedited.
- Amendment of Section 60 A of the Companies Act 1956 with a view to rationalising public issues and listing of corporate bonds in stock exchanges.
- A timely, efficient and effective bankruptcy regime is a key underpinning in the development of the corporate bond market.
- Pension reform is one of the necessary prerequisites for development of the corporate bond market. Expeditious passing of the Pension Regulatory and Development Authority Bill would bolster the process of pension reform.

A careful prioritisation and sequencing of reforms is needed. The parallel development of the government securities markets, including term money markets in government paper and related derivatives, is necessary to establish a risk-free yield curve to facilitate the pricing of corporate bonds.

At a time when India is endeavouring to sustain its high growth rate, it becomes imperative to remove financing constraints so that alternate financial channels can be developed in a systematic manner to supplement bank credit. Judicious opening of capital account convertibility may be a tool that could be utilised to help create investor demand and result in expeditious development of corporate bond market. The importance of the 'missing' corporate bond market requires to be viewed from this standpoint.

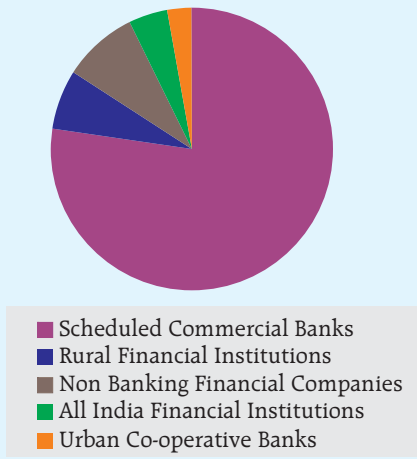
4.8 Issues Related to the Credit Market

4.8.1 Introduction

As a financial system dominated by bank intermediation, credit has traditionally been the main source of funds to the various sectors in the Indian economy. The commercial banks are the main providers, accounting for around three-quarters of the total credit (Chart 4.30).

A significant portion of the credit by commercial banks is directed to the 'priority sector' comprising agricultural loans, loans to MSEs and others. The predominant component

Chart 4.30 Share In Total Credit - Position as at End March 2008



Source: RBI/NABARD

of the 'others' category is individual housing loans up to Rs 20 lakh.

Though loans and advances continue to be the preferred part of the banks' asset books, banks' participation in the debt capital market instruments (such as investments in corporate bonds, debentures, asset backed securities, *etc.*) has been limited. The credit derivatives market in India is yet to take off in a significant manner. The Reserve Bank guidelines on securitisation do not permit immediate profit recognition and re-computation of credit enhancements. It is stipulated that losses from the sale of securitised standard assets must be borne upfront while profits are to be amortised over the tenor of the transaction. This approach has prevented the use of securitisation for the management of immediate profits by banks. Consequently, the 'originate – to – distribute' model in Indian banking is still not very prevalent (though some pick up is observed in 2007-08). While the sub-prime crisis points to a cautious approach, given the capital raising constraints currently faced by the banking sector (public sector banks, in particular), the credit-risk transfer mechanism requires to gain ground, subject to prudential safeguards, to maintain the rate of credit growth and improve the flexibility of the credit market operations in general.

4.8.2 Securitisation

Fresh asset-origination by banks is limited by capital requirements. However the diversification of credit risk is essential for expanding the flow of credit. Globally, banks have increasingly been taking recourse to securitisation to achieve a variety of objectives but chiefly to maximise the risk-adjusted return on capital. Securitisation worldwide has emerged as one of the largest sources of supply of debt securities. While simple techniques for transferring credit-risk, such as financial guarantees, collateral and credit insurance have been prevalent in the Indian banking industry for long, the recent innovative instruments in credit risk transfer (CRT) such as collateralised debt obligations (CDO), retail asset backed securities (ABS), residential mortgage backed securities (RMBS), second order derivative products such as CDO of ABS, *etc.* are yet to gain significant currency. Given the nascent stage of securitisation in India and the absence of complex and multi-layered securitisation structures, securitisation *per se*, is not yet a major systemic concern in the Indian context.

The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act, 2002, provided for sale of financial assets by banks/FIs to securitisation companies/reconstruction companies. Thereafter, in order to ensure healthy development of the securitisation market,

guidelines for the sale/purchase of NPAs were issued in 2003, followed by guidelines for the securitisation of standard assets (issued in 2006). The volume of such transactions by commercial banks in India in the 2005-06 and 2006-07 was minimal (Table 4.16).

After a lull for about two years, the securitisation market in India is showing signs of picking up from 2007-08. Total issuance volumes more than doubled, to over Rs.45,000 crore in the first eleven months (Source: CRISIL). According to a CRISIL report, the funding need prompted by the strong growth in credit off-take over the last few years, coupled with good liquidity in the financial markets explains the growth. The volumes in the new issuance market are expected to increase further. Additionally, the passage of the Securities Contract (Regulation) Amendment Bill, 2007 to facilitate the listing of securitised papers on stock exchanges will help create a secondary market for securitised papers in the long-term.

On securitisation, questions are being asked about the complex and multi-layered securitisation and the need, perhaps for originators to hold a certain proportion of the risk that they distribute to others. As a matter of best practice, regulatory agencies may consider asking financial entities such as banks, NBFCs as well as all-India financial institutions to disclose the amount of securitised assets being serviced by them and, perhaps, stipulate certain threshold levels beyond which suitable actions may be taken by the regulator, in terms of say, higher capital adequacy requirements.

What is, however, clear is that the emergence of innovative financial instruments to distribute credit risks has prompted institutions to take risks disproportionate to their capability to assume such risks. Renewing effort to test the capacity of the regulated institutions to manage such risks becomes a sine qua non in this regard. Contextually as well, the need for closer and continuous co-ordination among the various policy-making and regulatory agencies and increasing regulatory coverage to include market intermediaries and non-banking financial entities that have the potential to affect the stability of financial system in such a dynamic scenario can hardly be over-emphasised. (Please see Appendix for a set of recommendations made by the Financial Stability Forum for enhancing market and institutional resilience).

4.8.3 Credit Derivatives

A Working Group on Credit Derivatives was constituted in the Reserve Bank in 2003 for studying the need for and scope of credit derivatives in India. On the basis of its recommendations, draft guidelines were issued. The final guidelines have not yet been issued by the Reserve Bank.

Referring to credit default swaps (CDS) in the Annual Policy announced in April 2007, the Reserve Bank said that as part of the gradual process of financial sector reforms, it would be appropriate to introduce credit derivatives in a calibrated manner. The risk management architecture of banks had been strengthened and banks were on their way to becoming Basel

Table 4.16 : Credit Risk Transfer Through Loan Sales and Securitisation

(Amount in Rs. crore)

Item	2005-06	2006-07	Increase/decrease (per cent)
1	2	3	4
Loan Sales	13,441.85	8,041.82	- 40.2
(as per cent to total loans)	0.89	0.41	
Securitisation	13,585.16	16,895.20	24.4
(as per cent to total loans)	0.90	0.85	

Source: RBI

II compliant, providing adequate comfort level for the introduction of such products. The recent amendment to the RBI Act, 1934, had provided legality of OTC (over-the-counter) derivative instruments, including credit derivatives.

Against this backdrop, the Reserve Bank also issued draft guidelines on credit default swaps (CDS) to put in place a regulatory framework for such transactions. However, in view of the complexities involved, it decided to issue the proposed guidelines as a first draft for comments and get a feedback from various stakeholders. The draft guidelines initially allows only plain vanilla credit default swaps. Banks are not permitted to enter into credit derivative transactions where their 'related parties' are the counterparties or are reference entities. A bank's policy on CDS approved by the board of directors has to cover their strategy (whether for hedging or for trading), appetite and limits for the credit derivatives business. The Reserve Bank has now indicated that it would draw lessons from the recent international financial turmoil and review the proposal to introduce the CDS at an appropriate time. Accordingly, the issuance of final guidelines regarding CDS has been kept in abeyance.

While the Panel appreciates the need for caution and the fact that market development should build in sufficient safeguards in the form of mitigation of risks, it believes that there is a case for going ahead with the development of credit derivatives market in India early, particularly taking into account the increasing credit portfolio in the banks' balance sheets as also the need for greater flexibility in operations.

The Panel therefore, thinks that a phased and calibrated development of the credit derivatives market in India can be achieved in the following manner:

- Allowing more participants like NBFCs, mutual funds and insurance firms access to the CDS market to promote better price discovery and to add depth to the market. The participants should be well-regulated and follow transparent practices. The prudential requirement of proper entry norms, which could include risk based capital norms and ownership, needs to be mandated.
- In addition to plain vanilla CDS, more products like multi-asset CDS and synthetic products should be permitted. This could cater to the diverse needs of the disparate market participants.
- FIMMDA is required to play a pro-active role by ensuring stable market infrastructure for proper settlement of trades. This could include :
- Seeking market feedback and promoting a CDS Forum (FIMMDA or other);
- Price pooling of issued INR Bonds;
- Standard form ISDA confirmation;
- Minimum standards for term sheets, contracts, credit event recognition;
- Reference Entity Database & Reference Obligation Database;
- Front-to-Back automated infrastructure across the market for trade capture, documentation and settlement.

Simultaneously, regulatory skills require to be honed for mitigating the risks associated with CRT instruments.

- Regulation and supervision to be geared not only on credit, market and operational risks but also on liquidity risk. Liquidity risks emanating particularly from off-balance sheet items should be recognised and mitigated. The risk management strategy should also recognise the inter-linkages of CRT markets with the other markets and institutions and mitigate the risks arising therefrom.
- Regulation of both entities and the activity are important. Since different segments of markets come under different jurisdictions, it is important that both aspects are adequately taken on board. Proper regulatory information sharing and co-operation is imperative.
- Instituting appropriate valuation and provisioning norms. There should be clear-cut norms for recognition of losses (credit events).
- Pricing of the product to take into account prevailing governance and legal impediments.
- Encouraging more market transparency through introduction of exchange traded CRT instruments and strengthening credit information.
- Adequate disclosure norms require to be put in place. The following items can be disclosed mandatorily:
  - CDS exposures – both outstanding at the year end and peak during the year;
  - A rating-wise classification of outstanding protection sold;
  - All CDS transactions should be mandatorily reported in a common reporting platform like NDS. This would improve confidence of the stakeholders and ensure enhanced and effective participation.
  - Greater mandated disclosure in respect of assets in the banking book.

4.8.4 Conclusion

Credit market innovations in the matters of risk-transfer have enhanced financial deepening. However problems can arise over the speed of innovation and a flawed incentive structure. Capturing and commoditising such information is not easy. While the positive contribution of financial innovations in the credit market should not be ignored, the Reserve Bank and other regulatory organisations need to consider steps to promote the securitisation market, subject to appropriate safeguards.

A phased and calibrated development of credit derivatives market emphasising liquidity risk management, and strong mandatory disclosures as well as the development of a secondary mortgage market should pave the way for the smooth development of this market in the medium-term.

Chapter V

Financial Infrastructure

5.1 Introduction

Developing a robust and secure financial infrastructure holds the key to financial stability. The financial infrastructure comprises of several components. For the purpose of this assessment, the Panel considered the regulatory and supervisory structure, the payments and settlement infrastructure, the legal infrastructure, the liquidity infrastructure, the framework governing business continuity management (BCM), the safety net and credit information.

Accordingly, issues covering regulatory and supervisory structure are discussed in Section 5.2. Developments in the payment and settlement systems are discussed in Section 5.3, followed by an analysis of business continuity management (BCM), including the same for CCIL (Section 5.4). This is followed by analyses of the issues concerning the legal infrastructure (Section 5.5), liquidity infrastructure (Section 5.6), safety net issues (Section 5.7), and credit information (Section 5.8).[71]

5.2 Regulatory and Supervisory Structure

5.2.1 Overview

There is a multiplicity of regulatory bodies in the regulatory structure of the Indian financial system. The Reserve Bank of India (RBI), Securities and Exchange Board of India (SEBI), the Insurance Regulatory and Development Authority (IRDA) are the three major regulatory bodies with the recent addition of the Pension Funds Regulatory and Development Authority (PFRDA) as the fourth body. While regulatory jurisdictions between the four bodies are demarcated, there are nevertheless areas of overlap and gaps requiring close co-operation and co-ordination. The Finance Ministry, the Ministry of Corporate Affairs as well as State Governments also have some jurisdiction. The Central Government has some over-arching powers over the financial system and policies as a whole.

The Indian financial system has evolved over time. So has the regulatory structure. The Reserve Bank was set up in 1935 under an Act of 1934, more as a monetary authority with basic functions of note issue, bankers' bank, reserve management and banker and debt manager to governments. The areas of regulatory and supervisory jurisdictions of the Reserve Bank expanded over time through other legislations as also a series of amendments to the RBI Act, 1934, making it a multi-faceted organisation. While there was no fundamental change in its core objective as stated in the Preamble to the

[71] Issues relating to the information and governance infrastructure have been dealt with in more detail in the Report of the Advisory Panel on Transparency Standards and the Advisory Panel on Institutions and Market Structure.

Act: '*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 currency and credit system to its advantage*', its role and functions have continuously expanded over time.

The Reserve Bank has been entrusted with the supervision of India's banking system under the provisions of the Banking Regulation Act, 1949. The regulation over foreign exchange was acquired through the Foreign Exchange Regulation Act 1973 and modified with Foreign Exchange Management Act, 2000. Consequent to amendments to the RBI Act, the regulatory powers of the Reserve Bank extended to non-banking financial companies (NBFCs) and select all-India financial institutions. The amendments to the RBI Act in 2006 brought clarity with regard to the Reserve Bank's regulation over financial markets-money, foreign exchange, gold related securities, government securities and related derivatives products. With the passage of the Payments and Settlement Act in the Parliament in December 2007 and notification of the regulation in 2008, the Reserve Bank has the legislative authority to be the regulator and supervisor of the payment and settlement systems.

Regulatory powers over other segments of financial systems such as capital markets and insurance was originally vested with the Government through various ministries and departments. As the capital market expanded and matured, the need for an independent capital market regulator was felt and SEBI emerged as the regulator of capital market and related intermediaries including stock exchanges, depositories, credit rating agencies, foreign institutional investors (FIIs) and collective investment schemes like the mutual funds under the SEBI Act, 1992 as modified from time to time. Similarly, with the opening up of the insurance sector, IRDA was set up to regulate and supervise insurers, both life and non-life, and re-insurers under the IRDA Act, 1999.

The PFRDA is a more recent entrant. It is the prudential regulator for the new pension scheme (NPS), which is a defined contribution pension system to be launched after the PFRDA Bill, 2005 is passed by Parliament.

Given this multiplicity, coordination is attempted through a High Level Coordination Committee on Financial Markets (HLCCFM) in which the heads of the four major regulatory institutions are represented along with the Finance Secretary.

The current structure has the following features:

- A multi-tiered and segmented regulatory and supervisory architecture: RBI, SEBI, IRDA, PFRDA along with several Central Government Ministries at the apex level, coupled with NABARD, SIDBI and NHB at the second level as also Registrar of Cooperative Societies (RCS) and representatives from several ministerial departments at Central/State Governments at another and parallel level;
- Regulators have come to acquire generally well demarcated, but sometimes overlapping responsibilities across institutions and markets. Such overlaps

leads to a diffusion of regulatory powers and inadequate inter-agency coordination could impact the effectiveness of regulation and increasing potential risks and vulnerability of the system;

- Operational independence and accountability vary across regulators;
- A joint-family approach across institutions, regulators and governments with predominant public ownership has provided stability to the system. But this often leads to regulatory forbearance and at times, over-protection and complacency about the efficiency and soundness of the system;
- The public sector's domination also limits the scope for the maturation of the system in terms of size, growth and operational efficiency, making the system susceptible to competitive pressures when the major sectors are further opened up to private sector and foreign players;
- The regulation and the supervision of urban co-operative banks is done by the Reserve Bank and Registrar of Cooperative Societies (RCS); the regulation of Chit Funds and Nidhis is a shared responsibility. Thus, the Reserve Bank regulates only their deposit-taking activities and interest rates on deposits, the other concerned aspects are within the regulatory purview of the Registrar of Chits of the states concerned; the Reserve Bank regulates regional rural and rural co-operative banks, but they are supervised by NABARD;
- The overlapping powers of the Government arise both from its ability to give direction to regulatory authorities, presence in boards, the power to remove heads of regulatory authorities and supersede boards and also due to predominant government ownership of the regulated entities like banks and financial institutions. All these impact the operational and financial independence of regulatory authorities as also regulated institutions.

As financial sector liberalisation has progressed, the Reserve Bank's approach to regulation has also changed from micro-management to macro-governance. On-site supervision remains the predominant plank of supervisory process, but off-site monitoring and surveillance are gaining in importance. Operational flexibility has been given to the banking system and other regulated entities such as authorised dealers (ADs) in the foreign exchange market through a delegation of powers to the boards, subject, however, to overall guidance from the regulator/supervisor. This became possible because of interest rate deregulation, the discontinuance of the credit authorisation scheme and the dismantling of several other controls over the credit markets.

In a medium term perspective, and in the context of a further opening up of the financial sector, following issues are important:

- the regulatory jurisdictions and functional demarcation among major regulators;
- improving the regulatory coordination and information exchange so as to strengthen and harmonise practices across jurisdictions;
- the pros and cons of further separation and hiving off the functions such as supervision; and
- emerging challenges in the financial sector and ways to improve the capacity - building and related skills among the institutions and market agents, as also the regulators, to effectively meet these challenges.

5.2.2 Regulatory Jurisdictions

As shown in Annex 5.1, the regulatory jurisdictions are divided both on the basis of institutions and markets. Where the four major regulatory authorities are concerned, the role and functions of the Reserve Bank are perhaps the most wide-ranging and diversified. Whereas the objectives, role and functions of the relatively new authorities such as SEBI, IRDA and PFRDA are well defined both in terms of markets and institutions, the ambit of the Reserve Bank in terms of objectives, instruments and operational independence is diverse. The institutional regulation encompasses, besides commercial banks, urban and rural co-operative banks and regional rural banks and certain categories of deposit and non-deposit taking non-banking financial companies. In most of these areas, the overlap with State and Central Governments is pervasive and intensive.

As regards market regulation, while traditionally the Reserve Bank has been regulating the money, foreign exchange and government securities markets, only recently has legal clarity been established through an amendment to the RBI Act. However, Reserve Bank is still left with the challenge of evolving precise regulations for products and market intermediaries. Clarity of the Reserve Bank's regulation and supervision over the payments and settlement systems has been established with the enactment of the Payments and Settlements Act. The Bill was enacted in December 2007 and the Act and regulations were framed and notified in 2008. The Panel feels that the functional demarcation and co-ordination between systemically important payments systems across regulators remains to be pro-actively addressed.

5.2.3 Uneven Playing Field

Banking regulation and supervision norms have been upgraded and the Reserve Bank's capacity to enforce and monitor these regulations has improved significantly. Nonetheless, a number of challenges remain with regard to sustaining a level playing field in the regulation of the financial sector.

First, a more stringent set of rules for capital adequacy, loan classification and provisioning are applicable to commercial banks than to regional rural (RRBs) or co-operative banks. Second, intra-group linkages between non-financial entities which have financial subsidiaries/associates need closer monitoring. Gaps in the regulator's powers over NBFCs – no say in the removal of management, appointment of auditors, reviewing major acquisitions, in controlling their branch expansion (unlike the case of banks) creates unevenness in the playing field between these entities. Third, financial conglomerates continue to fall under the jurisdiction of different regulatory agencies for each of the business areas in which they operate. This creates opportunities for regulatory arbitrage, among other things, with implications for financial sector stability. The uneven playing field and the possibility of regulatory arbitrage has been addressed through the introduction of consolidated supervision and financial conglomerate monitoring. But, there still exists differential regulatory treatment in respect of stand-alone NBFCs as compared to those NBFCs, which are a part of a banking group. This is because NBFCs which are a part of banking

group are subject to stricter prudential norms in respect of their scope of activities as compared with stand-alone NBFCs. Though an element of regulatory co-operation has been put in place, issues remain regarding consolidated supervision of these entities. Consequently, determining the overall health of the conglomerate and the accuracy of the consolidated financial statements has become a challenging task.

The Panel feels that it is imperative to reduce the scope of regulatory arbitrage across institutions and markets by enhancing and strengthening the existing arrangement of inter-regulatory cooperation.

5.2.4 Diffusion of Regulatory Governance

The three main regulatory agencies (the Reserve Bank, SEBI and IRDA) were established under separate Acts of Parliament. All three Acts vest the Government with extensive powers to issue directions including those on policy to these agencies. The heads of these agencies and a number of board members are appointed by the Central Government, which also has powers to remove them. While any abrupt use of this power is constrained by reputation risk, the lack of legal and procedural clarity represents a hurdle to the operational independence of the Reserve Bank.[72] The grounds for removal are well established and the members get a 'reasonable opportunity' of being heard prior to possible removal under the SEBI Act or IRDA Act. But the RBI Act lacks such provisions.

The Panel feels that there is need for a thorough review of the various Acts (in particular, the RBI Act and Banking Regulation Act) in line with modern banking and financial practices.

5.2.5 Regulatory Overlaps in Securities Markets

The regulation and supervision of entities in the corporate debt and equity markets are also characterised by a multiplicity of regulators. Banks, NBFCs and Development Finance Institutions (DFIs) are regulated by the Reserve Bank. But when raising funds through IPOs, they become subject to regulation by SEBI as well. Moreover, decisions regarding public sector banks' issuance of such instruments also involve the Ministry of Finance.

Similarly, once a company is listed, in addition to compliance with the statutory requirements under the Companies Act, it is also required to satisfy the listing agreements stipulated by SEBI and the stock exchanges.

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[72] The RBI Act 1934 (Section 11) states that: The Central Government may remove from office the Governor, or a Deputy Governor or [any other Director or any member of a Local Board]

The SEBI Act 1992 (since revised in 1995) lays out the conditions for removal of member from office. Section 6 of the Act stipulates that:

The Central Government shall remove a member from office if he -

(a) is, or at any time has been, adjudicated as insolvent;
(b) is of unsound mind and stands so declared by a competent court;
(c) has been convicted of an offence which, in the opinion of the Central Government, involves a moral turpitude;
(d) has, in the opinion of the Central Government, so abused his position as to render his continuation in office detrimental to the public interest:

Provided that no member shall be removed under this clause unless he has been given a reasonable opportunity of being heard in the matter.

The IRDA Act 1999 lays out the terms of removal of the members of the Authority. Section 6 of the Act stipulates that:

(1) The Central Government may remove from office any member who-
(a) is, or at any time has been, adjudged as an insolvent; or
(b) has become physically or mentally incapable of acting as a member; or
(c) has been convicted of any offence which, in the opinion of the Central Government, involves moral turpitude; or
(d) has acquired such financial or other interest as is likely to affect prejudicially his functions as a member; or
(e) has so abused his position as to render his continuation in office detrimental to the public interest.

(2) No such member shall be removed under clause (d) or clause (e) of sub-section (1) unless he has been given a reasonable opportunity of being heard in the matter.

Trading in stock exchanges of any products including derivatives comes under the purview of SEBI, whereas the market as such for example, government securities and foreign exchange come under the regulation of the Reserve Bank.

5.2.6 Multiple and Conflicting Roles and Objectives of Regulatory Agencies

The problem of multiple regulators is exacerbated by the multiplicity of roles and objectives assigned to a regulator. This can generate conflicts of interest. For instance, the Reserve Bank, as the central bank, influences the short-term interest rates. As merchant banker to Government, it has an incentive to keep interest rates low but macroeconomic concerns often require the opposite. As the regulator of primary dealers in the securities market, its function is to create an open, transparent, competitive and efficient market. These functions can often be in conflict.

Problems also arise because regulatory agencies, apart from owning the financial institutions, are also responsible for their regulatory and supervisory oversight. For instance, the Reserve Bank fully owns NHB, NABARD, DICGC and Bharatiya Reserve Bank Note Mudran Pvt Ltd. (all of which it also regulates). Generally, ownership should be separated from regulatory functions, since this is a serious conflict of interest. In the interim, governance and disclosure arrangements could probably be made to mitigate these concerns.

Several regulatory/supervisory agencies are also mandated with a market development role, and some function, at the same time, as development banks, with refinancing windows. The Reserve Bank itself undertakes various developmental functions in respect of institutions, markets and infrastructure within its regulatory jurisdiction. Similarly, SIDBI regulates state financial corporations (SFCs), while also functioning as a development bank providing refinancing to commercial banks and SFCs. NHB has a refinancing window for housing finance companies (HFCs), which it regulates and is also mandated with a market development role. NABARD plays a developmental role in respect of rural financial institutions. In order to effectively demarcate these regulatory and developmental roles, several of these institutions have created a separate quasi-independent body to focus on financial supervision.

The existence of multiple regulators was perhaps inevitable in the initial and transitional phase of financial development. In a way the real challenge lies in the co-ordination of financial policies which could be lacking even in a super-regulator environment. It would, therefore, be more in order for the regulators to focus on co-ordination, collaboration, and information sharing amongst themselves, than on an institutional integration of agencies or separation of functions. The Panel, therefore, believes that a strengthening of HLCCFM as a co-ordinating body in this regard particularly in identifying and resolving cross-jurisdictional issues is desirable[73].

India's institutional arrangements for financial regulation are rules-based. The rules

[73] Reference ; Section 5.2.9 ibid

have been evolved based on functions *i.e.*, regulators regulate and supervise specific functions regardless of the type of institution performing these functions. Notwithstanding its advantages (greater legal certainty to market players, operating in a non-discretionary rule-based environment), it is tantamount to a 'check-list' approach, with an objective verification of observed compliance standards. But with gradual blurring of distinctions across products and with entities offering products that cut across regulatory jurisdictions, this could engender regulatory gaps and overlaps, leaving the overall regulatory system weak and porous.

An alternative approach to rules-based regulations is gaining currency. This is 'principles-based' regulation, wherein broad principles of regulation are articulated, avoiding the codifying of details of allowable products, markets or business plans. By encouraging competition, it fosters innovative ideas and strategies into the market place and thereby works to the advantage of the final consumer. On the flip side, it places an enormous burden on the supervisory staff, who need to be adequately equipped to make judgements regarding the business plans of the financial firm. A watertight system of checks and balances is also important so that supervisory discretion does not go overboard.

The limitations of principles-based regulation has come into sharp focus in the recent sub-prime crisis. The Indian financial system which is pre-dominantly rules-based with certain elements of principles-based regulation in aspects like appropriateness of the member of Board of Directors, *etc.,* and has been working generally satisfactorily over the last decade-and-a-half.

The Panel is of the view that a clear demarcation between 'principles-based' from 'rules-based' regulation is impractical. There is however, a need to ensure that rules are based on clear principles, which state clearly the regulatory objectives and also the possible benchmarks against which regulatory performance will be assessed. Rules should be easy to understand and easy to implement or enforce. The basic approach that should be followed is that, at the outset, the basic principles and objectives should be clearly enunciated and the regulations should be built around these principles. This would be helpful to both the regulator and the regulated entity to refer back to the principles whenever in doubt.

A third approach is the 'objectives-based regulation'. This was introduced by the US Treasury in March 2008. The objective based structure is expected to develop a flexible regulatory regime more conducive to innovation and risk management. The approach will take time to evolve (Box 5.1).

5.2.7 Financial Conglomerates

In the early 1990s, it was possible to regulate and supervise banks and other financial intermediaries as an individual entity or institution. However, the proliferation of links with subsidiaries makes it imperative to extend the regulatory and supervisory purview to banks, other institutions and subsidiaries owned or managed by the same group on a consolidated basis, since their operational results and that of their parent are potentially linked. But issues regarding conglomerate supervision, like the calculation of group-wide capital requirement, differences in prudential regulations across regulators, management of liquidity risks across jurisdictions/sectors, subsidiary units, need to be resolved.

There has been an increase in the number of financial conglomerates (FC) in India in the recent years. While some of the bigger banks have entered into other financial market segments like merchant banking, insurance, NBFCs etc., a few large industrial houses have also diversified into financial services sector and

Box 5.1: Objectives-Based Regulation

In order that their financial regulatory system could more effectively promote stable and resilient markets and a more competitive financial services industry, the US Treasury' in March 2008, issued a Blueprint for Financial Regulatory Reform. The Blueprint envisages a more flexible, efficient and effective safety and soundness regulatory framework and employs a structure whose outline is the accountability that stems from having one agency responsible for each regulatory objective. This model would have three regulators: a regulator focused on market stability across the entire financial sector, a regulator focused on safety and soundness of those institutions supported by a federal guarantee, and a regulator focused on protecting consumers and investors.

For the task of market stability, the Federal Reserve's market stability role would continue through traditional channels of implementing monetary policy and providing liquidity to the financial system. In addition, the Fed would be provided with a different, yet critically important regulatory role with broad powers focusing on the overall financial system. To do its job as the market stability regulator, the Fed would have to be able to evaluate the capital, liquidity, and margin practices across the entire financial system and their potential impact on overall financial stability. To this end, the Fed would have the authority to go wherever in the system it thinks it needs to go for a deeper look to preserve stability.

The second regulator would combine all federal bank charters into one charter and consolidate all federal bank regulators into a single prudential regulator. For further regulatory efficiency, a federal insurance charter has been recommended and oversight of these guaranteed products has been put within the jurisdiction of the federal prudential regulator. By its singular focus on prudential regulation that ensures the safety and soundness of institutions with federal guarantees, this regulator would serve a role similar to the current Office of the Comptroller of the Currency (OCC).

A dedicated business conduct regulator with the responsibility to vigorously protect consumers and investors has also been proposed, one which would focus on achieving greater consistency across product lines. This regulator would monitor business conduct regulation across all types of financial institutions and entities. The business conduct regulation in this context includes key aspects of consumer protection such as disclosures, business practices, chartering and licensing of certain types of financial institutions, and rigorous enforcement programs.

The premise of this optimal regulatory structure is that the envisaged clarity of mission and objective would lead to strengthened regulation and improved capital markets efficiency. An objectives-based structure has been chosen because it would provide a flexible framework fostering and embracing innovation, helping ensure competitiveness and better managing risk. Such a structure would be better able to adjust to market and institutional changes. The above objectives-based model is substantially different from the current regulatory system prevalent in the United States of America and is likely to take several years to evolve.

Source: US Treasury

graduated to a level which makes them important players in the country's financial system. Also, a few non-banking financial intermediaries have acquired large enough proportions to cause a systemic impact. There is also the growth of cross-border financial conglomerates operating in and out of India.

The activities of large and complex financial institutions raise issues relating to cross-border and cross-sectoral transfer of risks.

Such institutions comprise diverse legal entities and could have implications on financial stability if their share in local banking, securities and insurance markets are large. Given the potential of such institutions as a conduit for the transmission of risks, an adequate regulatory and supervisory mechanism should be in place to assess the risks arising out of such entities.

A FC in India is defined as a cluster of companies belonging to a group which has significant presence in at least two financial market segments. Banking, insurance, mutual fund, NBFC deposit taking and NBFC non-deposit taking are considered as financial market segments. Significant presence in the respective financial market segment is defined as in Table 5.1.

Twelve institutions, with a significant presence in banking, insurance, NBFC, housing finance and capital markets, have been identified as financial conglomerates (FCs). These institutions are primarily under the regulatory ambits of RBI, SEBI, IRDA and NHB. In view of the growing importance of off-balance sheet activities, size may not adequately capture the systemic importance of FCs. A 'cluster analysis' of the sort followed by European Central Bank could be considered for identification of systemically important FCs (Annex 5.3: Large and Complex Banking Groups)

As a first step, the Reserve Bank introduced consolidated supervision for banks in 2003. The system at present has two components: Consolidated Financial Statements (CFS) which are intended for public disclosure; and, Consolidated Prudential Reports (CPR) which is necessary for supervisory assessment of risks which may be transmitted to banks (or other supervised entities) by other group members. Group companies conducting insurance business and business not pertaining to financial services are kept out of the purview of consolidated supervision. In terms of the amendment proposed in the Banking Regulation (Amendment) Bill, 2005, the Reserve Bank will be empowered to inspection of the associate enterprise.

The Panel thinks that the performance of conglomerates needs to be closely monitored, and only when the firm-level risk management gets sufficiently integrated, would it be appropriate to consider institutional integration at the supervisor level. In this context, regulatory co-operation and co-ordination assume paramount importance. In order to move towards a co-ordinated regulatory approach to the supervision of financial conglomerates, a separate return has been developed for financial conglomerates focusing mainly on intra-group transactions and

Table 5.1: Classification of Institutions as 'Conglomerates' According to Financial Market Presence

Financial market segment	Significant presence
1	2
Bank	Included in the top 70 per cent of the segment in terms of asset base
Insurance Company	Turnover in excess of Rupees one hundred crore
Mutual Fund	Included in the top 70 per cent of the segment in terms of Asset under Management (AUM)
NBFC (deposit taking)	Included in the top 70 per cent of the segment in terms of deposit base
NBFC (non-deposit taking)	Asset base in excess of Rs.2,000 crore

Source: RBI.

exposures both for fund-based and non-fund based transactions for both banks and non-bank financial institutions which satisfy the definition of financial conglomerates. In order to develop an effective mechanism for inter-regulatory exchange of information in respect of conglomerates a standing Technical Committee having members from the Reserve Bank, SEBI and IRDA has been formed.

The Panel is of the view that the legislative underpinning of the regulatory apparatus to deal with the emerging reality of financial conglomerates needs to be appropriately addressed in order to foster market-based evolution and innovation. Full disclosure of related-party transactions between different arms of the conglomerate is a *sine qua non* in this regard.

5.2.8 Holding Company Structure

Internationally, financial firms increasingly operate in multiple segments of financial products/services to exploit scale and scope economies. This is beginning to happen in India also. It is expected that this trend will intensify in the coming years. The growth in size and complexity of financial conglomerates is both desirable and inevitable—desirable, because conglomerates can capture potential economies of scale and scope and synergies across complementary financial services, and inevitable, because India is committed to further financial globalisation and Indian financial firms have no choice but to compete with their international counterparts.

The main objective of a financial holding company is to raise and deploy resources in various subsidiary companies depending on their needs, thereby optimising capital utilisation within the group as well as segregating risks across various financial businesses. The structure enables the groups to undertake various financial sector activities by attracting various categories of investors with varying risk appetites.

The Banking Regulation Act does not contain provisions for the regulation of holding companies. There remains the possibility of regulatory gaps and overlaps if a bank holding company (BHC) structure with various activities (insurance, asset management, stock broking and housing finance) under the holding structure is followed. Legal complications arise when certain subsidiaries have caps on foreign holding (*e.g.,* in insurance, where the cap on foreign holding is 26 per cent). These also remain to be addressed. The absence of a holding company structure exposes investors, depositors and creditors of the parent company to risks, strains the parent company's ability to fund its own core business, and could restrict the growth of the subsidiary business.

In this context, the Panel is of the view that the legal and regulatory gaps need to be expeditiously addressed.

5.2.9 Regulatory Co-ordination

Co-ordination for better enforcement requires better information exchange. There are two facets to this process.

First, better disclosure of aggregate information on the supervised institutions by various entities is necessary. Indeed, this challenge becomes greater as India prepares to move to a fuller adoption of Basel II, which will require a stronger disclosure regime involving

greater transparency and disclosure, including risk disclosures (under Pillar 3 of Basel II to support micro prudential supervision) of individual institutions. This will have to be implemented by the supervisors to complement the more complex risk measurement approaches. This requires very close co-ordination among supervisory agencies so as to ensure adequate disclosure necessary for undertaking proper macro-prudential surveillance.

Second, better disclosure of risk management approaches by individual institutions will also be necessary, as will be relevant under Basel II. Disclosure requirements for individual financial institutions may need to be set in a co-ordinated manner, with the involvement of the Reserve Bank, SEBI, IRDA, the Ministry of Corporate Affairs and accounting bodies so as to ensure access by regulatory agencies to high quality information as a complementary tool for strengthening market discipline. Thus, in both cases, a significant amount of co-ordination is needed among supervisors on accounting standards and information exchange.

The Panel notes that an assessment of monetary and financial policy transparency has been carried out by the Advisory Panel on Transparency Standards. That assessment has revealed that regulatory agencies comply with most of the transparency standards, but the objectives of monetary policy have not been precisely mandated in the RBI Act. There are also issues like overlaps with the Government and other regulators in regulating and supervising entities like rural financial institutions and urban co-operative banks, separation of debt management from monetary management and removal of the heads and members of the governing bodies of financial agencies. Disclosure of information, after a suitable period, on emergency financial support given by the Reserve Bank to the banks has also been recommended by the Advisory Panel on Transparency Standards.

A High Level Co-ordination Committee on Financial Markets (HLCCFM) was established by the Ministry of Finance in 1992 in an effort towards ensuring better regulatory and supervisory coordination. The HLCCFM was established under the Chairmanship of the Governor, the Reserve Bank and the Chairman, SEBI along with the Secretary, Department of Economic Affairs of the Ministry of Finance, as members. The Chairman of IRDA joined the HLCCFM in 2000 and more recently, the Chairman, PFRDA has also been taken into the fold.

The terms of reference of the HLCCFM state that the purpose of the Committee is to ensure greater co-ordination among regulatory agencies in the financial and capital markets and require the Committee to meet regularly to review the position regarding the financial/ capital markets. However, it does not spell out whether the HLCCFM should function as a forum where the regulators meet on a regular basis to exchange information and play a pro-active role in setting and monitoring rules that require a co-ordinated approach among regulators, or whether it is left to function on a more *ad hoc* basis in times of emergency.

There are also certain legal impediments in the efficient functioning of HLCCFM. These relate to the exchange of information among regulatory agencies, and particularly, on the banking system. While the SEBI Act was amended in 2002 to allow it to obtain banking information in a person under investigation from banks, this authority is not available with IRDA, limiting their access to relevant information.

There are also questions regarding the information sharing mechanism between regulators. Though SEBI is empowered under the SEBI Act to call for information from both domestic and foreign regulators by entering into Memorandum of Understanding (MoU) there are no such provisions in the RBI and the IRDA Acts. Information sharing arrangements among

the domestic regulators (*e.g.* HLCCFM) do not have a legislative backing. There is no formal arrangement with the home/host supervisors to exchange information at periodic intervals. In the absence of a formal MoU arrangement for sharing of supervisory information between home and host supervisors, there is no agreed communication strategy in respect of banks and insurance companies which hinders the process of supervision of FCs.

Although the HLCCFM has constituted three Standing Technical Committees to provide a more focused inter-agency forum for sharing of information and intelligence and agreed in principle to undertake a joint study of books of accounts and other operations of financial conglomerates in order to back-test the efficacy of the reporting format in identifying intra-group transactions, the efficacy of the system has not been tested in an exigency.

The role of HLCCFM and the jurisdictions of each agency and the scope of regulatory oversight, including exchange of information, and market development areas may have to be made more formal, and necessary institutional arrangements have to be put in place:

- First, an important priority is the need to improve co-ordination in regulation and supervision. Measures could include increasing the extent of cross-board membership among the agencies in that it exposes the members from other agencies to the critical issues that the board in each agency faces. At present, Reserve Bank has a representative on SEBI's Board, but not on IRDA Board; neither SEBI nor IRDA are represented on each others' board or on the Reserve Bank Board.
- Second, where formal memoranda of understanding do not exist between the agencies, these could be drawn up and tested for their ability to ensure co-ordination, both in normal times as well as in exigencies. In case of any conflicts or lack of co-ordination, a formal memo should be presented to the HLCCFM to resolve these issues.
- Third, better information sharing among the concerned agencies would enhance the efficacy of the HLCCFM. In this context, the legal impediments to the exchange of information could be addressed. While the SEBI Act was amended in 2002 to allow it to obtain banking information on a person under investigation from banks, similar amendments are needed to allow other agencies to access relevant information.

5.2.10 Separation of Supervisory Responsibilities

The growing concerns about financial stability have raised questions as to whether the regulatory and supervisory functions can be divested from the central bank, leaving it only with responsibilities related to monetary management. Thus far, the Reserve Bank has been following a middle path having established the Board for Financial Supervision, a quasi-independent body, following from the recommendations of the Narasimham Committee-I (1991) to this effect. After weighing the pros and cons in this respect (Box 5.2), the Panel feels that in order to exploit information

Box 5.2: Should Bank Supervision be Separated from the Central Bank ?

There are several arguments both for and against separation of regulatory and supervisory functions.

Pros: First, the role of the central bank in managing, underwriting and supervising the national payments system is fundamental. Such a system requires a high level of intra-day liquidity, the absence of which may hinder the operation of the settlement system. As a result, central banks need to monitor movements in liquidity which also requires information on the health of banks. Second, the availability and disclosure of financial information are relevant ingredients for banking efficiency, and more so in a setting integrated with international financial markets. Such data are necessary for the central bank as they are in a position to exercise discipline and formulate judgments. Third, placing banking supervision with the central bank satisfies the information needs of the lender of last resort (LoLR). As LoLR, the central bank needs to be aware of the borrower's (banks) financial conditions. Central banks are seen as performing this function under two circumstances: first, in response to systemic crisis, when depositors resort to panic withdrawals from the banking system, and second, in case of providing emergency liquidity to an individual bank, which is otherwise considered as solvent. Assigning bank supervision to the central bank enables it to have in-house information on individual bank's condition. Fourth, vesting banking supervision with the central bank facilitates the central bank's ability to assess the impact of regulatory, prudential and other policy decisions on individual banks as also the banking industry in aggregate. This task becomes easier to accomplish if the central bank has the supervisory database and expertise to interpret it. Finally, placing bank supervision within the central bank may insulate it from pressures in regard to cost of supervision. Central banks being often self-funded and profitable can provide insulation from budget pressures on the banking supervision function.

Cons: On the flip side, there are a number of arguments against such a process. For one, central banks with multiple objectives might lead to diffused objectives: place greater emphasis on its monetary policy objective at the expense of bank supervision. Bank supervision goals and examination might become subservient by an overt emphasis on monitoring compliance with other policy targets. Second, too much information sharing between the central bank and the supervisory department might engender conflicts of interests – a central bank's monetary policy decision, for instance, may affect individual bank's conditions and run counter to bank supervision requirements. Third, it might turn out that monetary policy and banking supervision are in conflict and a central bank in charge of both areas might engender biased policy decisions[74]. There might also be diseconomies of scale: unified agencies might be assigned an ever-increasing range of functions; sometimes called the 'Christmas-tree effect'. Fifth, confidentiality of information might be an issue when the central bank is involved in supervision. Bank supervision involves a high degree of confidentiality and requires the safeguarding of sensitive information on individual bank's financial condition and that of the borrowers. This confidentiality is easier to maintain if supervisory function is limited to a separate agency *vis-à-vis* a central bank with a large array of functions, many of which are subject to substantial disclosure and scrutiny. Perhaps the most worrisome of criticisms of having supervision with the central bank is the 'moral hazard' argument. This argument is based on the premise that the public will tend to assume that all creditors of institutions supervised by a given supervisor will receive equal treatment. Hence, if depositors, and perhaps other creditors, are protected from loss in the event of a bank failure, then the customers and creditors of all other financial institutions supervised by the central bank may expect to be treated in an equivalent manner.

Source : Economic and Political Weekly-2006

[74] For example, in its role as LoLR, the central bank might loan short-term funds to banks experiencing chronic liquidity shortages that might possibly be due to high levels of nonperforming assets. This might create a conflict for the central bank in that it may be hesitant to recognise a bank failure, particularly if the bank has large amount of credit outstanding.

synergies more efficiently the regulation and supervision of institutions could remain with the Reserve Bank.

Given the fragmentation of regulatory and supervisory powers, especially with respect to rural financial institutions in the Reserve Bank, and with increasing variety of entities coming under the purview of BFS, it is important that both regulation and supervision are vested within a single entity. More importantly, since the functions of regulation and supervision are organically linked, the Panel supports the view of the Narasimham Committee-II (1998) that the Board for Financial Supervision should be renamed as the Board for Financial Regulation and Supervision (BFRS) to make this combination explicit. (Annex 5.2: Major Models of Financial Regulation and Supervision).

5.3 Payment and Settlement Infrastructure

5.3.1 Policy Developments

During the last four years, there have been rapid developments in the payment systems in the country. The first step was the launching of the real time gross settlement (RTGS) System. This has now developed into a truly national system with footprints in all parts of the country. All inter-bank transactions, which were being settled on net basis through inter-bank cheque clearing, have been migrated to RTGS system. An intra-day liquidity facility has been provided to the participants in the RTGS to ease the intra-day liquidity bottlenecks. The National Electronic Funds Transfer System (NEFT) was also introduced as a secure system for retail payments with a national coverage. This system provides six settlements during the day. Same day credit to the beneficiary is assured in the case of first four settlements and in case of the last two settlements; the funds are credited next day morning.

Given the criticality of payment systems to the financial system, the Reserve Bank initiated several steps to place the system on a sound basis. The steps taken in this direction include:-

(a) To have focused attention on Payment and Settlement systems, a Board for Regulation and Supervision of Payment and Settlement Systems (BPSS) was set up in March 2005 as a Committee of the Reserve Bank Central Board. The Board is entrusted with the role of prescribing policies relating to the regulation and supervision of all kinds of payment and settlement systems, set standards for existing and future systems, authorise the P&S systems, determine criteria for membership to these systems, including continuation, termination and rejection of membership.

(b) A new department, the Department of Payment & Settlement Systems (DPSS) was also created in March 2005 in the Reserve Bank for focused attention on payment and settlement systems as well as acting as a Secretariat for BPSS.

(c) A 'Payment System Vision Document' for 2005-08 was published in May 2005 articulating the vision of the central bank in this area, as well as highlighting the achievements in this area during the last few years.

Recognising the importance of a well-

founded legal system for the stability of the payments system, the Reserve Bank initiated procedures to align the legal system with the current requirements. Amendments were carried out to the existing statutes and new laws were passed. It included, among other things, an amendment to the RBI Act, which empowers the Reserve Bank to regulate electronic funds transfer among banks and financial intuitions. Amendments have been carried out to the Negotiable Instruments Act 1881 to enable cheque truncation and to define e-cheques. The Information Technology (IT) Act 2000 recognises electronic payments.

While these amendments helped in the promotion of electronic payments, they did not provide any explicit provisions for regulation and supervision of the payment systems. Further, multilateral netting as a procedure for settlement did not have an explicit legal backing. The system providers had to enter into contract with the participants under the provision of Indian Contract Act, 1872 to carry out the netting.

In order to address these issues, the Parliament passed the Payment and Settlement System Act providing the Reserve Bank with explicit legal powers to regulate and oversee the payment and settlement systems in the country. The Act also provides legal recognition to multilateral netting and settlement finality.

5.3.2 Gross Settlement Systems

RTGS system was implemented in response to the need felt by market participants, including the central bank, for a change in the infrastructure for the settlement of large value inter-bank payments to introduce greater efficiency and prevent credit and settlement risk. RTGS requires that the banks maintain adequate liquid funds throughout the day, since, each transaction is settled separately, unlike in the deferred net settlement DNS system. Therefore, efficient management of liquidity assumes prime importance for banks in RTGS system.

To avoid intra-day liquidity bottlenecks, system-participants are provided intra-day liquidity (IDL) support. Most central banks by law or self-imposed rules, extend credit only on a secured basis. They normally accept government securities/treasury bills as collateral for providing intra-day liquidity. Some also incorporate liquidity optimisation features which facilitate simultaneous netting of payments, effectively reducing liquidity requirements. Some countries have introduced real-time netting systems in their large value payment systems. These systems combine the advantages of real-time settlement with the reduced liquidity requirements of netting systems.

Systemic risk can arise in the RTGS whenever there is the possibility of a long chain of interdependent payments queuing-up and there are no appropriate mechanisms to cover a possible default in any one link of the chain.

5.3.3 The Indian RTGS System

In the Indian RTGS system, liquidity optimisation features have not been introduced (gridlock resolution mechanism is available). Accordingly, to address the intra-day liquidity requirements, the Reserve Bank has been providing collateralised intra-day liquidity, free of cost, to the participant banks. This liquidity support is available up to three times of the value of a banks' tier-I capital.

RTGS system serves as the arterial system for all settlements in the central bank money. All inter-bank transactions and time-critical retail payments (minimum value of Rupees one lakh) are put through the RTGS system. The final settlement of the different net settlement systems *viz.* all the paper-based and electronic clearings in Mumbai, settlement files from government securities settlement, foreign exchange settlement, CBLO and National Financial Switch for ATM transactions settled by CCIL take place in the RTGS system. On account of these settlements, the requirement of intra-day liquidity in the system has risen

manifold. In this context, there have been issues relating to smooth settlement of net settlement batches in RTGS, since these batches settle on 'all-or-none' basis.

To ensure the optimum utilisation of RTGS, efforts are underway to educate banks about the need for the efficient management of their intra-day liquidity. On its part, the Reserve Bank is exploring the possibility of aligning the multi-lateral net settlement batches in a manner that the concentration of net settlement of such files towards the end of the day is minimised.

The assessment by the Advisory Panel on Institutions and Market Structure, of Indian RTGS and High Value clearing system against the BIS CPSS Core Principles for Systemically Important Payment Systems reveals that the system is broadly in compliance with the Core Principles.

5.3.4 Multilateral Netting Systems

The netting of payments is a means of reducing credit exposure to counterparties. In multilateral netting, counterparties having multiple fund flows during the day agree to net those fund flows to one payment thus reducing the fund flow requirement. Multi-lateral netting can be of two types, a non-guaranteed settlement arrangement, wherein the system operator only facilitates the fund flow and netting and a central counterparty arrangement, where a guaranteed net settlement is provided by the system operator.

The risks in multilateral netting systems can arise when, upon the failure of one participant, unwinding of the net positions are undertaken. In the new position arrived, all other participants can end up with unforeseen payment obligations.

5.3.5 Non-Guaranteed Settlement Arrangement

In this process the settlement agency facilitates the set-off of receivables and payables among system participants, but does not guarantee the settlement. In India, the settlement of cheque clearing systems, the electronic clearing system and the electronic funds transfer systems are carried out in this manner.

The High Value Clearing System which facilitates settlement of high value cheques (any cheque whose value is Rupees one lakh or more) through shorter settlement cycles is the only net settlement system which has been designated as a Systemically Important Payment System. A default by a member in this system can have system-wide ramifications. An unwinding of the settlements is the only risk mitigation process currently available in this system. Even this process is skewed because only a partial unwind (which is required to be done under the extant clearing house rules) is carried out, where the defaulting entity gets all credits due to it. All debits payable by the defaulting entity are excluded. Subsequent to the passing of the Payment and Settlement System Act, a system of complete unwind is being finalised.

In terms of volume, the High Value Clearing, constituted 1.6 per cent and 1.7 per cent of the total cheque clearing in February and March 2008, respectively. However, in terms of value, it constituted 39.2 per cent and 40.5 per cent in February and March 2008 respectively.

The assessment of the High Value Clearing System against the Core Principles for Systemically Important Payment Systems

indicates that the system is broadly adhering to the principles. However, this system does not have any arrangement to ensure completion in the event of an inability to settle by the participant with the largest single settlement obligation.

As the High Value clearing is systemically important, the percentage of returns in High Value clearing could be another pointer to vulnerability. Based on data pertaining to select centres for March 2008, the return percentage in high value clearing was around 2.6 per cent in terms of total cheques returned.

The presence of a paper-based clearing system, which handles large values and settles on an unsecured deferred net settlement basis, is a clear indication of financial vulnerability. To address this aspect, the Reserve Bank had constituted a Working Group with broad-based participation to suggest a risk mitigation mechanism for the retail payment systems in the country. The Working Group identified the paper-based High Value Clearing System (presently functioning at 27 places) which handles large values and functions on a deferred net settlement basis as a risk-prone system. It recommended that in the long-term, efforts should be undertaken to move the transactions currently routed through the High Value Clearing System, to the RTGS system. In the interim, to contain the risk presented by this system, a centralised contributory guarantee fund should be established with contributions from all banks participating in the system. Pending the fructification of this process, with cooperation of the banks, the Reserve Bank may try to persuade customers who present high value cheques to shift their transactions to more secure electronic payment systems, like the RTGS or the National Electronic Fund Transfer (NEFT) system depending on the time-criticality of the payment and the service charge the customer wishes to pay for putting the transaction through the system.

5.3.6 Multi-lateral Netting System Through Central Counterparties (CCPs)

Multilateral netting arrangements using CCPs have gained prominence in the settlement of trades in securities, foreign exchange and derivative instruments. CCPs serve an important role in reducing counterparty risks by providing guaranteed settlements. The development of anonymous trading platforms is further facilitated by the existence of CCPs, which are an integral part of most post trading operations. The role of CCPs is to novate contracts and to guarantee the settlement of such trades. In serving this role in financial markets, the CCPs are exposed to counterparty credit risk, liquidity risk, settlement bank risk, custody risk, investment risk, operational risk and legal risk. The counterparty credit risk comprises two aspects: pre-settlement or replacement cost risk (defined as the 'loss from replacing open contracts with the defaulting participants) and settlement or principal risk (defined as the risk of loss on deliveries or payments from the defaulting participant)[75].

To protect against default or insolvency of a participant, the risk management procedures of CCPs work on the principles of reducing the probability of default by prescribing strict entry criteria, safeguarding against defaults by prescribing margin requirements that collateralise the future credit exposures, and safe-guards designed to cover losses that may exceed the value of the defaulting member's margin collateral through supplementary resources such as capital, asset pools and guarantee funds or loss allocation procedures.

5.3.7 Clearing Corporation of India Limited (CCIL)

CCIL serves as a Central Counterparty (CCP) for trades in government securities market and foreign exchange market. Since its inception, CCIL has expanded its area of

[75] Recommendations for Central Counterparties, CPPS-IOSCO, BIS, November 2004.

operations. It introduced a money market instrument CBLO (Collateralised Borrowing and Lending Obligation) in January 2003. As part of its operations, CCIL also encounters intra-day liquidity shortfalls. To tide over intra-day liquidity requirement, CCIL has availed of a dedicated Line of Credit (LoC) from a few commercial banks. The LoC for securities and foreign exchange segment is Rs. 700 crore and for CBLO a separate LoC of Rs.600 crore.

The assessment of adherence to the CPSS-IOSCO recommendations for Central Counterparties has been carried out by the Advisory Panel on Institutions and Market Structure. While CCIL is broadly compliant with the CPSS-IOSCO recommendations, some of the major gaps identified in the assessment pertain to a lack of adequate financial resources with CCIL in the event of default by a participant with the largest single settlement obligation and the need for improvement in CCIL's risk management measures, particularly with regard to monitoring of settlement bank risk in the CBLO and foreign exchange settlements.

5.3.8 Central Counterparties in the Equity Market

National Securities Clearing Corporation Ltd. (NSCCL), set up in April 1996, as a subsidiary of NSE, acts as a central counterparty in the equity market and carries out clearing and settlement function as per the settlement cycles of different sub segments in the NSE equity market. The settlement of trade in the equity market (both cash and derivatives segments) are settled in the BSE by the Bank of India Shareholding Ltd. (BOISL) which is a company jointly promoted by BSE (49 per cent) and Bank of India (51per cent) acting as a clearing house. All other stock exchanges use clearing houses, but the transactions in these exchanges are negligible.

An assessment of observance of the CPSS-IOSCO recommendations for central counterparties in respect of NSCCL and BOISL shows the two entities to be in full compliance with the recommendations.

5.3.9 Progress in Systemically Important Payment Systems and Cheque Clearing

Concomitant with the growth of the economy, there has been a significant increase in both the volume and value of transactions through the Systematically Important Payment Systems (SIPS). As a ratio of GDP, the annual turnover in value terms increased from around 5.7 times of GDP in 2006-07 to 7.0 times in 2007-08. The rise in turnover can be attributed to increased financial market activity.

Among the various constituents, RTGS constituted the largest segment in terms of value, over 80 per cent in 2007-08 (Table 5.2). The growth in RTGS can be attributed largely to the movement of large value time critical payments to this system and the widening of the RTGS network to cover more branches. In particular, the ratio of RTGS system turnover to GDP stood at 5.8 in 2007-08. These figures are, however, quite low as compared with European economies.

The turnover in the retail payment system is smaller, accounting for around 14.9 per cent of the total value of payments under SIPS and retail payment taken together, and around 1.9 times of GDP in 2007-08.

Table 5.2: Payment System Indicators								
System	2004 – 05		2005 – 06		2006 – 07		2007 - 08	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value
1	2	3	4	5	6	7	8	9
SIPS								
Inter-bank clearing	808	9,91,436	..	..	..	..	..	..
High-value clearing	13,077	46,07,208	15,924	49,81,428	18,730	50,34,007	21,919	55,00,018
RTGS	460	40,66,184	1,767	1,15,40,836	3,876	1,84,81,155	5,840	2,73,18,330
I. Total SIPS	14,345	96,64,828	17,691	1,65,22,264	22,606	2,35,15,162	27,759	3,28,18,348
Financial Market clearings								
Government Securities	185	26,92,129	151	25,59,260	167	35,78,037	216	56,02,602
Forex clearing	466	40,42,435	490	52,39,674	606	80,23,078	757	12,72,26,832
II. Total Financial Market clearings	651	67,34,564	641	77,98,934	773	1,16,01,115	973	1,83,29,434
Others								
MICR clearing	9,27,571	37,57,608	10,15,912	44,92,943	11,25,373	54,01,429	12,01,045	60,28,672
Non-MICR clearing	2,25,392	11,02,643	2,54,922	18,54,763	2,23,177	16,06,990	2,37,600	18,67,376
Electronic clearing	57,900	77,702	83,241	1,06,598	1,48,997	1,86,160	2,18,800	9,71,485
Cards	1,71,004	31,047	2,01,772	39,783	2,29,713	49,533	3,16,509	70,506
III. Total others	13,81,867	49,69,000	15,55,847	64,94,087	17,27,260	72,44,112	19,73,954	89,38,039
Grand total (I+II)	13,96,863	2,13,68,392	15,74,179	3,08,15,285	17,50,639	4,23,60,389	2,10,02,686	6,00,85,821

Note : Volume in '000s; value in Rs. crore
Source: RBI

The growth in retail payments (comprising cheque clearing, electronic clearing and card-based payment system) in value terms was roughly 23.4 per cent in 2007-08. A salient feature of the retail payment system is the dominance of conventional cheque payment systems: the turnover of the clearing at MICR-cheque processing centres increased by 11.6 per cent in 2007-08 in comparison to growth of roughly 20.2 per cent in 2006-07.

5.3.10 Progress in Electronic Clearings

Electronic clearings – comprising Electronic Clearing Service (ECS), Electronic Funds Transfer (EFT) and National Electronic Funds Transfer (NEFT) - recorded strong growth during 2007-08; nonetheless, the share of electronic clearings remains fairly low in retail payment systems, comprising only 10.9 per cent in 2007-08 of the turnover of retail payment systems (Table 5.3).

5.3.11 Credit and Debit Card Frauds

Credit cards were first issued in India in 1981. Since then the number of cards issued and the usage of cards have increased progressively. Currently there are 27.5 million credit cards (March 2008) issued by banks in circulation in India. The average spend per card in India is quite low. During March-2008, 21 million transactions are reported in credit cards. The total value of transactions under credit cards has more than doubled from Rs. 25,686 crore in 2004-05 to Rs.57,985 crore in 2007-08.

Debit cards were first introduced in India in 1999. Since then there has been phenomenal

Table 5.3: Retail Electronic Funds Transfer System

System	2004 - 05		2005 – 06		2006 – 07		2007 – 08	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value
1	2	3	4	5	6	7	8	9
ECS – credit	40,051	20,180	44,216	32,324	69,019	83,273	78,365	7,82,222
ECS – debit	15,300	2,921	35,958	12,986	75,202	25,441	1,27,120	48,937
EFT/NEFT	2,549	54,601	3,067	61,288	4,776	77,446	13,315	1,40,326
Credit cards	1,29,472	25,686	1,56,086	33,886	1,69,536	41,361	2,28,203	57,985
Debit cards	41,532	5,361	45,686	5,897	60,177	8,172	88,306	12,521
Total	2,28,904	1,08,749	2,85,013	1,46,381	3,78,710	2,35,693	5,35,309	10,41,991

Note : Volume in '000s; value in Rs. crore
Source: RBI

growth in the number of cards issued. Currently, there are 102.4 million debit cards issued by banks in India. The debit cards are primarily value-added ATM cards. As a result, while the number of debit cards in circulation are substantially higher than the number of credit cards, the number of transactions recorded using debit cards at point of sale (PoS) terminals (use for purchases) are very low. The debit cards are mainly used as ATM cards. This is reflected in the fact that the monthly usage of debit cards at ATM machines is around 179 million and the number of transaction at PoS terminals is 8.7 million in March 2008. The value of transactions aggregated Rs.12,521 crore in March 2008.

5.3.12 Technological Developments in Banks

In order to provide customers with greater flexibility and convenience, banks have been investing to computerise their branches and in new delivery channels. The process is primarily seen in case of public sector banks which have an extensive branch network. Considering that connectivity and networking of branches is emerging at a fast pace, banks have been making pro-active efforts towards implementing Core Banking Solutions (CBS), and networking their bank branches. The extent of computerisation has increased significantly: in as many as 24 public sector banks, computerisation was in excess of 80 per cent in 2008 (Table 5.4). The percentage of fully computerised branches (defined as aggregate of those fully computerised and those under CBS) has increased from 71 per cent in 2005 to 93.7 per cent in 2008. PSBs incurred expenses amounting to Rs.15,016 crore between September 1999 and March 2008, with roughly 9 per cent of the expenses being incurred during 2007-08 alone. Banks have also been aggressively exploiting the use of Automated Teller Machines (ATMs) to expand their outreach. PSBs (including IDBI) installed a total of 5,459 ATMs (including 2,846 off-site) during 2007-08. New private banks installed 1,675 ATMs (including 950 off-site) during 2007-08.

Table 5.4: Computerisation in Public Sector Banks

Extent of computerisation (per cent)	Number of banks			
	2005	2006	2007	2008
1	2	3	4	
Up to 10	1	1	..	1
Greater than 10 and up to 20	1	..	1	..
Greater than 20 and up to 30	3	2	1	..
Greater than 30 and up to 40	..	2	1	..
Greater than 40 and up to 50	3	..	1	1
Greater than 50 and up to 60	3	3	..	..
Greater than 60 and up to 70	1	2	1	..
Greater than 70 and up to 80	2	2	1	1
Greater than 80 and up to 90	2	..	4	3
Greater than 90 and less than 100	2	5	2	1
Fully computerised	9	10	15	20
Total	27	27	27	27
Fully computerised branches (per cent)	**71.0**	**77.5**	**85.6**	**93.7**

Excludes IDBI Ltd.
Source: RBI

5.3.13 Issues and Concerns - Payments and Settlement Systems

5.3.13 (a) Real Time Gross Settlement System

The High Value Clearing system which handles large values, functions on a deferred net settlement basis which is risk prone. Shifting of high value transactions to more secure electronic payment system like RTGS or NEFT would be a useful step in circumventing the risks emanating out of dependence of the High Value Clearing System. In order to encourage movement to electronic payment systems, the Reserve Bank has mandated that all individual transactions of its regulated entities, valued at Rs. 10 lakh or above, have to necessarily be routed through the RTGS. Similarly, all transactions above Rs. 10 lakh which are undertaken in financial markets that are within the regulatory purview of the Reserve Bank have also to be routed through RTGS. The Panel believes that such initiatives can be taken by other regulators in respect of markets within their respective regulatory jurisdictions which would result in more transactions being routed through RTGS.

5.3.13 (b) Credit and Debit Cards

Credit/debit card fraud, like any other fraud, is constantly evolving. So any safeguards adopted will only address part of the problem. Hence, it is critical to stay abreast of the latest developments in this area to combat fraud effectively. Some solutions to mitigating the problem with credit card frauds are :

- Authentication for controlling access to critical systems (password, token, smart card, personal information, *etc.*)
- Use of PIN (to be entered by customer) for authenticating debit card transactions at merchant sites (*i.e.*, at point-of-sale terminals)
- End to end encryption of credit and debit card transactions, including that between point of sale terminals and acquiring bank server.
- Protection of credit card data by card issuing banks and their partners is critical. Initially the Reserve Bank should ensure that banks have a system in place for ensuring information security and that

they carry out periodic vulnerability assessments. In the event of a breach, banks must necessarily notify the Reserve Bank and inform the affected consumers as well as take necessary action like issuing new credit cards etc.

- The Reserve Bank encourages banks to deploy fraud prevention systems and banks should in turn encourage their merchant clients to deploy such technologies. If the problem does become more serious, the Reserve Bank has to look at playing a more active supervisory role in this regard.

5.3.13(c) Telecommunication as a Payment System Facilitator

Given the rapid growth of mobile telephony, it is felt that in the medium term, telecom system providers will play a growing role as payment system facilitators. In India the reach of mobile phones has been increasing at a rapid pace. There were about 231 million mobile phone connections in the country at the end of December 2007. The rapid expansion of this mode of communication has thrown up a new payment delivery channel for banks. An offering that provides both banking and telephony services would satisfy two core needs at once. At the same time, this could lower transaction costs for banks and provide greater convenience than traditional banking products, increasing the cost-efficacy and attractiveness of the service. This channel also facilitates small value payments to merchants, utility service providers and the like and money transfers at a low cost. Cross-country evidence is supportive of the increasing use of telephones to expand the reach of banking services, to the advantage of both users and providers (Box 5.3). Several impediments need to be ironed out in the interim, including the development of appropriate risk management skills, but once the telecom industry expands into other areas

Box 5.3 : Use of Telecom for Banking Outreach – Cross-Country Evidence

In China, China Merchants Bank has tied up with a leading telecom group to provide their customers more flexible and convenient personal financial management service, including account information enquiry, multi-transfer of proceeds, utility charges and securities service.

In Malaysia, Maybank has launched the M2U Mobile Service in collaboration with Celcom (a mobile telecom company) to provide bill payment, balance enquiry and funds transfer, in a secure environment.

South Africa's *Mzansi* account, a debit-card based transactional and savings account was launched in 2004. Access is provided through a combination of service points, including branches, ATMs, post-offices and retail point of sale (PoS) locations. All banks in South Africa are participants in this venture.

In Kenya, Safaricom's (a leading mobile network service) rapidly growing M-PESA account allows easy money transfers through mobile phones. Telecom customers can deposit money into an account on their mobile phones and transfer the funds to the other mobile-phone users, even in remote areas.

In Zambia, the telecom company *Celtel* introduced the Celpay service, which allows customers to perform transactions with merchants, pay bills and transfer funds on their mobile phones.

Source : Boston Consulting Group (November 2007)

of banking, the opportunity could become attractive enough to justify the investment. The Reserve Bank has recently issued operative guidelines to banks for mobile payments systems in India. These guidelines take into account aspects on security, fraud prevention and the relationship between the telephone service provider and the banking system.

5.3.13 (d) Need for High Level of Encryption Standard for E-commerce Security

In respect of the issues relating to Blackberry e-mail services, TRAI and DoT are examining approaches that enable dilution of encryption standards to gain access to information. The recent directive by TRAI regarding Blackberry email encryption came very close to adversely impacting e-commerce security. It is conceivable that the telecom regulator will again examine approaches around reducing encryption standards to gain access to electronic information. The Reserve Bank should engage with TRAI and DoT to educate them of the adverse impact this could have on the entire e-commerce infrastructure. At the same time, while acknowledging the importance of security measures to combat terrorism, as well as the need for effective telecommunication regulations, there needs to be a balance between such measures and maintaining a supportive business environment. It is important for the Reserve Bank to be party to any steps by other regulators so that adequate balance is maintained.

5.3.13 (e) Clearing Corporation of India Ltd.

(I) Liquidity Issues

The funds settlements (rupee leg) of the government securities, CBLO and foreign exchange segments operated by CCIL are settled in the current accounts of the participants maintained in books of the Reserve Bank at the end of the day. The settlements of the funds leg, which are carried out independently for each segment are not always smooth. Members participating in either two or all the three segments of CCIL often have long/short positions in different segments. As the funds settlement in these segments is effected separately, their settlements get into gridlock. Settlements in these cases are completed by CCIL by availing of the LoC facility for those segments. As the transaction volumes have now increased manifold, the LoC available to CCIL is grossly inadequate to complete the settlements. This has resulted in the Reserve Bank having to intervene to complete the settlement on many of the days. The options available to address this issue are

(i) increase the LoC,

(ii) provision of liquidity by the Reserve Bank *via* intra-day repo,

(iii) grant limited purpose bank status to CCIL and

(iv) introduce net debit caps in the CBLO and governments securities segment.

(II) End of the Day Settlement and Payment System Liquidity

CCIL operates systemically important financial infrastructure, identified by the Reserve Bank. These settlements account for large value of the money, securities and foreign exchange market transactions in the country. While the net settlement of these transactions reduces the liquidity requirements in these segments independently, the end-of-day settlement of these funds results in intra-day opportunity loss to banks. The efficient functioning of payment system requires that these settlements are spread through out the day. To facilitate such a system the CCIL would require large intra-day liquidity which the Reserve Bank may have to consider providing. Further, in a system where the funds settlements are at the end-of-day, the participants would tend to externalise their liquidity management and risk on the CCPs and can be less prudent in their trading.

(III) Concentration Risk

CCIL has been successful in bringing efficiency in the clearing and settlement operations in money, securities and foreign exchange market through its settlement guarantee and risk mitigation measures. The counterparty risk present in transactions in these markets which were decentralised has been centralised on CCIL. Being the only CCP catering to these markets, over the years the role of CCIL has been expanding. The concentration of such a wide spectrum of activities leads to concentration of risks on one entity. Moreover, in case of CCIL, its inadequate lines of credit to ensure liquidity for carrying out settlement is another potential risk. The inadequacy of their risk management can have system-wide implications, which could be more de-stabilising than the decentralised systems. Concentration can also lead to 'moral hazard' problems if the central counterparty is considered 'too big to fail'.

As far as the risk being concentrated in a few participants who perform multiple roles as major stakeholders of CCIL, LoC/SLoC providers, deposit keepers and also the major participants in the market, it is felt that under the present market structure this is inevitable.

5.4 Business Continuity Management

5.4.1 Introduction

Managing business continuity (protecting critical business processes by evaluating resources and recovery strategies in advance of unplanned events) including IT continuity (*i.e.* uninterrupted operation of Information Technology services), has been perceived as a crucial component of overall financial stability; more so in the context of large-scale dependence of the financial sector on IT-related systems.

Considering the importance of business continuity, select market participants, falling under the ambit of the Reserve Bank were chosen[76] for the exercise to ascertain their level of preparedness with regard to business continuity by formulating a questionnaire based on the High Level Principles of the BIS Joint Forum.[77] Under each of the first six Principles, a set of inter-related questions were developed and the participants asked to provide their status of compliance for each of them. They could also provide additional remarks, if any, in case some of the questions were not directly relevant to their business philosophy. Drawing from the spirit of the BIS Principles, the focus of the questionnaire was primarily on eliciting the response of the regulated entities on the resiliency and recovery capability to effectively manage impact of exigencies (*e.g.*, invoking pre-planned business continuity measures, operationalising alternate/disaster recovery (DR) sites[78]). Since the Principles provide only a broad framework for participants and authorities to use in developing business continuity arrangements, the questionnaire was

[76] Comprising 22 commercial banks spanning across ownership, size and regional presence accounting for around 70 per cent of total banking sector assets.
[77] The High Level Principles of the BIS Joint Forum published in August 2006 comprise of seven Principles: the first six pertaining to both the financial market participants and financial authorities and the final one pertaining to the financial authorities only.
[78] Alternate/disaster recovery (DR) site is a site held in readiness (or near readiness) for use during a business continuity event to maintain an organisation's business continuity. The term applies equally to work space or technology centre requirements.

augmented by a set of additional questions to obtain more information on the efficacy and extent of BCM implementation, including human resource development issues, management succession and emergency powers in an exigency.

Although the role of the Reserve Bank in regard to business continuity management (BCM) was enunciation of broad guidelines, banks' preparedness for the same are being validated in two ways. First, it is taken up for discussion at the highest level for ascertaining their extent of preparedness. Second, the adequacy of BCM process in banks is also being examined at the time of periodic on-site inspections.

The Reserve Bank has also taken steps internally to build BCM capability. These cover both the systems operated by the Reserve Bank (such as the RTGS, MICR and Cheque clearing systems) and other internal systems which have an impact on the financial sector at large.

5.4.2 Commercial Banks

At the aggregate level, in respect of commercial banks, the results indicated that although banks are sensitised to the issue of business continuity management as a part of banks' operational risk management, certain deficiencies exist in respect of its implementation. The key results arising from the analysis can be summarised as under:

- Driven in part by recent events and partially by compliance requirements, the banking industry has been sensitised towards paying greater attention to the cost and efficacy of their business continuity programmes.
- Many institutions reported a significant focus on maintaining centralised data centres with alternate/DR sites (for IT continuity). The attention towards maintaining or restoring disrupted operations (business continuity) is also gathering momentum.
- Institutions are becoming more engaged in business continuity management. Traditional gap between business continuity and IT continuity is gradually giving way to synergies of working together on these inter-related issues.
- The importance of business continuity process of vendors and suppliers for individual institutions has not been given adequate importance.
- Driven in part by recent events, communication is an aspect, which is explicitly incorporated by banks as a part of BCM.
- Human resource management (management succession and emergency powers; availability of adequate staff at DR/alternate site; agreed role of Senior Management in a crisis) and development issues are not yet adequately integrated as part of BCM exercise.

The majority of the banks have ensured board and management responsibility towards BCM. For a third of the banks, their BCM is not subjected to review by independent audit and significant findings are not brought to the attention of the board and top management on a timely basis.

Among the respondents, 95 per cent have ensured that their BCM plan incorporates wide area disruptions in terms of providing for alternate/DR sites sufficiently remote from the primary site and ensuring that adequate and current IT systems are available at the alternate/DR sites.

As regards recovery time objectives, 90 per cent of the respondents have aimed at recovery times ranging from 30 minutes to up to eight hours for the systems supporting their critical services like core banking, payment and clearing systems, ATMs, etc. The recovery times depend upon system redundancy and data availability. Reduced recovery times are achievable for banks that have implemented active/hot systems with

online data replication/backup at an alternate in-city site, in addition to remote (*i.e.* off-city) recovery site.

Communication is an aspect that has been adequately emphasised by respondents, with 80 per cent of them indicating that BCM incorporates comprehensive emergency communication protocols and procedures. However, some aspects relating to using alternate communication channels, incorporating contact information of financial supervisor and other financial industry participants and regular updating of calling trees need to be concentrated upon in a focused manner and on a periodic basis. As regards cross-border communication, some of the banks with foreign presence have incorporated this requirement even though there are also a few other public sector banks with foreign presence that are yet to fully integrate these aspects into their BCM process.

Periodic testing of BCM plans ensures that the plans remain current and can be effectively implemented when required. 70 per cent of the respondents informed that they conduct at least annual testing of their plans and also conduct them at the alternate sites. Nearly 40 percent of the banks do not conduct an independent and comprehensive audit of the tests or even update their plans to reflect the outcomes of the testing.

The additional information sought on this aspect from banks involved 32 questions relating to 'best practices'; these indicate the effectiveness and extent of BCM implementation. Salient issues included in the questionnaire comprise aspects related to management succession and emergency powers; human resource issues - transportation arrangements during disasters, ensuring availability of personnel at alternate sites, ensuring safety and well being of personnel, involvement and role of senior management in case of operational disruption and ensuring BCM of vendors/service providers to the institution etc.

Of these additional questions, only in the case of 10 issues the level of compliance is 60 percent or less, while for the rest of the issues the compliance is more than 60 percent. The issues with comparatively lower level of compliance include:

- A requirement that all key staff carry reference cards/information on activities to do in case of disasters.
- The BCM sufficiently addresses HR issues and training aspects.
- All key service providers are required to have BCM in place which are formalised in contracts.
- In addition to electronic documents, planning for protection of key paper assets is also incorporated.
- Making provisions for transportation of staff during disruptions.
- Local/Government emergency related services/disaster management plans are to be taken into consideration as part of planning.
- Having a corporate crisis management plan in place.
- The agreed roles of the executive/senior management during an incident are

contained in crisis management plan and are signed off by concerned individuals.

- Policy preventing key staff from travelling together in the normal course.
- Necessary business continuity measures are advised to all the branches.

Among others, BCM of service providers is an area that has not been implemented, either in full or in part, by about 60 percent of the respondents. Given the dependence on service providers for critical functions, this remains an area of concern.

About 90 percent of the respondents have also ensured that their business continuity plans take into account the nature of disasters – natural disasters like floods, earthquake etc, malicious activities like terrorism, frauds, etc, and technical disasters like power failure, communications link failure, etc.

About 80 percent of respondents have also taken into consideration the possibility of loss or absence of critical staff during different scenarios.

All but four banks have indicated coverage of all of their systems supporting critical services under their BCM plans. The rest of the banks have reported that the BCM plan for the systems that support their critical services would be completed shortly.

An important aspect of any disaster situation is the heavy dependence on critical infrastructure like power, telecommunication, water supply, transportation etc. Extensive BCM measures can become futile if these aspects are not adequately considered. While to a large extent they are beyond the control of the individual banks, banks can build in the necessary redundancies, to the extent possible.

Summarising the responses, the majority of the respondents have taken action on several facets of BCM. This provides reasonable assurance that many of the major banks, subject to the critical physical infrastructures being available, are in a position to respond in a suitable manner to disruptions by recovering from the adverse situations and ensuring continuity at least for many of the critical systems. Notwithstanding the positives, several areas of concern remain to be addressed to make the BCM process more resilient, pro-active and robust. Since BCM is a journey and not an end, banks must continuously test and upgrade their BCM plans incorporating new areas/changes in their business as well as new developments and technological improvements.

5.4.3 Clearing Corporation of India Ltd.

Among the other entities under the regulatory and supervisory oversight of the Reserve Bank is the Clearing Corporation of India Limited (CCIL). The CCIL provides clearing and settlement functions for trades in government securities, CBLO and foreign exchange. It also facilitates the settlement facility for cross currency trades through the Continuous Linked Settlement System (CLS system) and ATM transactions carried out through National Financial Switch. *Clearcorp Dealing Systems*, a fully owned subsidiary of CCIL also handles NDS platform for Reserve Bank and other dealing platforms of CCIL in foreign exchange and money markets.

The CCIL cleared and settled an aggregate volume of Rs. 2,64,40,262 crore in 2007-08 across its securities, foreign exchange and CBLO segment, an increase of 61.9 per cent over the previous year (Table 5.5).

CCIL has a well-documented Business Continuity Management (BCM) plan. The BCM is integrated with the overall risk management programme of the institution and identifies the potential impact of major disruptions or exigencies on its operations and the operations of its members. The plan takes into account natural disasters, malicious activities, technical disasters and communications failures. Although the plan does not explicitly define the

Table 5.5: Total CCIL Settlement Volumes

(Volumes in Rs. crore)

Settlement period		2003-04	2004-05	2005-06	2006-07	2007-08
1	2	3	4	5	6	7
Outright	Trades	2,43,585	1,60,682	1,25,509	1,37,100	1,88,843
	Avg. trades	820	550	467	562	765
	Volume	15,75,133	11,34,222	8,64,751	10,21,536	16,53,851
	Avg. volume	5,304	3,884	3,215	4,187	6,696
Repo	Trades	20,927	24,364	25,673	29,088	26,612
	Avg. trades	71	83	88	99	91
	Volume	9,43,189	15,57,907	16,94,509	25,56,501	39,48,751
	Avg. volume	3,208	5,335	5,803	8,755	1,35,700
Forex*	Trades	3,30,517	4,66,327	4,89,649	6,06,808	7,57,074
	Avg. trades	1,425	1,976	2,084	2,550	3,181
	Volume	23,18,531	40,42,435	52,39,674	80,23,078	1,27,26,832
	Avg. volume	9,994	17,129	22,297	33,710	53,474
CBLO**	Trades	3,060	29,351	67,463	85,881	1,13,277
	Avg. trades	10	101	229	292	385
	Volume	76,851	97,657	29,53,134	47,32,271	81,10,828
	Avg. volume	262	3,345	10,045	16,096	27,588

* : commenced operations from November 12, 2002;
** : commenced operations from January 20, 2003.
Note : Average Trades/Volumes are the average daily volumes.
Source: CCIL

'acceptable level of risk', it addresses this aspect by defining 'Recovery Point Objectives' and 'Recovery Time Objectives'. The life cycle of the BCM plan is reviewed periodically by CCIL in three stages: Business Impact Analysis, Strategy Selection and Detailed Plan, Testing, Revision and Modification.

The off-city DR site of CCIL is located at a considerable distance from the primary site. Data replication takes place at the off-city DR site, in on-line asynchronous mode and normally within few minutes of the primary site. Apart from the off-city DR site, an in-city alternate site with infrastructure for synchronous replication of data, sufficient user terminals, off-site backup storage etc., has also been established. This in-city alternate site has the capability to establish connectivity either to the primary or to the DR site and to commence operations in case of a disaster. Redundancy with respect to critical components like telecommunication, power, network component etc. has been provided.

The targeted business recovery time depends upon the type of disaster and the site used to recover operations. If the in-city

alternate site is used, the expected recovery time is 3-6 hours and if the off-city DR site is used, the recovery time can vary from 8-18 hours. The BCM contains detailed procedures for shifting to alternate sites and restoring critical systems/ business activities.

The BCM also incorporates emergency communication protocols, which are put to test during BCM drills. CCIL has identified the BCM in-charge in co-ordination with the department co-ordinator as responsible for communicating with staff and various external stake holders. However, a detailed procedure for communication in case of emergency is absent. The contact information of the internal staff and external entities are maintained in the plan however the plan, does not take into consideration the local/government emergency related services/disaster management.

BCM drills are conducted by CCIL every quarter to maintain preparedness for various disaster scenarios and the test results are reviewed. DR drills are conducted at the alternate/DR sites as well. The drills are typically conducted on non-working days (Sundays, other holidays) by involving users like banks to create a production like environment and are conducted on the primary/DR servers. During the drill, representatives from all important areas and levels of CCIL, including senior management, are involved. The BCM plan is updated annually. However, in case of any major changes, the same is updated quarterly.

CCIL has an emergency plan for incidents like fires, bomb threats, floods, power failures, earthquakes, etc. However, the incidents like terrorist attacks and biological warfare are currently not covered under the plan.

Alternate work-sites for top management and other critical work operations have been identified. But the appropriate mechanisms for establishing management succession and emergency powers have not yet been put in place. No written policy preventing key staff from travelling together is in practice at present.

BCM procedures do not cover the training requirements of the staff responsible for these activities. Reference cards/information on activities to be performed during disasters are provided at the primary site, the in-city alternate site and the off-city DR alternate site. CCIL thinks that carrying reference cards at all time can be a security risk. There are no separate trained personnel manning the in-city alternate sites.

Despite its resilience, the BCM policy of CCIL exhibits some shortcomings:

- The BCM policy of CCIL has not been approved by its Board of Directors, considering it is system provider for three major SIPS.
- The key service providers of CCIL are yet to confirm their BCM preparedness.
- Detailed procedures for communication with the staff and various external stake holders have not been included.
- Local/government emergency related services/disaster management plan has not been incorporated in the BCM.
- Transportation arrangements for staff to the DR site in case of man-made/natural disasters like riots, floods, earthquakes have not been clearly stated.
- Incidents like terrorist attack and bio-chemical incidents have not been covered indicating that the risk assessment performed may not be comprehensive.

5.4.4 The Reserve Bank

The critical nature of the tasks performed by the Reserve Bank necessitates uninterrupted operations. With the large scale induction of technological solutions to facilitate the Reserve Bank in its conduct of various activities, the need to ensure that technology-intensive systems are available at all points of time has been recognised, and IT continuity capability (covering resilience and recoverability) for all the critical systems of the Reserve Bank, has already

been finalised and implemented across all critical areas of activity. The activities of all departments, both at the central office as well as at the regional office levels are covered under the BCM measures.

BCM in the Reserve Bank follows a graded approach (based on the nature of the system and the impact it would have in the event of a potential disruption) and it seeks to ensure that in case of any contingency, operations are resumed within a minimal time, as detailed below:

- Critical Payment and Settlement Systems operated by the Reserve Bank for the benefit of the financial sector and the general public (such as RTGS, PDO-NDS, SSS, CFMS and SFMS) have been architectured in a manner that there are fall back systems which take care of continuous operations in the event of any exigency. These systems function in a synchronised manner; if the primary systems are completely not available for use, the alternate DR systems would facilitate operations to be continued with full scale operations resuming within a maximum time of two hours (Recovery Time Objective).
- For the cheque clearing systems which are operated by the Reserve Bank at the four metros, the cheque processing centres (CPCs) operated by State Bank of India act as back up centres for Reserve Bank operated MICR CPCs. In addition, an alternate bank is being identified to act as a back up (using the Magnetic Media Based Clearing System - MMBCS software) to carry out clearing and settlement in case there is an operational problem with the MICR CPC. Also, back up arrangements are being made for electronic clearing service (ECS).As far as the other MICR cheque clearing centres are concerned the Reserve Bank has advised the MICR CPCs to have back up facilities with other MICR CPCs located in close-by cities.
- In case of the other important systems, alternate systems are available which would ensure resumption of IT based operations within a period ranging from two hours to a day, depending on the nature of the system, its criticality and potential impact on account of the non-availability.
- For the other systems which are not important, data backup at regular intervals takes care of resumption of operations, albeit with a delay, which is within acceptable tolerance limits. For these, data backup – in the form of physical media – are being taken by the departments and forwarded to two geographically disparate sites 'A' and 'B', with varying frequencies (depending on the nature of the system). In the event of an emergency, the data can be transported to the nearest location where the IT systems which can use such data is available (which in most cases would be the site 'A' or 'B' itself) and operations resumed from this alternate location.
- The objective of establishment of full fledged data centres at three locations in the Reserve Bank to take care of all the computing requirements of all critical functions, has been achieved.

The status of setting up of the data centres is as outlined in Table 5.6.

5.4.5 DR drill for RBI-regulated Entities

In order to ensure that the BCM is in a readily executable form, the Reserve Bank conducts periodical DR drills, where all banks, other entities, CCIL, *etc.*, also participate. These exercises are performed in a live mode on a day which is notified to the participating members just one day in advance. The complete end-to-end BCM is thus fully put to test by such exercises. One such drill was performed during February, 2008. The exercise involved the following tasks:

- Operations switching from RBI's primary production site to the DR site.
- Banks switching to their respective DR sites from their production sites.
- Conduct of live operations in the above set up.
- Banks migrating back to their primary sites.
- The Reserve Bank migrating to its primary production site.
- Banks connecting their primary sites to the Reserve Bank's primary site.
- Re-synchronisation of data at the primary site.

The overall exercise was conducted in a satisfactory manner and live operations were completed from the Reserve Bank's DR-site thereby reaffirming the high level of redundancy of the systems used for processing the critical payment systems of the country.

As far as the participating members were concerned, the exercise revealed that some were still not fully completely ready with their DR sites. While normal operations were completed during the day with the Reserve Bank allowing many entities to operate from their primary site, some participants could not operate from their DR Sites and therefore had to continue operations from their primary site itself. The system wise level of participation was as follows:

- For the NDS : 75 per cent
- For the RTGS : 47 per cent
- For the IAS : 93 per cent

The above position reflects that although participants may have adequate systems to take care of business continuity, they have to ensure that these systems operate with ease in case of any contingency. The Reserve Bank has also put in place a pre-and post-implementation audit. The DR-drill for banks is conducted in the presence of auditors.

5.4.6 Issues and Concerns

5.4.6 (a) Risk Assessment and Scenario Planning

While the focus of business continuity measures is to enhance availability of systems and services, the BCM program should embed a

Table 5.6: Progress in Setting up of Data Centres

Phase	Status	Modalities
1	**2**	**3**
I	Completed	Establish production centre at the primary site
II	Completed	Establish on-city backup data centre
III	Completed	Establish off-city backup data centre
IV	Completed	Migration of critical application systems to the primary site establishment of replication of data from the primary production centre to the on-city back-up centre in a synchronous mode and asynchronous replication at the off-city backup centre

Source: RBI

comprehensive risk assessment process, which will facilitate:

- Identification of potential threats.
- Preparatory measures to minimise the impact and likelihood of certain risks, which will help enhance the resilience.
- Develop potential disaster scenarios and plan for continuity and recovery measures.

Though most banks do have a risk assessment program in place to plan for business continuity, there is a need to periodically revisit the risk assessment and update the business continuity plan accordingly.

5.4.6 (b) Market Wide Simulation with All Participants

The best-laid out plans may sometimes come to nought during an emergency. This is what leading financial institutions should guard against during an emergency response situation. The loss of critical resources, including human and IT could make an institution vulnerable. A co-ordinated system-wide response to any eventuality is important and that is why exercises are being conducted 'market or industry-wide' within major financial centres to test collective responses, decision making and the inter-connectivity of business continuity arrangements.

The financial services industry participants in a few countries undertake near real-life business continuity simulations to assess their business resiliency capabilities. The Reserve Bank organises market-wide business continuity tests with participation of certain banks and financial institutions focussing on system capabilities in the event of a disaster.

These market-wide tests should be enhanced to cover areas like communication among various parties, including civic and government authorities. Also, joint response options (wherein banks can work in a symbiotic manner) to provide services to customers (who may be in dire need) could be tested.

5.4.6 (c) Incident Response Capability

Most banks have a blueprint for business continuity in place. The BCM program addresses a number of threats and recovery capabilities. There are times however, when a dis-continuity of operations is caused by an incident, which is not significant enough to invoke the business continuity plan. Such an incident may not even bring down the operational capability, but may merely impact operational efficiency. Many organisations may ignore such events and incidents, which may at times be an indication of or a trigger for a larger event/disaster. It is extremely important for organisations to develop an incident response capability to assess the impact of such incidents by updating their business continuity plan and recovery measures accordingly.

5.4.6 (d) Reciprocal Arrangements

Many a times, a disaster scenario may not impact all the financial industry participants in a region. Reciprocal arrangements could be extremely effective in the industry, whereby one participant may utilise the infrastructure and other systems of another participant in the event of a disaster. Presently, such reciprocal arrangements have not been witnessed in the

industry, but the industry should be encouraged as they are a cost effective arrangements to enhance the industry-wide stability.

5.4.6 (e) Outsourcing Issues

Globally, banks are resorting to outsourcing as means of both reducing costs and accessing specialist expertise. India is not an exception to this trend. Such outsourcing leads to the emergence of several risks. The failure to manage them can lead to financial losses/ reputational risk for the bank and to systemic risks within the banking system. The Reserve Bank has therefore issued guidelines to ensure the effective management of these risks. These guidelines are intended to provide direction and guidance to banks to adopt sound and responsive risk management practices for effective oversight, due diligence and management of risks arising from such outsourcing activities. They are applicable to outsourcing arrangements entered into by a bank with a service provider located in India or elsewhere. The service provider may either be a member of the group/conglomerate to which the bank belongs, or an unrelated party. The guidelines also cover issues relating to activities that should not be outsourced; legal obligations of the bank that outsources its activities; the regulatory and supervisory requirements; risk management practices; role of the board and senior management; due diligence requirements while selecting service providers; coverage in outsourcing agreements; service providers obligation to maintain confidentiality and security; code of conduct of direct selling agent (DSA)/direct marketing agency (DMA)/recovery agents; BCM Plans; monitoring and control of outsourced activities; and the requirement of a robust grievances redressal machinery.

A key aspect is instituting a comprehensive outsourcing policy, approved by the board, which incorporates criteria for the selection of such outsourced activities, as well as service providers for them, the delegation of authority depending on risks materiality, and systems to monitor and review the operations of these activities. Due diligence is expected to also take into account qualitative, quantitative, financial, operational and reputational factors. Banks have been advised to also consider whether the service providers' systems are compatible with their own and also whether their standards of performance, including in the area of customer service, are acceptable to it. The bank should have in place a management structure to monitor and control its outsourcing activities. It should ensure that outsourcing agreements with the service provider contain provisions to address their monitoring and control of outsourced activities.

5.4.6 (f) Integrity of Service Providers

There has been an increased reliance on a number of third party service providers. These service providers form an essential component of an organisation's business continuity preparedness. While most banks include third party service providers in their business continuity plans, there is a need for a greater participation and integrated response capability for the service providers, which provide services from remote sites. The third party service providers may have access to bank's data, systems and network.[79] In such a scenario, banks should ensure that:-

- All employees of the outsourced service provider follow the bank's security guidelines as applicable to the banks own employees.
- A background check from a qualified agency should be made mandatory.
- Employees of the service provider should be asked to sign an individual non disclosure agreement (NDA) apart from

[79] Example of such services are – Hosting banks IT infrastructure and application systems at data centre hosting service provider, use of vendor for management of infrastructure/systems , management of network connectivity, application processing/data entry, *etc.*

the NDA/model confidentiality agreement (MCA) that banks have with service providers.

- Photo-identity cards should be issued.
- Minimum qualification criteria for the personnel providing services should be defined.

In case the service provider operates outside of bank network (whether offshore or within country), the Panel recommends following additional steps:-

- The extended network at the service provider's site should be isolated from rest of the network of service provider.
- The link from the isolated network at service provider to the bank's network should be encrypted, using industry accepted encryption standard.
- The extended network should be treated as extension of bank's network for control purposes. The bank must have full control of extended network.
- External connectivity (*i.e.*, link to Internet, third party) from the isolated network, if required, should be only allowed through bank's network.
- Use of external removal mass media (e.g. USB drives, DVD) should be prohibited at service provider's to prevent copying of data by removal of such media from the site.
- Media removal (*i.e.* removal hard disk, etc) from the work area should be as per bank's media disposal policy, such that all data is removed before disposal.

The bank should take up periodic third party security and availability audit to the service provider network where, apart from network details, IT process and controls should be subject to audit.

5.4.6 (g) SMS Directories for Disaster Management

During disaster scenarios, communication is a critical requirement. In today's world, mobile phones are ubiquitous. Industry should take the benefit of such wider availability of this technology to effectively communicate the invocation of disaster. It is recommended that in addition to a calling tree, organisations maintain mobile phone directory and enter into contract with SMS gateways to broadcast message in the event of disaster.

5.4.6 (h) Challenges in Technology Upgradation – Obsolescence

In today's world, technology is changing very rapidly and, consequently, obsolescence rate is also fast. New technology comes to the market almost every three years and support for the old technology goes out in about seven to ten years. As equipment manufacturer stops supporting the old technology and stops releasing new patches or security fixes, these become more susceptible for security risks.

Keeping this in mind, the Panel recommends banks to:

- Give attention to upgradation of both hardware and application deployed at the bank.
- Draft a policy against obsolescence.
- Reserve/allocate budget for upgradation.

- Train staff to continue support existing application and be aware of new technology and keep themselves prepared for migration to new technology.

Such change in technology and upgradation of systems leads to certain change in application and hardware setup. Banks should arrange to test the system integrity and compatibility before changing to new technology and should follow a defined 'Change Management Process'.

5.4.6 (i) System Maintenance and Change Control

A robust system maintenance and change control is critical. Change control and system maintenance processes are designed to measure and evolve the systems in accordance to the changing business requirements in a manner that the system continues to deliver its stated objectives. It is applicable to all varieties of change processes including software, hardware, resource management and incident-fixes. Across various industries, mature technology processes have stressed on the underlying importance of system maintenance and change control in the overall efficiency of fail-safe mechanisms that manoeuvre critical processes.

Due to the extensive use of technology in financial industry, these processes have gained critical dimensions. System maintenance and change configuration management is a science that IT departments the world over are dedicating resources for addressing. This is due, in part, to various incidents that have transpired related to inadequate processes overseeing configuration management and change control in the systems maintenance lifecycle, putting at stake the ability of financial institutions to service their customers.

Change control is critical for ensuring that changes to systems are aligned with the overall objective of the system, *i.e.*, do not lead to discordance in the system *vis-à-vis* overall objective - leading to errors or deterioration in functionality or performance. The maintenance program should cover areas like hardware health, capacity, performance, incident (repetition) frequencies.

While most financial industry participants have a well-defined change control process, it is recommended that for critical systems, a Change Approval Board (CAB) be put in place to sanction each change request. Changes requested for integration with other systems should be supported by a business case, signed off by the relevant system owners from the business side – so as to appreciate the level of risk that may be manifested in any new development. Versioning of configuration objects and appropriate documentation facilitates greater collaboration between system owners.

5.4.6 (j) Technology in Banks

The application software used by banks at present are mostly based on foreign retail banking models tailored to the Indian context. These often lose sight of Indian realities, such as specific modules on priority sector lending, tax deductions, etc. As a result, it is important for the user of such technologies to acquire a certain level of skills so as to judiciously select and apply the available technology for their individual business needs.

5.4.6 (k) Technology in Rural Financial Institutions

As the level of education in rural areas rises and affluence spreads, customers would start seeking efficient, quicker and low cost banking services. As more and more intermediaries enter rural areas, traditional banking business could come under pressure. The role of technology for expanding reach would then gain in importance. This is all the more likely in the case of micro-finance institutions, which need to reach out to a diverse population. Given the socio-economic considerations, it seems likely that the technology would need to be simple,

incorporating value-added features so as to ensure wider usage and applicability. This, in effect, provides an opportunity for the IT-industry to adequately respond for efficiently meeting the domestic needs.

5.4.6 (l) Impact of Computer Malware

Protecting networks from malware should be an ongoing effort. Bank should ensure that: -

- All external data gateway (Internet/Email/ ODC) connections are secured with proper anti-malware solutions (anti-virus, anti-spam, *etc.*).
- An anti-malware agent is deployed on all end-points, connected to the network.
- Anti-malware agent/solution on each end-point is kept up to date with latest anti-virus definitions. Bank should consider implementing a central console to monitor the end-points and deploy these updates.

5.4.6 (m) External Network Threats

In today's world, banks' websites, networks and other externally facing systems are continuously subject to attacks from hackers. In light of these, the Panel recommends that banks consider deployment of following security measures:-

- Intrusion prevention system (IPS) at public gateway.
- Firewall and Network intrusion detection system (NIDS) at all external entry points including network links to branches, service provider locations, regional offices and other third parties.
- Host intrusion detection systems (HIDS) on servers running critical systems (compatibility should be confirmed by service provider).
- Banks with large network should deploy Enterprise security management (ESM) that should allow monitoring of security incidents, system management and patch deployment across systems (all critical systems should be covered).
- The above precautions should apply to both primary and back-up sites.

5.4.6 (n) Network Separation

Financial institutions are beholden to their customers for the assets that are entrusted to their care, whatever the underlying security. In an increasingly electronic world – where even routine financial operations are being routed through the realms of information technology, it is important that financial institutions have secure perimeters drawn up between their internal and external environments, including Internet. This should include segregation of production (treasury, trading, etc.) and corporate internal networks. A clear demarcation into access controlled zones amplifies the security posture as well as provides for differential management of systems based on their criticality. Network segregation helps in effective implementation of IT security policies facilitating access control as well as allocating dedicated resources (e.g., bandwidth, ingress-egress gateway) to critical services like payment systems related traffic.

It is considered a good practice to segregate the network into several zones in a manner so as to define areas such as the intranet, de-militarised zone, etc. In such an environment, front-end (web services) systems

should be located in an external zone, application (business rules) systems in middle zone and database systems in the internal zone. The Reserve Bank and CCIL, who maintain critical transactional systems for financial industry, have separated the internal network from the external network through logical separation to avoid propagation of threats.

5.4.6 (o) Unauthorised Access

Unauthorised access to system and data can be misused to carry out fraudulent transactions. In case of critical systems, it may have significant impact on the bank and other stakeholders. In light of these, the Panel recommends banks to consider deployment of following additional security measures:

- Authentication for controlling access to critical systems (password, token, smart card, personal information, *etc.*).
- End-to-end encryption of credentials and other information sent between computers (client-server, server-server).
- Encrypted storage of session credential while session is active and its deletion on session close.

5.4.6 (p) Denial of Service Attack and Scalability

Many major websites have been put out of operation, at least temporarily, during denial of service (DOS) attacks that seemingly originate from multiple computers spread across a geographically disparate area, in a coordinated fashion. Most of these attacks have evolved with time, making it difficult for investigating agencies to track down the rogue computers they originate from.

DOS attacks are based on the principle that – "any system has finite resources (memory, computing power, *etc.*) and if subjected to a volume of 'input ', which is greater than its capacity, the system's performance will deteriorate (or system will stop functioning)".

DOS attacks thus cause damage to the bottom-line and/or the reputation of institutions that for a certain period of time cannot service the requests of customers. The Systemically Important Payment Systems are extremely critical systems from denial of service protection perspective, and could cause a domino impact across multiple parties.

DOS attacks can be addressed by effective monitoring of potential attacks and stopping such inputs and/or increasing the resources present in the system. Since, resources are finite, a system (network, servers, etc.) that allows for increasing the capacity (including dynamic changes) is better equipped to support growth in business and also handle periods of DOS attacks. Networks should be sized to scale, in order to fulfil business requirements and ambitions.

An intrusion detection system (IDS) that can identify potential DOS attack by way of heuristic logic or matching input against attack patterns and pro-actively alert and/or act to stop such input from reaching target system can be used to mitigate risks arising out of DOS. Most banks have adopted the IDS technology to potentially prevent the DOS attacks.

5.4.6 (q) Cross Border Cyber Laws

The increased use of net-banking has also heightened the risk of cyber hacking and cyber warfare wherein the Internet is used to accomplish destructive tasks. Internet security has therefore assumed prime importance in today's age of cross border Internet banking. Apart from having a pro-active approach to tackle such crimes, there is a need for customer awareness and an Information Security Certification for such transactions in order to reassure potential customers. Also there is a need for strong cross border cyber laws and necessary amendments to the IT Act 2000.

5.4.6 (r) Application Code Review

There are various risks that may be introduced into a system during the coding stage

– during initial development or subsequent changes. An accidental/intentional introduction of code to the system or deletion of existing code can lead to incorrect functionality, system malfunction, etc. All of these pose high levels of risk to the system due to issues such as integration problems and logical gaps in the functionality. In extreme cases, additional code can be a backdoor or fraudulently modify transactions.

Sub-optimal efforts in coding can be addressed and errors trapped through planned code review exercises. In addition, a technical code review can address areas such as lack of adherence to standard code management methodology. In case of critical systems a code review focussed on identification of security backdoors/fraudulent piece of code should be conducted. Organisation should conduct such reviews and build knowledge base for future reference.

Code reviews also play an important role while procuring third-party software that after some time requires further integration with another external module or third party application. A code review increases the levels of understanding, to an extent that maintenance of the integrated software suite becomes easy both from a development as well as integration stand-point.

5.4.6 (s) Training

Keeping the business continuity plans current in a technology enabled area is a significant challenge. While the industry has worked hard to cope up with this challenge, the bigger challenge that remains is to keep the employees aware of their responsibilities and recovery planning. This challenge is compounded due to growth and changes in employees' roles and responsibilities. As periodic class-room type classical training of employees on BCM program can be a practical difficulty and operationally expensive, the use of computer based training can be an effective approach. The computer based modules allow for flexibility of changing content and refresher based training options.

5.4.6 (t) Rotation/Forced Leave for System Administrator

The system administrator (SA) has full access to system (application, database and/or operating system). The SA is usually responsible for maintenance of and modifications to system functionality as requested by the business side. The person typically has a reasonable understanding of the system's network architecture, technical/functional features and integration with other systems.

Having such sweeping access on the system also puts the organisation to high risk of fraud by a system administrator. Since a system administrator can erase logs the risk further increases.

Drawing from the practices in the banking domain around roles like teller, dealer, etc, financial industry participants should consider implementing job rotation (across various systems) and forced leave for personnel handling system administrator roles. Also, insofar as possible, administrator login ID should be kept vaulted, *i.e.*, SA not knowing it. The SA should be informed of the password when an approved change requiring administrator login ID is provided and changed after the change is implemented.

5.4.6 (u) Fraud Monitoring Systems

Banks should closely monitor eight main areas, broadly classified under identity-related and transaction-related opportunities where tighter controls can facilitate combating fraud. The eight areas are: touch-points where customers unwittingly becoming a source of classified information, verification of user-id at account acceptance, verification of legitimacy of existing customers, validating identity during account maintenance requests from customers, stopping fraudulent transaction at the first instant, recognising bogus transactions during point of placement by a third bank, application of suspicious activity through analytical packages and analysis of losses and creating feedback to policy, process and systems design.

Internally, the best way to fight fraud is to have a strong corporate compliance mechanism with anti-fraud professionals monitoring the process. The assessment process includes:

- A systematic (rather than haphazard) assessment process.
- Consideration of potential fraud schemes and scenarios.
- Assessment of risk at agency-wide, business unit and significant account levels.
- Evaluation of the likelihood and significance of each risk to the agency.
- Assessment of exposure arising from each of the categories of fraud risk.
- Testing of the effectiveness of the risk assessment process by internal audit.
- Documented oversight by the audit committee, including consideration of the risk of override of controls by management.

5.4.6 (v) Logs Review/Pattern Analysis

Logs have a wealth of information on metadata around transactions *i.e.*, 'What', 'Who', 'When', 'How', etc. It is important that organisations implement a process for effective log review. Some of the good practices that might be kept in mind during log reviews includes:

- Storage of logs in a secure environment.
- Log review should be carried out in a periodic fashion.
- Log review should be carried out through sampling.
- Log review should be made a standard part of internal audit procedures.
- Relevant logs should be available in a readable format in case top level management wants to review.
- Logs should be backed up.

In the current environment, log reviews coupled with pattern analysis can be an effective source of verifying compliance to KYC norms, anti-money laundering, etc. Banks are advised to build capabilities for identifying and unearthing trends on application behaviour – this should be done diligently to detect any fraudulent activity. Further, fraudulent activity should be mapped to previous problems or incidents through some form of tagging.

5.5 Legal Infrastructure

5.5.1 Overview of the Legal Framework

The legal framework governing the regulation and supervision of financial systems and the laws which have a bearing on the stability of the financial sector have gained considerable importance in recent times. This analysis focuses on the relevant statutes, primarily from the standpoint of the banking sector. The statutes that have introduced major legal reforms in banking can be found in Box 5.4, as having a bearing on financial stability.

As financial sector reforms progressed, several of the relevant Acts were modified, primarily by enabling legislative amendments for providing greater operational flexibility to

Box 5.4: Major Legal Reforms in Banking

A. Laws Related to Banking Operations

- The Multi-state Co-operative Societies Act, 2002, which came into force with effect from August 2002, in replacement of the Act of 1984, empowers the Central Government to give directions to the multi-state co-operative societies in the public interest or to supersede their board only with respect to those multi-state co-operative societies in which not less than 51 per cent of the paid-up share capital or of the total shares is held by the Central Government.
- Reserve Bank of India (Amendment) Act, 2006 provides flexibility to the Reserve Bank in prescribing reserve requirements for scheduled banks as also comprehensive powers to regulate the money and government securities market. Accordingly, these amendments (i) empower the Reserve Bank to determine the Cash Reserve Ratio (CRR) for scheduled banks without any floor or ceiling; (ii) empower the Reserve Bank to deal in derivatives, to lend or borrow securities and to undertake repo or reverse repo transactions; (iii) remove the ambiguity regarding the legal validity of derivatives (iv) empower the Reserve Bank to determine the policy relating to interest rates or interest rate products and give directions in that behalf to all agencies dealing in securities, money market instruments, foreign exchange, derivatives and to inspect such agencies *etc.*
- The Banking Companies (Amendment) Act, 2007 under which (a) the Reserve Bank has been conferred with the power to specify Statutory Liquidity Ratio (SLR) without any floor. (*i.e.*, removing the existing floor of 25 per cent while retaining the ceiling of 40 per cent).
- Banking Regulation (Acquisition and Transfer of Undertakings) and Financial Institutions Laws (Amendment) Act, 2006 provides for (a) increase in number of whole-time directors of the nationalised banks from two to four; (b) the director to be nominated by the Government on the recommendation of the Reserve Bank to be a person possessing necessary experience and expertise in regulation or supervision of commercial bank, (c) removal of the provision for nominee directors from amongst the officials of SEBI/ NABARD/Public Financial Institutions; (d) nomination of upto three shareholder directors on the board of nationalised banks on the basis of percentage of shareholding; (e) elected directors to be persons having 'fit and proper' status as per the criteria notified by the Reserve Bank from time to time; and (f) the Reserve Bank to appoint one or more additional directors, if necessary, in the interest of banking policy/public interests/ interest of the bank or the depositors. In addition, the amendments empower such banks (a) to raise capital by public issue or private placement or preferential allotment of equity as well as preference shares, subject to the guidelines to be laid down by the Reserve Bank, as also (b) empower the Central Government to supersede the board of nationalised banks on the recommendation of the Reserve Bank and appointment of administrator *etc.*
- The salient features of the State Bank of India (Subsidiary Banks Laws) Amendment Act, 2007 include (a) increasing the authorised capital of subsidiary banks to Rupees five hundered crore and divide the authorised capital into shares of Rupees one hundred each, or of such denomination as may be decided by the subsidiary banks, with the approval of State Bank of India (SBI); (b) allowing the subsidiary banks to issue share certificates of such denominations as may be prescribed by regulations made by SBI with approval of the

Reserve Bank to existing shareholders; (c) allowing the subsidiary banks to raise issued capital through preferential allotment or private placement or public issue in accordance with relevant procedures; (d) allowing reduction of SBI's shareholding in subsidiary banks to 51 per cent from 55 per cent; (e) removing the restriction on individual shareholdings in excess of two hundred shares and increase the percentage of voting rights of shareholders (other than SBI) from one per cent to 10 per cent of the issued capital of the concerned banks; (f) conferring power on the Reserve Bank to supersede the board of directors of subsidiary banks in public/ depositors interests. Several other amendments, relating to the composition of board of directors are akin to those for nationalised banks.

B. Laws Relating to Debt Recovery and Enforcement of Security

- The Legal Services Authority Act, 1987 has conferred the statutory basis to the *Lok Adalats* (meaning, people's court) and the Reserve Bank has issued guidelines to commercial banks and financial institutions to make increasing use of the Forum of *Lok Adalats*. As per the earlier guidelines, banks could settle disputes involving amount upto Rupees five lakh through the Forum of Lok Adalats. This was enhanced to Rs. 20 lakh in August 2004. Further, banks have also been advised by Reserve Bank to participate in the Lok Adalats convened by various DRTs/DRATs for resolving cases involving Rs 10 lakh and above to reduce the stock of NPAs.
- The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002 (SARFAESI Act), effective from the date of promulgation of the first Ordinance, *i.e.*, June 21, 2002, has been extended to cover co-operative banks by a notification dated January 28, 2003. The Enforcement of Security Interest and Recovery Debts Laws (Amendment) Act, 2004 has amended the SARFAESI Act,, Recovery of Debts due to Banks and Financial Institutions Act, 1993 and the Companies Act, 1956. By this amendment, the SARFAESI Act has been amended, *inter alia* to (a) enable the borrower to make an application before the debt recovery tribunal against the measures taken by the secured creditor without depositing any portion of the money due; (b) provide that the debt recovery tribunal shall dispose of the application as expeditiously as possible within a period of 60 days from the date of application and (c) enable any person aggrieved by the order by the debt recovery tribunal to file an appeal before the debt recovery appellate tribunal after depositing with the appellate tribunal 50 per cent of the amount of debt due to him as claimed by the secured creditor or as determined by the debt recovery tribunal, whichever is less.
- The Credit Information Companies (Regulation) Act, 2005 is aimed at providing for the regulation of credit information companies and to facilitate efficient distribution of credit. The Act provides for establishment, supervision and regulation of credit information companies that can undertake the functions of collecting, processing and collating information on trade, credit and financial standing of the borrowers of credit institutions which are members of the credit information company.

C. Laws Relating to Government Securities

- The Government Securities Act, 2006 provides for (a)empowering the Reserve Bank to prescribe the form for transferring government securities; (b) holding of government promissory notes by trusts; (c) simplifying the procedure for recognising title to government securities up to Rupees one lakh with enabling power to the Central Government to enhance the said limit upto Rupees one crore (d) allow micro films, facsimile copies of documents, magnetic tapes and computer print outs to be admissible as evidence; (e) suspension of holders of subsidiary general ledger account in the event of misuse of the said facility.

D. Laws Relating to Payment Systems

- The Negotiable Instruments (Amendments and Miscellaneous Provisions) Act, 2002, effective from February 6, 2003, introduces the concepts of 'electronic cheque' and 'cheque truncation' by expanding the definition of 'cheque' as provided in the Negotiable Instruments Act, 1881. It also enhances the punishment for dishonour of cheques from one year to two

years, excludes the nominee directors from prosecution and provides for speedy and time-bound disposal of criminal complaints by summary trial, day-to-day hearing and complainant's evidence through affidavit.

- The Payments and Settlement Systems Act 2007, designates the Reserve Bank as the authority to regulate payment and settlement systems. The Payment and Settlement Systems Act, 2007 has received the assent of the President on the December 20, 2007, and has been notified in the Official Gazette. Under this Act, the Reserve Bank has been given wide regulatory and supervisory powers in respect of payment systems. The Act provides for (i) authorisation by the Reserve Bank to commence or operate payment systems; (ii) empowering the Reserve Bank to audit and inspect by entering the premises where payment systems are being operated; (iv) empowering the Reserve Bank to issue directions; and (v) finality of settlements (including netting) and their irrevocability in the event of insolvency, overriding other laws. According to sub-section (3) of Section 1 of the said Act, its provisions shall come into force on such date as the Central Government may by notification in the Official Gazette appoint, and different dates may be appointed for different provisions of the Act. The provisions of the Act have been brought into force by the Central Government with effect from August 12, 2008. The Reserve Bank is empowered, under the Act, to make regulations to operationalise the provisions of the Act. Accordingly, the regulations, *viz.*, (i) Board for Regulation and Supervision of Payment and Settlement Systems Regulations, 2008; and (ii) Payment and Settlement Systems Regulations, 2008 have been framed by the Reserve Bank.

E. Laws Relating to Securitised Debt

- The Securities Contract (Regulation) Amendment Act 2007 has amended the Securities Contract Regulation Act, 1956 so as to provide a legal framework for trading in securitised debt, including mortgage-backed debt.

F. Other Laws

- In order to combat the menace of crime-related money, the Prevention of Money Laundering Act, 2002 (PMLA) was enacted to provide the enabling legal framework. It may be mentioned that the provisions of PMLA and the Rules notified thereunder by the Central Government, cast certain obligations on the banking companies and financial institutions with regard to preservation of records of transactions and reporting of certain cash transactions and suspicious transactions to the Financial Intelligence Unit (FIU-IND).

Several Bills are awaiting Parliamentary approval. Salient among these include:

G. Bills Awaiting Parliamentary Approval

- The Banking Regulation (Amendment) Bill, 2005 seeks to amend some of the provisions of the Banking Regulation Act, 1949 with a view to strengthening the regulatory powers of the Reserve Bank.
- The State Bank of India (Amendment) Bill, 2006 contains amendments to the RBI Act, 1955 seeks to provide for enhancement of the capital of SBI by issue of preference shares and to enable it to raise resources from the market by public issue or preferential allotment or private placement.
- The Board for Industrial and Financial Reconstruction, set up under the Sick Industrial Companies (Special Provisions) Act, 1985 is sought to be replaced with the National Company Law Tribunal (NCLT). The Companies (Second Amendment) Act, 2002 will provide NCLT with the jurisdiction and power to consider revival/rehabilitation of insolvent companies. The said amendment is yet to be brought into force.

Source : Government of India/RBI.

the Reserve Bank. It was increasingly realised that good corporate governance was central to maintaining trust and confidence in the financial system.

Several provisions already exist in the Banking Regulation Act, 1949 (BR Act) from the corporate governance angle. To supplement them, the Reserve Bank, exercising delegated legislative powers under Section 35 A of BR Act, has issued directions to the banking companies to undertake a process of due diligence of directors. The purpose is to determine the suitability of the person for appointment/ continuing to hold the post of a director on their board, based upon qualification, expertise, track record, integrity and other fit and proper criteria.

Another example is the amendment proposed in the Banking Regulation (Amendment) Bill, 2005, for ensuring that ownership of banks is with persons who are fit and proper. Also an effective legal framework to protect the rights of creditors is a must for achieving financial stability. Therefore, it was felt necessary that the legal framework should provide for efficient and expeditious methods for recovering debts and the enforcement of the security interest. Amendments to the relevant Acts for protection of creditor rights need to be viewed in this light.

Another area with an important bearing on financial stability is the mechanism of amalgamation provided under Section 45 of BR Act. In cases of bank failures in the recent past, the process of amalgamation of such banks, invoking the provisions of Section 45 of the BR Act, were initiated immediately by the Reserve Bank and the Government, and the interests of the depositors were safeguarded. It has also been possible to reduce the period of moratorium imposed on the failed banks, thus minimising the inconvenience to the depositors.

However, there are still several amendments pending. In regard to the Banking Regulation Act, 1949, amendments pending consideration of the Parliament, *inter- alia* provide for:

- enabling banking companies to raise capital by issue of preference shares subject to regulatory guidelines by the Reserve Bank;
- removing the restrictions on voting rights under sub-section (2) of Section 12, concurrently with the insertion of a new section 12B providing for RBI's prior approval for acquisition of 5 per cent or more of shares or voting rights in a banking company by any person and empowering Reserve Bank to impose such conditions as it deems fit in this regard in order to satisfy itself that the acquisition of shares of a banking company is by a 'fit and proper' person;
- empowering the Reserve Bank to supersede the board of directors of a bank and appoint an administrator to manage the bank, till alternate arrangements are made; and
- insertion of Section 29A empowering the Reserve Bank to call for information and returns from the associate enterprises of banking companies and also inspect the same, if necessary.

The Banking Regulation (Amendment) Act, 2005, which is pending before Parliament has in the context of co-operative banks proposed that:

- Only those co-operative societies that have been licensed by the Reserve Bank should be allowed to carry on the business of banking;
- The primary co-operative societies should be given a timeframe within which they have to either stop the business of banking or fulfil all the requirements specified by the Reserve Bank and obtain a licence to carry on the business of banking; and

- Reserve Bank to have power to order a special audit of co-operative banks in public interest for more effective supervision of co-operative banks.

But, still much more is required to be done to instil public confidence in co-operative banks and ensure their stability.

Similarly, effective measures need to be explored to make regional rural banks more efficient and stable, and where found unviable, facilitate consolidation.

5.5.2 Issues and Concerns

5.5.2 (a) Legal Infrastructure Governing Institutions

The failure of co-operative banks and the rescue measures in that sector continue to be an area of considerable concern, mainly on account of issues like the dual control of such co-operative banks by the Reserve Bank and the State Governments. To cite an example, in the case of a failure of co-operative bank, unlike in the case of banking companies, the Reserve Bank's powers are confined only upto the stage of imposing a moratorium on the failed co-operative bank. In so far as the process of amalgamation thereafter is concerned, the powers are vested with respective State Governments. Also, the Co-operative Societies Acts of the states, permit the amalgamation of a co-operative bank, only with another co-operative bank, and not with any other entity. In actual practice, when the co-operative banks are in financial difficulties, often they are placed under directions issued by the Reserve Bank imposing limitations on incurring liabilities and making payments, including repayment of deposits. Although the depositors are denied access to their deposits beyond a small limit during the pendency of such directions, which normally lasts for a few years, the insurance protection under the DICGC Act is also not available to them under such eventualities. Further, the Co-operative Societies Acts prevailing in certain states are not in conformity with the provisions of the DICGC Act for availing the deposit insurance cover.

In the case of regional rural banks also, in terms of Section 23A of the Regional Rural Banks Act, 1976, amalgamation is permitted only with another regional rural bank.

In case of The Recovery of Debts due to Banks and Financial Institutions Act, 1993, the provisions of the Act have been made applicable to debts of more than Rs. 10 lakh. At present for amounts below Rs. 10 lakh, the banks/FIs have to resort to the normal remedy available with Civil Courts. However, the Central Government has been given the power to make this Act applicable to debts of any amount not less than Rupees one lakh, which it can specify. Though it would be preferable if debts above Rupees one lakh are covered under this Act, an equally important issue is the speed at which, at present, the Debt Recovery Tribunals (DRTs) are able to recover the debts. Delay in recovery proceedings before DRTs results in the locking up of huge amount of public money, which prevents its proper utilisation and recycling. Therefore, necessary steps to address delay before the DRT/Debt Recovery Appellate Tribunal (DRAT) have to be addressed by increasing the number of DRTs/DRATs. With the introduction of the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002

(SARFAESI Act), the banks and FIs have been opting to enforce their security interest without the intervention of courts, under the provisions of that Act and approaching DRTs only for the balance dues. Consequently, it is expected that the work load of DRTs would come down, which could justify the reduction of the Rs. 10 lakh limit under DRT Act to Rupees one lakh.

The SARFAESI Act, 2002 has conferred enormous powers on banks and financial institutions to enforce securities, without the intervention of the Court. The Act also provides for setting up of securitisation or reconstruction companies to whom banks and FIs can sell their financial assets for a price. These provisions have given a major boost to the recovery process of the banks and have helped them in reducing their NPAs. Although the Act provides for setting up of a computerised Central Registry for the registration of securitisation, reconstruction and security interest transactions, it has not been set up so far. Since all transactions creating security interests (covered by SARFAESI Act) involving amounts not less than Rupees one lakh will have to be registered with the Registry, once it is set up, it would help lenders to assess the quality of the security offered to them as collateral. The Panel is of the view that the Registry should be set up without delay.

The creation of equitable mortgage over immovable property does not get reflected in the Encumbrance Certificate issued by the registering authorities of the State Government as there is no registered deed while creating equitable mortgage, but it is created by deposit of title deeds. Several frauds are committed by using fake and forged title documents and availing multiple loans from various banks. The registration of transactions of creation of security interest by equitable mortgages with the Registry, would help lenders in such situations.

Another issue reported by the banks is in respect of DRTs granting stay orders when they propose to sell the securities under Section 13(4) of SARFAESI Act. Banks have demanded that a statutory provision, similar to a caveat under the Code of Civil Procedure, 1908, wherein the concerned banks/FIs would be heard before granting stay, is required. The SARFAESI Act has been enacted to empower the banks to enforce their security interest and sell their security without the intervention of the courts. With that objective in mind, Section 34 of the SARFAESI Act provides that civil courts shall not grant any injunction. Therefore, the granting of injunctions by DRTs is a matter of serious concern. The Panel feels that there is considerable force in the demand made by the banks and a suitable provision should be inserted into the SARFAESI Act to safeguard the interest of the lenders.

5.5.2 (b) Competition Issues

It is a well-accepted principle that subject matter should always determine the jurisdiction to avoid regulatory overlap. In this regard, it is relevant that the MRTP Act,1969 [Section 4(2)] had specifically excluded banks in relation to matters in respect of which specific provisions exist in the RBI Act, BR Act, SBI Act or Subsidiary Bank's Act.

The Competition (Amendment) Act, 2007, which has recently amended various provisions of the Competition Act, 2002, raises certain issues of serious concern. Section 21 A of the Competition Act provides for the Commission to make references to a statutory authority when the issue before it relates to an Act whose implementation is entrusted to that statutory authority. But it is observed that the opinion of the statutory authority in such cases has not been given any binding effect and the final decision has been left to the Commission. Going by the aforesaid principle, in respect of matters relating to banks, whose exclusive jurisdiction has been given to the Reserve Bank, it should have been left to the Reserve Bank to take the final decision in such matters and the opinion of the Commission could have been made an input for the Reserve Bank to decide. The Panel is of the view that the provisions of the

Competition Act, as amended, are likely to raise issues of regulatory overlap/conflict in future, and pose a serious problem to the financial sector.

Another area of concern is the Commission's power to regulate combinations. With the growing realisation among banks and financial institutions that consolidation is essential in the competitive scenario and necessary for their stable existence, the provisions of Competition Act are likely to become contentious. Under the provisions of Competition Act, every person or enterprise proposing to enter into a combination is required to give notice to the Commission before entering into a combination and wait for 210 days. Thus, the procedural requirements mandated under the Act as well as the wide powers conferred to the Commission even to nullify a combination, are likely to throw open issues of concern for banks and financial institutions. Since voluntary amalgamation of banks under Section 44A of BR Act, 1949 is at the instance of the concerned banks, it is apprehended that the aforesaid provisions may apply in such cases and consequently, it may become necessary for the banks to give notice of proposal of voluntary amalgamation under Section 44A of BR Act to the Commission and get the order of the Commission or wait for 210 days. The Reserve Bank may be able to consider giving sanction to the scheme of amalgamation only thereafter. This, apart from delaying the whole process, is also likely to raise regulatory conflicts. The position in the case of acquisition of business of other banks by SBI or its subsidiaries under Sections 35 and 38 respectively of SBI Act, 1955 and SBI (Subsidiary) Banks Act, 1955 is also not free from doubt. Since compulsory amalgamation under Section 45 of BR Act is not at the instance of the banks and the scheme after being sanctioned by the Central Government is laid before both the Houses of Parliament, a view can be taken that the aforesaid provisions of the Competition Act regulating combinations would not apply in such cases. The same view may also apply to amalgamations of nationalised banks under the schemes made by the government in exercise of its powers under Section 9(2) of the Nationalisation Acts 1970/1980. Considering the gravity of the matter and the repercussions, the Panel believes that it is necessary to seriously review the issue and if considered necessary, the Government should give the necessary exemption to banks under Section 54 of Competition Act.

5.5.2 (c) Disposal of Legal Suits

The assessment by the Advisory Panel on Institutions and Market Structure of the Indian insolvency and creditor's rights system shows that the provisions of the laws of the country are, in general, in compliance with the World Bank Principles for Effective Insolvency and Creditor Rights Systems. However, in terms of implementation there are significant delays. This is particularly evident in insolvency proceedings. One major area in which there are no clear legal provisions in respect of bank insolvency is the lack of a formal legal mechanism for sharing of information with other regulatory bodies and overseas regulators and the extent of co-operation between them. Further, an attempt should be made to reduce the long pendency of suits filed in respect of insolvency proceedings. The Companies (Second Amendment Act) 2002 which was aimed at speedier resolution of winding up proceedings is in abeyance. Enactment of

appropriate laws to ensure speedier insolvency resolution is necessary for development of the corporate debt (particularly the securitisation) markets.

5.5.2 (d) Payment and Settlement Systems

The Payment and Settlement systems serve as a backbone of the financial system of a country. The 'Core Principles for Systemically Important Payment Systems' published by the Committee for Payment and Settlement Systems (CPSS) of the Bank for International Settlements, states as its Core Principle 1, the need for having a well founded legal basis for payment systems under all relevant jurisdictions. The powers of the Reserve Bank to regulate and supervise the payment systems were limited, as the regulation making powers under Section 58 of the RBI Act, relate only to the regulation of clearing houses for banks and the regulation of funds-transfer through electronic means between banks/ financial institutions. Another area of concern was the legal validity of multilateral netting during insolvency and the systemic risks which it may pose.

The Payment and Settlements Systems Act, 2007, which has recently been brought into force, seeks to address these shortcomings. The Reserve Bank has been given wide regulatory and supervisory powers in respect of payment systems. This legislation also gives legal recognition to the netting procedure and settlement finality. This Act provides that, the insolvency of any participant in a payment system would not affect any settlement that has become final and irrevocable, and the system provider will have a right to appropriate any collaterals contributed by that participant towards the settlement of obligations in that system.

5.6 Liquidity Infrastructure

5.6.1 Backdrop

Active liquidity management is an integral part of the Reserve Bank's monetary operations. Until 1997-98, monetary policy in India used to be conducted with broad money (M3) as an intermediate target. The aim was to regulate money supply consistent with the expected growth of the economy and the projected level of inflation. Since 1998-99, the Reserve Bank has shifted over to a multiple indicator approach. In this approach, interest rates or rates of return in different markets-money, capital and government securities markets along with data on currency, credit extended by banks and financial institutions, the fiscal position, trade flows, capital flows, the inflation rate, the exchange rate, refinancing and transactions in foreign exchange are all examined along with output indicators.

5.6.2 Instruments of Liquidity Management

With the growing market orientation of the economy, there has also been a shift from direct instruments of monetary management to increasing reliance on indirect instruments. In the context of this shift and in line with international trends, the Reserve Bank has put in place a liquidity management framework. The Liquidity Adjustment Facility (LAF), introduced in June 2000, enables it to manage day-to-day liquidity or short term mismatches under varied financial market conditions to ensure stable conditions in the overnight money market. LAF operates through the reverse repo and repo auctions, thereby setting a corridor for the short term interest rate consistent with policy objectives. Open Market Operations (OMOs) through outright sale and purchase of securities are also an important tool. In view of the large stock of government securities in its portfolio, OMOs were used effectively by the Reserve Bank from the second half of the 1990s to 2003-04 to manage the impact of capital flows. However, in the context of sustained large capital flows, large scale OMOs led to a decline in its holdings. This and the legal restrictions on the Reserve Bank issuing its own paper became constraints on future sterilisation operations.

A new instrument, called the Market Stabilisation Scheme (MSS) was introduced in

April 2004, wherein dated securities/treasury bills are issued to absorb surplus liquidity. The scheme works by retaining the proceeds of auctions of treasury-bills and government securities in a separate identifiable MSS cash account on behalf of the Government. The amounts credited into the MSS cash account are appropriated only for the purpose of redemption and/or buy back of the treasury bills and/or dated securities issued under the MSS. These securities are otherwise indistinguishable from normal treasury bills and government dated securities in the secondary market. The payments for interest and discount on MSS securities are not made from the MSS Account, but shown in the Union budget and other related documents, transparently, and distinctly under separate sub-heads. The introduction of MSS has succeeded, in principle, in restoring LAF to its intended function of daily liquidity management. It has been unwound in times of low capital flows and greater liquidity needs and built up when excess capital flows could lead to excess domestic liquidity (Table 5.7).

As regards exchange rate management, the Reserve Bank has been following a policy that allows underlying demand and supply conditions to determine exchange rate movements over a period in an orderly way, while intervening to contain volatility. Nevertheless, international capital flows have made financial markets volatile as disturbances are quickly transmitted across markets.

Liquidity management is overseen by a Financial Markets Committee (FMC) in the Reserve Bank since 1997. It meets daily to review and analyse the liquidity and market conditions and evolve appropriate strategic actions.

5.6.3 Market Integration

With the progress of financial sector reforms, various segments of the money market are getting increasingly integrated. This is reflected in closer co-movement of rates in the various markets. The structure of returns across them has shown greater convergence after the introduction of LAF, differentiated by maturity, liquidity and risk of instruments (Chart 5.1).

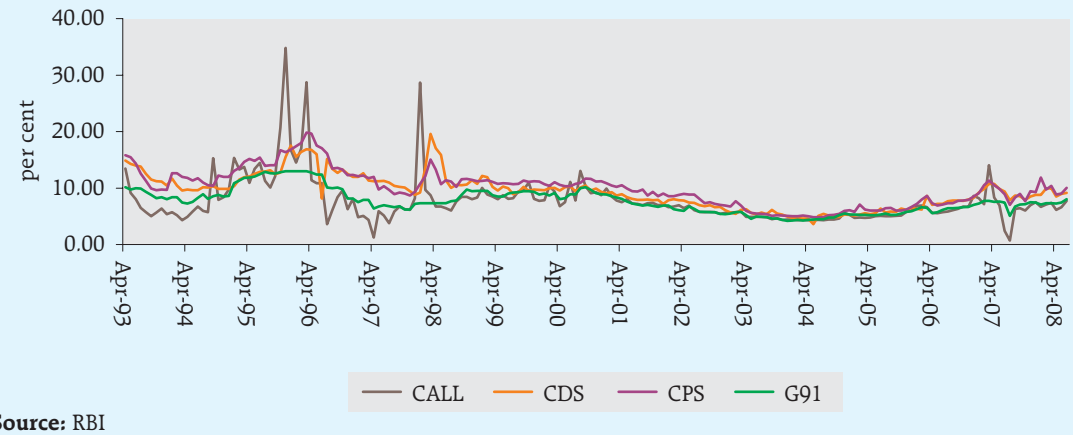
Table 5.7: Daily Average Liquidity Absorptions

(Amount in Rs. crore)

Year	MSS	LAF	Centre's Surplus with the RBI	Total (2 to 4)
1	2	3	4	5
2004-05	47,264	35,640	12,038	94,942
2005-06	60,240	11,100	25,820	97,160
2006-07	38,675	21,970	28,000	88,645
2007-08	1,30,229	4,742	28,211	1,63,182
2008-09*	1,61,526	-(4,897)	16,135	1,72,764

Note: Figures under LAF shows the net average absorption in different period
MSS figures are in outstanding face value
*For 2008-09, period from April 1, 2008 to January 31, 2009 has been considered.
Source: RBI

Chart 5.1 : Money Market Rates



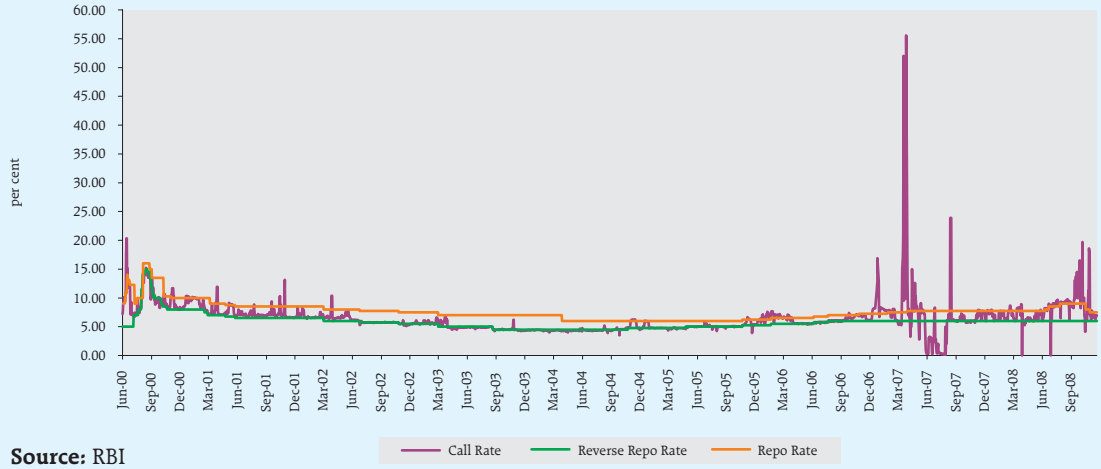
Source: RBI

5.6.4 Liquidity Infrastructure – Issues and Recommendations

5.6.4 (a) Friction in System Liquidity

Some friction in system liquidity continues. The movement of overnight rates at the end of each quarter due to advance tax payments and year-end considerations for banks has resulted in a significant volatility in overnight rates. In 2006-07, it breached the LAF determined corridor by a large margin (Chart 5.2). Large surplus cash balances of the government during the period accentuated the problem further. Conversely, there are times of excess liquidity when call rates operate at near-zero levels. Large swings in government cash balances with the Reserve Bank have implications for monetary management. Difficulties in predicting the government account arise from the uncertain flows of receipts and payments in the government account. As a result, the money markets, and in particular, the overnight segments, experience volatility. The Panel is of the view that there is a need to strengthen the management of government cash balances as well as the asset liability management of banks. It might be worthwhile to introduce auctions of

Chart 5.2 : LAF Corridor and the Call Rate



Source: RBI

Government's surplus balances with the Reserve Bank in a non-collateralised manner. This would also make available the government securities in the Reserve Bank's investment books for its own market operations. Other than a reduction in the volatility of overnight rates and leading to a more efficient money market, the Government could also expect a reasonable return on its idle cash balances.

5.6.4 (b) Volatility in Overnight Rates

A major conundrum is the high depth (in certain segments) coupled with low liquidity. This suggests shortcomings in systemic liquidity management. A large number of private and foreign banks tend to be dependent heavily on call money markets. Therefore, the high volatility of call money rates, as has been witnessed in the recent past, could have stability implications. Unlike in developed markets, it is technically possible for major players (lenders) in the money market to exert undue influence on the system. While the introduction of LAF has reduced volatility in overnight rates, there are still occasions, particularly at the end of the financial year (e.g. March 2007), when the LAF corridor was breached.

The management of overnight temporary liquidity is contingent on accurate liquidity forecasts. At present, this forecast is not precise. There is a need for skill development amongst market participants to assess their own liquidity requirements. At the same time, capacity-building on the part of the monetary authority to develop appropriate liquidity forecasting models is also necessary. This, together with improved government cash management practices, will ensure a better ability to forecast day-to-day liquidity swings.

5.6.4 (c) Limitations in LAF Operations

A fallout of the introduction of LAF has been the passive role adopted by some banks in managing their day-to-day liquidity positions. It is observed that often banks access the LAF window as the 'first resort', and not the last, and then arbitrage their positions across market segments like CBLO, call and market repo. This access to the LAF window as the first recourse raises questions regarding its efficacy as an instrument of liquidity management.

The operation of LAF is constrained by the availability of securities with the Reserve Bank when the liquidity has to be absorbed and by the availability of SLR surplus securities with the market participants when they have to avail of liquidity from the Reserve Bank. It has been observed in the recent past that as and when the system is short of liquidity the overnight non-collateralised call money rates swing towards and breaches the ceiling rate (the LAF Repo Rate). The differential between collateralised and non-collateralised money market rates (call money rates), depends on the shortage of liquidity and the surplus SLR securities available in the system. The scale of variation in volatility in overnight rates is also a function of the width of the overnight rate corridor. There may therefore be a case for moving towards a narrower corridor for overnight money market rates and eventually a shift to a single, overnight target rate on the lines of the Fed funds target rate in the US. This single target rate could be bound by a penal rate like the Discount Rate in the US through limited standing liquidity facilities that would be at rates that penalise participants who have not been able to manage their day-to-day liquidity

requirements efficiently. Such standing facilities to smoothen the money market rates in alignment with the policy rate should be seen as a fine-tuning at the margin.

Over time, there has been a depletion of stocks of government securities with the Reserve Bank and commercial banks. One option could be a reduction in statutory pre-emptions in the form of SLR to free some stock as collateral for managing liquidity to the extent that it is not inconsistent with the monetary policy stance. This would require a phased reduction in the borrowing requirements of the Central and State Governments, which could be achieved through better fiscal-monetary coordination. The other option could be to increase the types of instruments that can act as collaterals. A beginning has been made by deciding to accept the State Development Loans (SDL) as collateral for LAF with a haircut of 10 per cent. In future, it may be necessary to consider accepting collaterals such as high quality AAA-rated paper, as is the case in some of the other central banks. However, further institutional progress in the form of better transparency, delivery and settlement procedures etc. in respect of the corporate bond market is necessary before this can be considered. The repo market should also be opened up for corporate bonds, subject to prudential safeguards. The haircuts here should be in alignment with the capital risk weights recommended from time to time for them.

During September 2004 to August 2008, repo/reverse repo rates were increased by 300/150 basis points and the CRR as an instrument of monetary management reactivated and increased in phases by 400 basis points. This has been done mainly to sterilise excess liquidity besides anchoring inflation expectations. The bulk of the burden of sterilisation has been borne by the government, with government securities, sold under MSS supplemented by hikes in CRR. The latter has the potential to impact the banks' bottom lines adversely as no interest is paid on them since April 2007. In a market-oriented financial system, a high CRR, when unremunerated, causes distortions in term structure of interest rates. However the quantum of the impact is dependent on several factors, particularly, vibrancy of the money market and the ability of banks to pass on the burden to the customers. Subsequently, on a review of liquidity conditions, the repo rate was reduced by 350 basis points and CRR was reduced by 400 basis points by January 2009.

5.6.4 (d) Introduction of a Term Liquidity Facility

Liquidity management has assumed a new and larger dimension of sterilisation operations. In this context, the use of CRR, a blunt instrument, for such purposes with the objective of burden sharing, leads to banks facing difficulties in accessing liquidity from the market in times of temporary tightness arising out of skewed supply. In the absence of a comfort of any short term liquidity window from the central bank, in a range of about 15 days to three months, banks find it difficult to lend short term. As a result, there have been instances where the liquidity at the short end getting dried up causing call rates and short term deposit rates to witness steep hikes, even under overall benign liquidity conditions. In a situation of uncertainty, lenders in the market virtually disappear and banks tend to resort to high cost funding through bulk short term deposits.

The Panel observed that the Reserve Bank had been conducting longer term LAF operations till end October 2004. But the facility was discontinued in view of nil/negligible amount tendered in longer term LAF operations as they were conducted at the same rate as overnight LAF operations, but did not provide the same flexibility to participants as overnight LAF (Box 5.5).

The Panel concluded that the present LAF, by itself, does not adequately address the

Box 5.5 Term Liquidity Facility

The Reserve Bank while traditionally having used CRR for absorption of liquidity had *inter alia* been using various types of standing refinance facilities to inject liquidity on a temporary and purely short term basis. Such refinance facilities were provided against the collateral of loan assets and government securities subject to certain moderate limits and at relatively higher rate than the Bank Rate. Currently scheduled commercial banks can avail of standing facility from the Reserve Bank of India in the form of export credit refinance which is fixed at 50 per cent of the eligible export credit outstanding. Stand-alone Primary Dealers can avail of standing facility in the form of liquidity support. For the export credit refinance, bills of exchange against eligible outstanding export credit are eligible collateral, while for liquidity support to primary dealers, central government securities are eligible collateral. By law the central bank can purchase, sell and rediscount bills of exchange and promissory notes drawn on and payable in India and arising out of bona fide commercial or trade transactions. Options exist under the details of this broad direction to make additional collateral eligible if the central bank so desires. With the gradual shift to indirect instruments, such general facilities have practically been withdrawn.

In this environment, non-availability of government securities as collateral creates situations of tightness even in the interbank market causing the breach of interest rate corridor. Secondly, the perceived supervisory frowning upon the practice of a bank being both a lender and borrower in the short term money market particularly the overnight market, make the dispersion of even the available liquidity difficult among surplus and deficit banks freely.

Source: RBI

liquidity needs of the banking system in periods of market tightness. There is no window available to provide liquidity to the market on a term basis except through emergency lending. An appropriately designed term liquidity facility can provide powerful incentives to develop the term money market. The Panel believes that there is a need for opening a term liquidity window subject to the usual prudential safeguards*. It recommends the reintroduction of a general refinance facility against loan assets and government securities to commercial banks, subject to limits, and at a spread of about 100 bps above the repo rate, as a standing term liquidity facility. This facility could continue as an interim measure till such time the CRR remains above three percent and SLR above 20 percent.

The Panel believes that while this facility may not be used by banks in the normal course, in times of tightness caused by skewed supply conditions, it will enable a better distribution of liquidity in the market, thus easing pressure on interest rates. This facility should ideally be operative at the initiative of the Reserve Bank during such periods. It should be based on forecasts of the size and durability of bank reserve variations, and use market determined prices. Standardised products can also help develop market bench-marks. Secondly, banks should have the freedom to operate two-way in the short term money market as in the case of government securities and foreign exchange markets, so that they can freely lend and borrow in the money market, including in the call money market. This will enable market-clearing.

* The Panel notes that a term repo facility of Rs. 60,000 crore for NBFCs and mutual funds has been extended under LAF.

5.6.4 (e) Impact of Capital Flows

Liquidity management has been rendered complex by large capital flows witnessed in recent years. Excess supply conditions have dominated the foreign exchange market since 2003-04 till end-2007 due to a surge in capital inflows along with improvements in current account balance - not just in terms of the portfolio flows into and out of the equity markets but also in terms of non portfolio flows. The major categories of capital flows other than Foreign Institutional Investor (FII) investments in equity markets are primarily Foreign Direct Investment (FDI) and External Commercial Borrowing (ECB)/Foreign Currency Convertible Bond (FCCB). While FII flows are driven by both domestic and external events influencing different cross-border returns, the ECB/FCCB flows are likely to be more sensitive to the interest rate differential and to some extent the relative ease with which funds can be mobilised in the external markets. The present regulations on capital account restrict the FIIs exposure to the interest rate markets and hence most of the flows that are looking out for cheaper sources of funds emanate from Indian corporate borrowers. This had resulted in the process of intermediation to be relocated outside the domestic markets with the domestic market participants having to manage the exchange rate risks also. The de-bottlenecking of various regulations is also seeing increasing FDI flows into the country and this also has an implication on the exchange rates. The country had also seen inflationary pressures as supply of goods lag behind the increasing demand. While the real sector had to deal with achieving the demand supply balance, the financial services sector in general and the financial markets in particular had to deal with enhancing the ability of the market participants to efficiently manage both the exchange rate and interest rate risks (Table 5.8).

The main impact of the global financial crisis has been felt in the significant change in the capital account for the current financial year 2008-09. There has been a reduction in the portfolio investments made by the foreign institutional investors though the investments through the Foreign Direct Investment route has

Table 5.8: India's Capital Flows: Composition

(Per cent to total)

Indicators/Year	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09*
1	2	3	4	5	6	7
Total capital inflows (net) (USD billion)	16.7	28.0	25.5	45.8	110.0	20.0
1. Non-debt creating inflows	**93.7**	**54.6**	**84.0**	**63.3**	**46.6**	**45.5**
a) Foreign direct investment	25.8	21.4	34.9	48.0	16.1	73.0
b) Portfolio investment	67.9	33.2	49.1	15.3	30.5	-(27.5)
2. Debt Creating inflows	**-(6.0)**	**35.2**	**41.0**	**63.4**	**43.5**	42.0
a) External assistance	-(16.5)	7.2	6.9	3.9	2.2	4.5
b) External commercial borrowings	-(17.5)	19.4	10.8	35.9	23.1	16.5
c) Short- term credits	8.5	13.5	14.5	14.4	18.3	16.0
d) NRI deposits	21.8	-(3.4)	11.0	9.4	0.0	5.5
e) Rupee debt service	-(2.2)	-(1.5)	-(2.2)	-(0.4)	-(0.1)	-(0.5)
3. Other capital	**12.3**	**10.2**	**-(25.0)**	**-(26.7)**	**10.0**	**12.5**
Total (1 to 3)	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

* Upto September 08, 2009.
Source : RBI

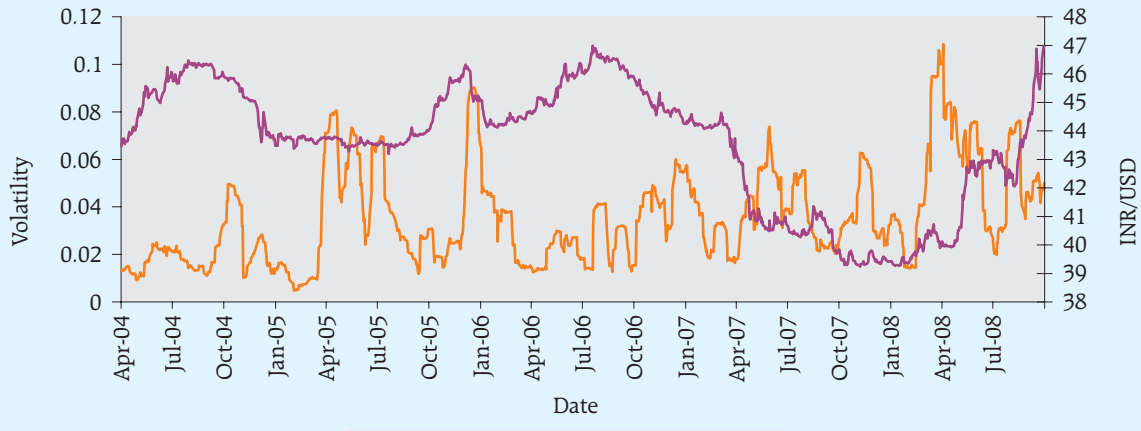
shown an accelerated growth. The net outflow of investments by the FIIs has been about USD 6.4 billion in April- September 2008 as against a net inflow of USD 15.5 billion during the same period last year. There has also been a significant reduction in the external commercial borrowings of Indian companies which can be mainly attributed to the global financial turmoil though some of the policy measures of the Reserve Bank taken earlier have also had an impact. With a relatively high trade deficit and the outflow of portfolio capital, there has also been pressure on the exchange rate of the rupee in recent months. The maximum impact of the crisis in the Indian context has been felt in the equity markets where there has been a significant reduction in the major indices owing to the portfolio outflows.

In the context of large capital movements, more attention needs to be paid to the macro economic implications of its volatility. In response the increased capital flows and economic downturn in the USA the depreciating trend in INR/USD was evident from early 2007 till April 2008. There was a sharp depreciation in USD *vis-à-vis* the Rupee, to the extent of 9.67 per cent. The position reversed very significantly after April 2008. The Rupee depreciated vis-à-vis USD by 17.51 per cent between April 2008 and September 2008 (Chart 5.3). There is a need to examine the likely implications of the excessive inflows and outflows on monetary operations.

(I) Financial Integrity

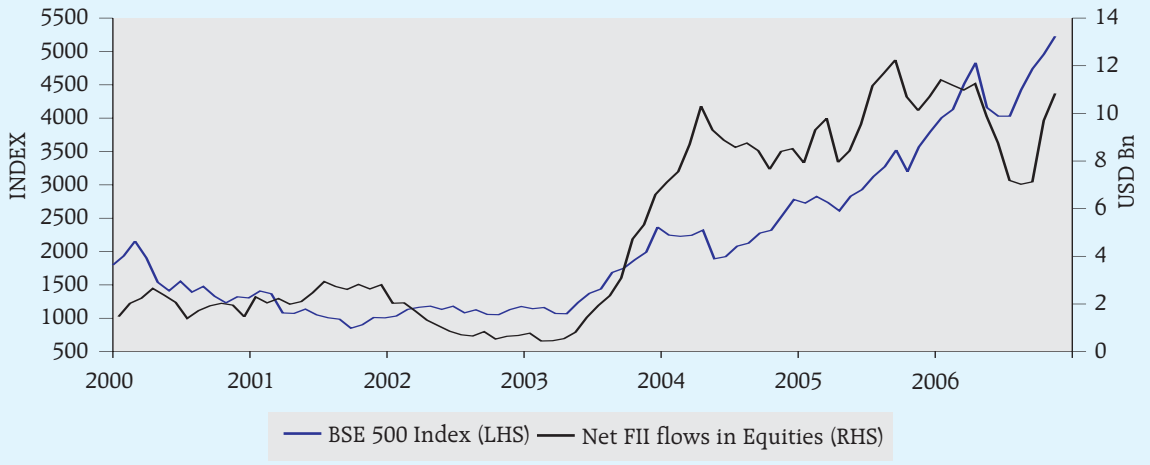
In order to maintain the financial integrity of the markets, suitable measures to address growing international concerns about the origin and source of investment funds should be taken. Such measures would enhance the confidence of the foreign investors and regulators alike. Consistent with the principle of hierarchy of capital flows, India has been making efforts to encourage more inflows through FDI and enhance the quality of portfolio flows by strict adherence to the 'know your

Chart 5.3 INR/USD MARKET



Source: RBI

Chart 5.4 Stock Markets are Directly Fuelled by FII Inflows



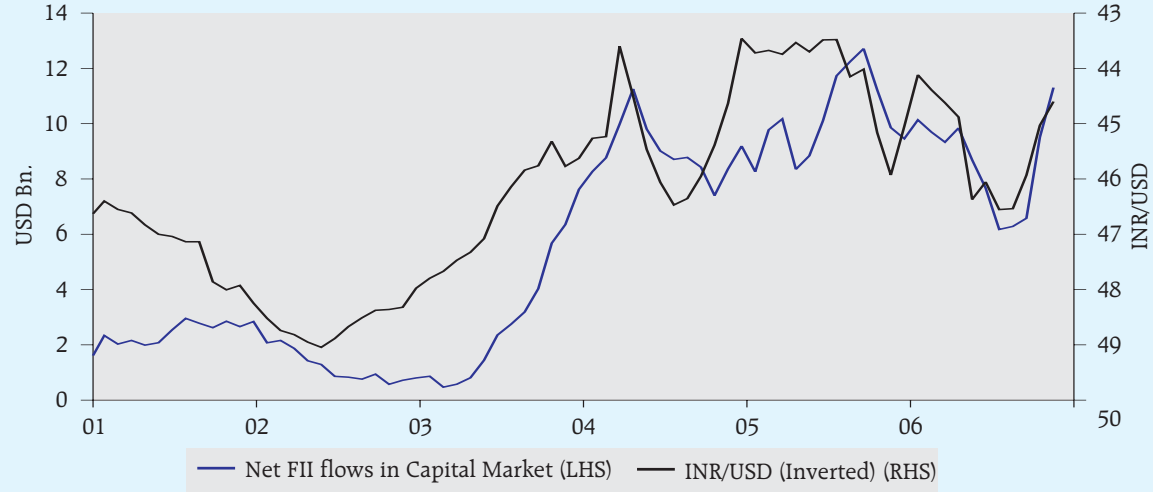
Source: Mecklai Financial & Commercial Services Ltd - 2006

investor' principle. The primary concern is the amount of investments through the participatory note (PN) route by the FIIs (31.4 per cent of the total FII investments in India was through the PN route) which is an anonymous route and compromises on the due FATF recommendation no. 5 on due diligence.

(II) Volatility in Foreign Exchange Market

Between 2003 and 2007, heavy inflows have made the Reserve Bank more active in the foreign exchange market, compelling it to release rupees in exchange for dollars. This has added to inflationary pressures. With the vast bulk of FII inflows focused on the equity markets, the stock market indices are very highly correlated with these flows. It is often noted that volatility in the Indian stock market, triggers a sell-off in Indian stocks, which in turn increases exchange rate volatility. An analysis of the movement of the BSE-500 index and FII inflows shows that the FII investments have contributed towards increasing volatility in the stock market due to their easy entry/exit options. The correlation between FII inflows and the INR/USD exchange rate during the period 2001 to 2006 was more than 85 per cent (Chart 5.4 & Chart 5.5).

Chart 5.5 INR/USD Movement During Same Period



Source: Mecklai Financial & Commercial Services Ltd - 2006

The Reserve Bank's intervention has generally been focussed on reducing volatility in the Indian foreign exchange market and such interventions have diminished during the last three years as a percentage of market turnover. The interventions have nevertheless enlarged the Foreign Currency Assets (FCA) continuously. In order to offset the effect of this increase on the monetary base, the Reserve Bank has been continuously mopping up the excess liquidity in varying degrees from the system through open market operation (OMO, LAF & MSS). (Table 5.9). The position had reversed in 2008-09. The Reserve Bank response to the shortage of liquidity has been discussed in section III below.

(III) The Reserve Bank's Response to Financial Crisis

The global financial turmoil has had ripple effects on the financial sector in India. The major risk to the Indian economy has arisen from the reversal of foreign portfolio flows which has had its effect mainly in the equity market. There has also been an after-effect of this in the domestic foreign exchange market and an overall squeeze in liquidity. The overall risk aversion prevalent in the global financial markets, particularly the frozen money markets, has raised the cost of funds of Indian companies and has also made access to these funds difficult.

The corporate sector in India had, in the recent past raised significant amount of resources from the global financial markets for funding their domestic as well as global acquisitions and their capacity-addition plans. With the down-turn in the capital markets, these corporates will have to fund their plans from the domestic sources, which could put pressure on liquidity and interest rates.

In response to the global crisis, the Reserve Bank has taken a number of steps to augment the domestic and foreign exchange liquidity and credit flow (Box 5.6)

Table 5.9 : Extent of RBI Intervention in Foreign Exchange Market

	RBI Intervention in Foreign exchange market (USD billion)**	Foreign exchange Market Turnover (USD billion)	Column 2 over 3 (in per cent)
1*	2	3	4
2002-03	45.6	1,560	2.9
2003-04	80.4	2,118	3.8
2004-05	41.9	2,892	1.4
2005-06	22.3	4,404	0.5
2006-07	26.8	6,571	0.4
2007-08	81.2	12,305	0.7

*Refers to data for April-March of that financial year.
** The figure has been arrived at by adding the absolute value of purchases and sales of foreign currency (in USD terms) by RBI.
Source: RBI

Box 5.6 : The Reserve Bank's Response to the Global Financial Crisis

In its Mid-Term Review of Monetary Policy on October 24, 2008, the Reserve Bank of India indicated that it will closely and continuously monitor the liquidity and monetary situation and respond swiftly and effectively to the impact of the global developments on Indian financial markets. The Reserve Bank also indicated that the challenge for the conduct of monetary policy is to strike an optimal balance among preserving financial stability, maintaining price stability and sustaining the growth momentum.

In response to emerging global developments, the Reserve Bank has taken a number of measures since mid-September 2008. The aim of these measures was to augment domestic and foreign exchange liquidity and to enable banks to continue to lend for productive purpose while maintaining credit quality so as to sustain the growth momentum. The following is a synopsis of the important measures taken:

Rupee Liquidity

1. Gradual reduction in CRR by 400 basis points.
2. Reduction in SLR by 100 basis points.
3. Gradual reduction in Repo under LAF by 350 basis points.
4. Gradual reduction in Reverse Repo under LAF by 200 basis points.
5. Term repo facility of Rs.60,000 crore for NBFCs and MFs under LAF.
6. Agricultural debt waiver of Rs.25,000 crore.
7. Special refinance facilities upto 90 days with a limit for SCBs upto 1.5 per cent of NDTL.
8. Buy back of MSS.
9. Prescribed interest rate as applicable to post-shipment rupee export credit (not exceeding BPLR (-) 2.5 percentage point) extended to overdue bills upto 180 days.

Foreign Exchange Liquidity

1. Sale of US dollars.
2. Special Market Operations to meet public sector oil companies' requirements against oil bonds.
3. Enhancing interest rate ceiling on FCNR(B) and NR(E)RA deposit accounts.
4. Enhancement of ECB – quantum USD 500 million per borrower per year – cost ceiling enhanced 200/300/500 bps over LIBOR.
5. NBFCs-ND-SI and NHB – permitted to raise short term foreign currency borrowings.
6. Buy-back/pre-payment of FCCBs.
7. Extension of period of entitlement of first slab of pre-shipment rupee export credit upto 270 270 days.
8. Eligible ECR limit to 50 per cent of outstanding export credit.
9. It has been decided, in consultation with the Government of India, to raise the ceiling rate on export credit in foreign currency to LIBOR + 350 bps subject to the condition that banks will not levy any other charges. Correspondingly, the ceiling interest rate on the lines of credit with overseas banks has also been increased from 6 months LIBOR/EURO LIBOR/ EURIBOR + 75 bps to six months LIBOR/EURO LIBOR/EURIBOR + 150 bps from February 5, 2009.

Prudential Measures

1. Advance allocation of amounts from SCBs to SIDBI and NHB for micro and small enterprises and housing. Refinance facility to NHB, SIDBI and EXIM Bank.
2. Counter-cyclical prudential measure – provisioning requirement – reduction of all standard assets provisioning to 0.4 per cent.
3. Reduction of risk weights – all unrated claims on corporates by 100 basis points.
4. Loans granted by banks to HFCs for on-lending for housing upto Rs. 20 lakh per dwelling unit classified as priority sector.
5. SPV for addressing temporary liquidity constraints of NBFC-ND-SIs.

Source : Reserve Bank of India.

(IV) Unhedged Open Position of Corporates

Apart from increased exchange rate flexibility, phased liberalisation in relation to the current and capital accounts could result in the management of excess capital flows with minimal concomitant monetary intervention. This would result in significant changes in market behaviour because the overriding perception is that exchange rate management policies are biased towards keeping the domestic

currency competitive for exporters. This has resulted in businesses that do not have a natural currency hedge maintaining unhedged positions and not adopting prudent risk-management practices. This could impact corporate profitability in case the exchange rate turns adverse. This is in spite of a fairly well-developed authorised dealer network offering products that can mitigate exchange rate risks.

The Panel is of the view that market participants should employ better risk-management practices. Monitoring of unhedged position of corporates by banks need to be strengthened, since the currency risk has the potential to transform into credit risk. It would be useful if corporates are mandated to maintain certain foreign exchange balances to offset their foreign exchange liabilities. This discipline at the private sector level should be enforced, even if external foreign exchange sustainability has improved with higher foreign exchange reserves recently.

(V) Reserve Adequacy

Another important feature is the adoption of prudent reserve management policies. The large capital flows of recent years are reflected in the large accumulation of reserves (Table 5.10), and the resulting improvement in external sustainability (Table 5.11).

Indicators of reserve adequacy suggest that India's current level of reserves are adequate as a cushion against potential disruptions to trade and current transactions as well as external debt servicing obligations. Reserve adequacy has to be viewed in a dynamic sense, taking into account the possibilities of sudden reversals in external flows. The high level of foreign exchange reserves have come to good use very recently, when there had been a reversal in capital flows.

During the last 15 years, the Indian economy has opened up considerably, while simultaneously reforming the financial sector, improving its fundamentals, and creating built-

Table 5.10 : India's Foreign Exchange Reserves

As at end-March	FCA	GOLD	SDRs	RTP	Total Reserves
1	2	3	4	5	6
1991-92	5,631	3,499	90	..	9,220
1996-97	22,367	4,054	2	..	26,423
2000-01	39,554	2,725	2	..	42,281
2001-02	51,049	3,047	10	..	54,106
2002-03	71,890	3,534	4	672	76,100
2003-04	1,07,448	4,198	2	1,311	1,12,959
2004-05	1,35,571	4,500	5	1,438	1,41,514
2005-06	1,45,108	5,755	3	756	1,51,622
2006-07	1,91,924	6,784	2	469	1,99,179
2007-08	2,99,230	10,039	18	436	3,09,723

Note : Amount in USD million
Source: RBI

Table 5.11 : External Sustainability Indicators								
Indicators \ Year	**1990-91**	**1995-96**	**2000-01**	**2003-04**	**2004-04**	**2005-06**	**2006-07**	**2007-08**
1	2	3	4	5	6	7	8	9
Current Account Deficit to GDP (per cent)	-(3.0)	-(1.6)	-(0.6)	2.3	-(0.4)	-(1.2)	-(1.1)	-(1.5)
External Debt to GDP (per cent)	28.7	27.0	22.5	17.8	18.5	17.2	17.8	18.7
Foreign exchange Reserves (USD billion)	5.8	21.7	42.3	113.0	141.5	151.6	199.2	309.7
Net Foreign Exchange Assets to Currency in Circulation Ratio (per cent)	7.9	47.7	84.5	142.6	160.9	150.3	165.9	209.2
Imports cover of Reserves (months)	2.5	6.0	8.8	16.9	14.3	11.6	12.5	15.0
Short-Term Debt and Portfolio Stock to Reserves (per cent)	146.6	70.0	57.0	35.2	43.9	50.4	45.4	44.4

Source: RBI

in measures to ensure financial stability. The overall approach has imparted enough resilience to withstand major global risks.

(VI) Global Imbalance

Recognising the growing influence of cross-currencies on the exchange rate, disorderly adjustments of current global imbalances on the exchange rate of major currencies, and the second round impact on the rupee, assume relevance. Though India has not directly contributed to the global imbalances, the current financial crisis could result in a disorderly unwinding of global imbalances, which is likely to have global ramifications and indirectly affect the Indian economy. Thus, the speed at which the US current account ultimately returns towards balance, the triggers that drive that adjustment, and the way in which the burden of adjustment is allocated across the rest of the world, have enormous implications for the global exchange rates. Any reversal of global capital flows from emerging and developing economies in the case of a realignment of interest rates and slow investment growth on account of higher interest rates, with the possible tightening of the monetary policy stance by major central banks, remain a major downside risk. The Panel therefore, thinks that the significant risk arising out of a sudden unwinding of positions in relation to US deficits, China's currency regime, as also increase in carry-trade in the Japanese yen, could be a source of risk to financial stability. Though the exposures of banks, corporates and households in India to the external sector are not significant, there is a need to be alert to unforeseen domestic and global shocks and pro-actively manage the risks.

5.7 Safety Net Issues – Deposit Insurance

5.7.1 The Current Situation

There are safety nets in the banking system that act as instruments for dissipating crises. One such instrument is emergency liquidity support. In very rare and exceptional circumstances, when a bank faces a sudden and unforeseen liquidity problem, the Reserve Bank has, at its discretion, extended liquidity support to the bank.

Another such instrument is the provision of safety net in the form of deposit insurance (DI). Such safety net in India is provided by the Deposit Insurance and Credit Guarantee

Corporation (DICGC), a wholly owned subsidiary of the Reserve Bank. DICGC has been extending insurance cover to small depositors with an objective of maintaining the confidence of small investors in the banking system of the country as also promoting financial stability. The functions of the DICGC are governed by the provisions of 'The Deposit Insurance and Credit Guarantee Corporation Act, 1961' (DICGC Act) and 'The Deposit Insurance and Credit Guarantee Corporation General Regulations, 1961' framed by the Reserve Bank in exercise of the powers conferred by sub-section (3) of Section 50 of the said Act.

The role of deposit insurance (DI) as a policy for prevention of bank runs has been widely documented. Two concerns have been raised. On one hand, it has been argued that its existence raises the possibility of moral hazard, with limited incentives for depositors to monitor the risk profile of the bank. On the other hand, it is contended that bank managers might be willing to assume high risks since, in the event of a failure of the bank, they have only a very limited liability. The challenge is to develop a scheme that optimises this trade-off.

In view of the special role of banks, safety net arrangements are often provided by governments with the public policy purpose of promoting economic growth with financial stability. While the nature of these arrangements can assume different forms, they typically include some combination of the following:

- bank access to a lender of last resort;
- final, riskless settlement of payment system transactions;
- prudential supervision of banks; and deposit insurance.

In the Indian context, all of these functions are presently vested with the Reserve Bank.

Deposit insurance is mandatory and covers all banks (commercial/co-operative/RRBs/LABs)[80]. All deposits except deposits of foreign governments, deposits of Central/State Governments, inter-bank deposits, deposits held abroad and deposits specifically exempted by DICGC with prior approval of the Reserve Bank are covered. The amount of coverage is limited to Rupees one lakh and extends to deposits held in the same right and in the same capacity. Given the present limit, as much as 93 per cent of deposit accounts (79 per cent in 1961) and 60 per cent of assessable deposits (23 per cent in 1961) are fully protected as on March 2008[81]. The coverage limit is roughly 2.4 times the per capita GDP as on March 2008. A profile of the deposit insurance scheme in India *vis-à-vis* the global position is presented in Table 5.12.

[80] Deposit insurance (DI) is not applicable to co-operative banks where the Cooperative Societies Act under which they are registered do not comply with the provisions of Section 2 (gg) of the DICGC Act, 1961. Extension of the scheme to co-operative banks in Meghalaya and 3 Union Territories (Chandigarh, Lakshadweep and Dadra and Nagar Haveli) is pending as the concerned State Governments are yet to introduce necessary legislative changes in their respective Co-operative Societies Acts. There are no co-operative banks at present in Lakshadweep and Dadra and Nagar Haveli.

[81] Assessable deposits is total deposits less (a) deposits of foreign government, (b) deposits of Central/State Government, (c) inter-bank deposits and (d) deposits held abroad.

Table 5.12: Features of Deposit Insurance Scheme

Feature	India	European Union	US	Global position***
1	2	3	4	5
Explicit	Yes	Yes	Yes	
Coverage limit	USD 2,288*	USD 25,823**	USD 1,00,000	3 times per capita GDP
Co-insurance	No	10 per cent	No	17
Coverage of FC deposits	Yes	Can be excluded	Yes	48
Coverage of inter-bank deposits	No	No	Yes	18
Source of Funding	Joint	Not regulated	Joint	Joint: 51 Private: 15 Public:1 Not available for1 country
Administration	Public	Not regulated	Public	Joint: 24 Public: 33 Private: 11
Membership	Compulsory	Compulsory	Compulsory	55
Premium levied (per cent of assessable deposits)	0.10	Varies markedly	0.00-0.27	58
Risk-adjusted premium	No	Not regulated	Yes	31

Joint: public *plus* private
* USD1=Rs.39.6;
** USD 1= Euro 0.708;
*** based on 68 countries
Source: Beck (2000), DICGC

The premium is charged on a flat-rate basis. It is currently 10 paise per Rs.100 of assessable deposits (earlier it was 5 paise per Rs.100 of assessable deposits till 2003-04 and thereafter, 8 paise per Rs.100 of assessable deposits for 2004-05). There is a statutory ceiling on the premium at 15 paise per Rs.100 of assessable deposits. This flat-rate premium, along with the mandatory nature of the deposit insurance scheme, poses the issue of moral hazard, inasmuch as banks can over-extend the risk profile of their lending portfolio beyond prudential limits.

The DICGC maintains three funds: the Deposit Insurance Fund (DIF), built from the premium received from insured banks, coupon received from investment in Central Government securities and small amount of recoveries made by the adjudicator/ administrator/transferee banks; the Credit Guarantee Fund (CGF), built from the guarantee fees received from the credit institutions and the coupon income received from investments in central government securities; and, the General Fund (GF), built from capital amounting to Rs.50 crore which is fully paid-up by the Reserve Bank and the coupon income received from investment in the central government securities.

The DICGC Act stipulates that the investment of surplus funds can only be in central government securities (Section 25 of DICGC Act, 1961). The cumulative size of the fund balances over the period 1993-2006 is depicted in Table 5.13.

5.7.2 Flat Rate Premium Versus Risk Related Premium

Juxtaposing the trend in claim settlement by the DICGC over the last five years separately

Table 5.13: Position of Various Funds of DICGC

(Amount in Rs. crore)

Year/Fund name	DIF	CGF	General Fund
1	2	3	4
1992-93	222	0	13
1997-98	1,773	0	17
1999-00	2,876	1,140	17
2000-01	3,205	1,133	18
2001-02	3,687	1,262	20
2002-03	4,683	1,394	23
2003-04	5,037	1,511	25
2004-05	6,943	250	26
2005-06	8,077	345	74
2006-07	9,768	349	70
2007-08	11,809	367	164

Source: DICGC

in respect of commercial and co-operative banks, with the premium received (Table 5.14) suggests a significant element of cross-subsidisation in the process.

Following from the earlier observation, there is a statutory ceiling at present on the premium (15 paise per Rs.100)[82] of assessable deposits, which can act as an impediment in the efforts to strengthen the DIF. The raising of the premium to 8 paise from 2004-05 and further to 10 paise per Rs.100 of assessable deposits from 2005-06, has enabled the augmentation of the DIF. However, as the trends in claims settlement indicate, the costs of such settlement have been increasing over time. There is therefore a need to explore the possibility of introducing a risk-based premium, backed by necessary legislative amendments. Risk-based premia may discourage excessive risk-taking by insured banks, motivate them to improve governance, and address the issue of cross-subsidisation implicit in the current system. A brief description of country practices across emerging/developed/transition economies which have risk-based insurance premium is presented in Table 5.15.

Certain problems in switching over to risk-based premia also need to be recognised. The first is being able to accurately forecast the degree of risk the bank places on its fund. The risk premia imposed also need to be based on objective criteria. Two popular candidates for inclusion in the calculation of bank's risk are CRAR and supervisory rating. The problem with this approach is that CRAR tends to be a lagged indicator of a bank's condition. Second, although supervisory ratings are confidential in most countries, they can be revealed if the bank's annual accounts report the premium the bank is paying. An alternative could be to charge flat-rate premia on risk-adjusted assets, so that banks with less risky assets pay less for their insurance (*e.g.*, Norway, Poland, Germany). Nonetheless, the benefits of risk adjusted premia come with certain costs such as higher operating costs in measuring the risk level of financial institutions and highly competent human resources. More importantly, if premia are to precisely represent a bank's risk, they could become prohibitively expensive for weak institutions. Therefore, although there is a strong trend towards risk adjusted premiums, fixed rate premiums are not without advantages.

In India, certain issues need to be kept in mind before switching over to risk-related

[82] Section 15 of DICGC Act, 1961

Table 5.14: Trend in Claim Settlement and Premium Received

(Amount in Rs. crore)

Year	Claims settlement			
	Commercial banks	Cooperative banks	Total	Share of Commercial banks (per cent)
1	2	3	4	5
2001-02	0.03	414	414	0.007
2002-03	100	86	186	53.7
2003-04	..	181	181	0.0
2004-05	..	440	440	0.0
2005-06	..	565	565	0.0
2006-07	6	539	545	1.0
2007-08	..	161	161	0.0
Total: 2002-08	**106**	**2,386**	**2,492**	**4.25**
Premium received				
2001-02	556	79	635	87.6
2002-03	623	84	707	88.1
2003-04	684	86	770	88.8
2004-05	1,212	143	1,355	89.5
2005-06	1,784	190	1,974	90.4
2006-07	2,116	205	2,321	91.2
2007-08	2,622	222	2,844	92.2
Total: 2002-08	**9,597**	**1,009**	**10,606**	**90.49**

Source: DICGC

premia. Firstly, systemic risks posed by big banks and their conglomerates need to be considered. Secondly, the supervisory system for the banking sector as a whole needs to stabilise and be similar across the sector. Finally, the banking sector is still evolving, with the consolidation process underway in certain segments. For instance, in regional rural banks segment, the Government has initiated state-level amalgamation to enable them to function in a competitive environment more effectively by taking advantage of economies of scale and reductions in transactions costs. Similarly, the District Central Co-operative Banks and State Co-operative Banks are undergoing structural change as a result of the recommendations made by the Vaidyanathan Committee. The Panel therefore suggests that legislative amendments to raise the ceiling on flat-rate premium in the interim may be examined.

5.7.3 Deposit Insurance Fund

A deposit insurance fund can be built and maintained in at least two ways. One way is to employ a steady premium rate over a long period. Alternatively the premium system can be designed to maintain a target reserve ratio or range, which is sufficient to cover the potential losses of the insurer under normal circumstances. Several factors need to be taken into account for the target reserve ratio, such as the number and size of banks; the liabilities of member banks and the risk exposure of the insurer to them; the likelihood of failures; and the characteristics of losses typically experienced by the insurer. There is no scientific method to arrive at the right fund size and no deposit insurer (DI) with a target fund has a model to show how they have arrived at the designated reserve ratio (DRR) or target fund.

Table 5.15: Risk-Adjusted Premiums – Cross-County Experience

Country	Fund target as per cent of deposits	Actual fund as per cent of deposits	Assessment base	Basis for risk-adjusted premium
1	2	3	4	5
US	1.15-1.5 per cent of insured deposits	1.4 per cent	Domestic deposits	Capital and CAMELS
Norway	1.5 per cent deposits + 0.5 per cent risk weighted assets	—	Risk weighted assets and total deposits	Risk weighted assets
Taiwan Province of China	< 5 per cent of insured deposits	0.3 per cent of insured deposits	Covered deposits	9 categories reflecting CRAR and rating on early warning system
India	1.5 per cent proposed by Working Group (1999)	0.74 per cent	Assessable deposits*	—
Poland	0.4 per cent of deposits	1.8 per cent of insured deposits	Deposits, also risk-adjusted assets	Risk weighted assets
Canada	No	C USD 500mn	Covered deposits	Capital adequacy, profitability, asset concentration, regulatory rating (quantitative) and adherence to standards (qualitative)
Sweden	2.5 per cent of deposits	..	Covered deposits	From 60 per cent-140 per cent of base, depending on CRAR
Argentina	5 per cent of total deposits	0.1 per cent of total deposits (Dec 1998)	Insurable deposits	Formula that includes: Provisions, CRAR, CAMEL and risk assets

*excludes deposits from foreign Government, deposits of Central/State Government, inter-bank deposits and deposits held abroad

Source: Garcia, G. (2000): Deposit Insurance: Actual and Good Practices, *IMF Occasional Paper* No. 179.

Instead of looking at fund size, containing the loss percentage to a stipulated minimum can also be explored. In any case, irrespective of the fund size, there is always the possibility that the need for funds can surpass resources, especially in a crisis. Deposit insurers usually fill the resource gap by borrowing either from the central bank or the Government directly. As no capital adequacy has been prescribed for DICGC, the Capoor Committee had recommended a DRR of 2 per cent. This was later modified to 1.5 per cent by an internal study team of DICGC.

Apart from the own source discussed above, the DIF has, in the event of a shortfall, a line of credit for Rupees five crore available from the Reserve Bank. The RBI Act also provides for extending a line of credit to DICGC. But no ceiling has been laid down.

The adequacy of the DIF is an important issue for ensuring the solvency of the fund and maintaining public confidence in the deposit insurance system. The DICGC had an actuarial liability of Rs.1,553 crore at end-March 2008, in addition to Rs. 11,809 crore as surplus in the balance sheet (at end-March 2008). An important component of the process is the designated reserve ratio, which defines the percentage of funds available for settling claims to the insured deposits. The FDIC has a range of designated reserve ratio between 1.15-1.5 per cent. The DRR as at end-March 2008 was 0.74 per cent (Table 5.16)[83].

To ascertain the adequacy of the DIF, stress tests were undertaken for March 2007, based on three scenarios[84]. The evidence indicates that under each of them, DICGC would be in a position to meet the claims. However, under the latter two scenarios, the ratio would drop sharply. In view of all these above, the Panel believes that it is necessary to constantly monitor the DIF and, perhaps, if the situation arises, there will be a need to take a view on the issue of raising the premium in order to strengthen it (Box 5.6).

Table 5.16: Designated Reserve Ratio of the DIF

(Amount in Rs. crore)

Year (end-March)	Fund	Surplus balance	Insured deposits	DRR (per cent)
1	2	3	4	5
2002	563	3,687	6,74,051	0.63
2003	831	4,683	8,28,885	0.67
2004	871	5,037	8,70,940	0.68
2005	880	6,940	9,91,365	0.79
2006	1,026	8,077	10,52,988	0.86
2007	1,211	9,768	13,72,597	0.80
2008	1,553	11,809	18,05,081	0.74

Note : DRR is computed as (fund *plus* surplus balances)/Insured deposits
Source: DICGC

[83] The DIF consists of the following items: (i) balance at the end of the year; (ii) surplus; (iii) estimated liability in respect of claims intimated but not admitted (provisions); (iv) claims intimated and claims admitted but not paid; (v) insured deposits remaining unclaimed; (vi) investment reserve, including Investment Fluctuation Reserve and, (vii) Other liabilities including provision for income tax. Out of these, items (vi) & (vii) are clearly not available for meeting claim liabilities. Items (iv) and (v) are monies earmarked to be released for already sanctioned claims. Thus, only items (i), (ii) and (iii) are available for meeting claims.

[84] The assumptions underlying the analysis are as follows: (i) The liability of the Corporation will grow at a rate, estimated on the basis of past five years; (ii) total insured deposit has been taken as the liability of the Corporation on a particular year; (iii) around 60 per cent of assessable deposit has been taken as the insured deposit and, (iv) while estimating the liability, it is assumed that the assessable deposit and hence insured deposit remains constant for next period as well.

Box 5.7: Stress Tests of Deposit Insurance

There has been a spurt in claim settlements from the year 2001-02 onwards, especially from the co-operative banking segment, putting pressure on the Deposit Insurance Fund (DIF). In this context, it becomes imperative to ascertain the adequacy of the DIF. A summary of the three scenarios and the results of the stress tests are provided in the table.

Summary of the three scenarios

	Methodology	Estimated Liability (Rs. crore)	DRR**
1	2	3	4
Scenario I	Taking the average growth in claims settled for the last five years and applying it to the figure of claims settled for the year 2006-07.	656.27	0.75
Scenario II	Thorough estimation of insured deposit of all the Grade IV UCBs if they were to be liquidated.*	10,313	0.05
Scenario III	If the commercial banks which have been amalgamated (during 2003-2006) with other banks were to be liquidated.	9,167.98	0.13

**As per cent of funds available with DICGC at end-March 2007
*Grade IV UCBs: banks meeting the following conditions:
(a) CRAR less than 50 per cent of the prescribed limit;
(b) net NPA of 15 per cent or more as on March 31 of the previous year
Source: DICGC

5.7.4 Tax Exemption

DICGC had been exempted from payment of income tax up to 1986. Since 1987, it has been paying substantial amounts as corporate tax after computing its income on an actuarial basis, cumulatively amounting to over Rs.8,600 crore till end-2007. This has led to a depletion in the Fund. Deposit insurance systems in several developed countries (USA, Japan, Denmark, etc,) and those in Latin America (Brazil, Argentina, Mexico and Chile) enjoy full tax exemptions[85]. Given that DICGC is acting as a trust for the public at large and small depositors in particular, the Panel is of the view that there is a case for providing it with an exemption from income tax. This will help in augmenting reserves without the need for charging a higher premium.

5.7.5 Organisational Structure

Organisational structure lies at the core of a sound deposit insurance system. To the

[85] In Canada, although full tax exemption is not available, the premium receipt of Canadian Deposit Insurance Corporation is exempt from income tax.

extent that the structure facilitates the functional separation of the deposit insurance system from government and other regulatory operations, there may be less potential for incentive conflicts that compromise the effectiveness of the programme. At present, the Reserve Bank is represented on the Board of DICGC. Access to any credit line from it could curtail the incentive to build up a stand-alone deposit insurance fund, besides having monetary implications.

Given that a potential function of a deposit insurance system is to spread risk over time as well as across insured parties, the need for building up a stand alone insurance fund assumes even greater relevance if the deposit insurance organisation is to be provided *de jure* independence from the central bank. The independent role of deposit insurance will grow in importance as the banking sector is further opened up to foreign and private sector participation. In such a case, a fund, financed solely through premia paid by insured parties, would incentivise the deposit insurance provider to not only perceive a direct stake in the financial health of the members but also provide motivation for them to scrutinise deposit insurance operations and maintain industry self-policing.

5.7.6 Information Risk

Information sharing and co-ordination of the activities of the deposit insurer and other safety-net players is a high priority for the majority of deposit insurers. The common mechanisms are legal agreements, Memoranda of Understanding (MoUs), representation on the Board of Directors, and specially designated co-ordination committees. In India, the latter two mechanisms are employed. Thus, a Deputy Governor of the Reserve Bank is the Chairperson of the Board of Directors of the Corporation; Reserve Bank is also represented by an Executive Director. The Government is represented by an official of the Department of Financial Services. DICGC also maintains close contact with the supervisory departments of the Reserve Bank and NABARD for the efficient discharge of its functions.

Information risk is a major concern for proper functioning of deposit insurance. It is important that DICGC be taken on board to examine the viability of the regulated entity at the 'entry point' and on an on-going basis. This has been manifested in case of urban co-operative banks where DICGC paid/provided for large sums of money to depositors owing to problems in this segment. Accordingly, the Panel feels that a Committee, comprising of the regulatory/supervisory departments of the Reserve Bank and DICGC be constituted on a standing basis for regular sharing and exchange of information on regulated entities may be considered. This will also be useful in times of bank restructuring and/or amalgamations wherein the DICGC can be *a priori* informed on the health of the concerned institution.

5.7.7 Failure Resolution

In order to deal in a timely and effective manner with the impact of individual bank failures, many countries are seeking to enhance their mechanisms for dealing with failing or failed banks. Deposit insurers with a 'risk minimiser' mandate have a large role to play in this context, especially in the liquidation process which enables the insurer to address costs compared to pure pay-box systems. Illustratively, being risk minimiser, the FDIC has the authority to decide on the appropriate form of failure resolution in a least-cost manner. These include the assumption to undertake formal liquidations; purchases of assets and the assumption of its liabilities; different forms of financial assistance, including granting direct loans; and merging the failed institution with another insured depository institution without the consent or approval of any other agency, court or party with contractual rights. Although 'pay-box' systems as in India are not involved in the failure-resolution process, in recent times, it has been observed that the added

responsibilities of the pay-box with extended powers systems make it necessary for them to play a larger role in the failure resolution/ liquidation process. The balance of experience of risk-minimiser deposit insurers reveal that the time and cost related to resolution can be considerably curtailed and deposit insurers are included in the resolution process.

At a minimum, however, all deposit insurers need certain powers to ensure that they can meet their obligations to depositors in a timely fashion. As per the DICGC Act 1961, the dues of depositors' are expected to be settled within a maximum of five months from the date assuming charge by the liquidator, or the coming into force of the scheme. At present, the DICGC transacts its business of paying depositors' claim amounts and recovery of dues from the failed banks, through liquidators. However, the time lag between the issue of the liquidation order and actual reimbursement to the depositor is often extended due to non-receipt of claim lists, delays in the appointment of liquidators and court cases. The liquidators for commercial banks are appointed by the High Courts on the Reserve Bank's application under the provisions of the Banking Regulation Act, 1949, while in the case of co-operative banks, the Registrar of co-operative societies directly appoints them. In order to expedite the resolution process, there is merit in considering the need to actively involve DICGC in the same. The experience with regard to urban cooperative banks is a case in point. Despite legal constraints and other impediments arising out of dual control over them, steps have been taken to expedite the post-liquidation process. Salient among these are an expeditious settlement of claims as also inducting professional expertise to handle liquidation process to have better control over the liquidation process. Additionally, the Task Force for Urban Co-operative Banks overseeing the restructuring exercise has constituted a sub-committee to provide the necessary support in expediting the process of recovery of dues and the repayment to the Corporation and other creditors of the bank under liquidation. To improve the efficacy of the DICGC in the long term, the Panel thinks that an 'extended pay-box' mandate to ensure loss minimisation for the Deposit Insurance Fund should be explored.

A related issue is the order of priority in the sharing of the realisations from the assets of failed banks. Given the present 'pay-box' type mandate, there is a need to improve the recovery performance of liquidated banks so that funds come back to DICGC for re-cycling. As per the provisions of the DICGC Act, out of the recoveries realised from the sale of assets of a failed/liquidated bank, after making provisions for expenses, *i.e.*, taxes, dues of workers, salary and other current payments to employees, the balance is required to be paid to DICGC to the extent of claims paid or provided for. However, some State Governments have disputed this interpretation. To place the matter of priority in recoveries beyond any doubt, the Panel recommends that a suitable amendment to the relevant provision be enacted, specifying that distinct priority is to be accorded to the DICGC out of the recoveries. This will remove the ambiguity or mis-interpretation of the said provision of the DICGC Act.

Section 43 A of the Banking Regulation Act, 1949 provides a certain hierarchy as regarding the preferential payment of depositors

in the event of the winding up of a banking company. These provisions are not applicable to depositors in respect of which DICGC is liable. Likewise, the Companies Act, 1956 also provides priority for certain kinds of debts. Combining this with the Banking Acts in Singapore, as also their Companies Act, it appears that the cost of winding up, the wages/salaries, provident fund dues etc. of employees, dues to workmen get precedence over the taxes payable to the government. This needs to be seen in the context of the lack of clarity regarding the priority of claims of DICGC over that of other claims (including those of secured creditors) on an insured bank. Therefore, the Panel thinks that it would be advisable to make appropriate amendments to the DICGC Act to expressly provide that the claims of DICGC will have priority over those of other creditors during liquidation proceedings.

5.8 Credit Information

5.8.1 Credit Information Bureau

Central to the business of finance is risk. And central to the assessment of risk is accurate and timely information about risk. The exponential rise in demand for credit leads to an increase in competition which, in turn, could result in higher credit delinquencies. In such an environment, risk assessment has become critical for not only deciding on what business to book and the speed at which a credit grantor does so but also in determining the appropriate pricing. Comprehensive credit information, which provides details pertaining to credit facilities already availed of by a borrower, as well as his payment track record, has therefore become the need of the hour. Not only the developed but also several developing countries have established credit information bureaus (CIBs) for the purpose of continuous and correct credit assessment on both commercial and consumer credit (Table 5.17).

In order to facilitate the sharing of information, a Credit Information Bureau (India) Ltd. (CIBIL) was established in 2004. Its aim is to provide comprehensive credit information by collecting, collating and disseminating credit information pertaining to both commercial and other borrowers to a closed group of members. Banks, financial institutions, non-banking financial companies, housing finance companies and credit card companies use CIBIL's services. Data sharing is based on the principle of reciprocity.

At present, CIBIL maintains a database on suit-filed accounts of Rupees one crore and above and suit-filed accounts of (wilful defaulters) of Rs. 25 lakhs and above. This information is based on a software application developed, to enable the users to access data through a parameterised search process across banks and companies at various geographical locations. Suit-filed accounts of lower value would be covered in a phased manner.

At present, 146 credit grantors are members of CIBIL. These include 77 banks accounting for over 90 per cent of the total credit outstanding amongst the commercial banks, 16 HFCs accounting for over 70 per cent of the total credit outstanding amongst the HFCs, 10 DFIs accounting for over 90 per cent of the total credit outstanding amongst the DFIs, two credit card companies accounting for over 90 per cent of the total credit outstanding, six state financial corporations and 35 major NBFCs representing a substantial portion of the credit outstanding of that sector.

Currently, CIBIL collects details relating to suit-filed accounts and credit card receivables from its members. There are still some legal impediments regarding the sharing of credit information. To address the issue, the Credit Information Companies (Regulation) Act was passed in June 2005. The Government and the Reserve Bank have also framed rules and regulations for implementing the Act. These were notified in December 2006. In terms of the provisions of the Act, after obtaining the registration certificate from the Reserve Bank,

Table 5.17: Credit Information Bureaus: Country Experience

Country	India	Sri Lanka	Australia	Pakistan	Malaysia	Bangladesh	Thailand
1	2	3	4	5	6	7	8
Single/multiple bureau	Single	Single	Multiple	Multiple	Single	Single	Multiple
Earliest date established	2004	1990	2001	1992	1982	1993	2000
Ownership type	PPP	PPP	Private	Private	Public (established under Central Bank Act)	Public	Public/Private
Sources of information	Banks, NBFIs-D, FIs, HFCs, credit card companies	Other financial institutions	Banks, Specialist financial services, telecom; retailers, mortgage specialists, insurance companies	Banks, NBFIs, Other financial institutions	All licensed commercial banks, Islamic banks, finance companies, merchant banks, other financial institutions	Banks, NBFIs, other supervised financial institutions	Commercial banks; finance companies; securities brokerages; housing societies; life/general insurers; credit card issuers; financial institutions set up by special laws; notified credit-granting entities
Main products	Credit report on individuals and firms	Credit report on individuals	Credit report on individuals and companies	Credit report on individuals; scoring model	Personal particulars, Details of credit account such as type of credit facilities, credit limit, outstanding balance, conduct of account. Covers information on private individuals, businesses (sole proprietors and partnerships), companies and government entities	Credit report on individuals	Credit report on individuals
Positive or negative information	Both	Both	Negative	Both	Both	Both	Both

PPP: Public-private partnership;
Negative information: includes history only on past defaults
Positive information: Includes comprehensive credit portrait on all open and closed credit accounts.
Source: Asian Development Bank (ADB)

the credit information companies will be able to collect all types of credit information (positive and negative) from members.

The Panel believes that to reduce information asymmetries, data regarding timely payment of loans should be shared across banks as well as rating agencies. The Credit Information Companies (Regulation) Act 2005 has already paved the way in this regard.

In terms of the Reserve Bank guidelines, a wilful default would be deemed to have occurred if any of the following events is noted:-

i. The unit has defaulted in meeting its payment/repayment obligations to the lender even when it has the capacity to honour the said obligations.

ii. The unit has defaulted in meeting its payment/repayment obligations to the lender and has not utilised the finance from the lender for the specific purposes for which finance was availed of but has diverted the funds for other purposes.

iii. The unit has defaulted in meeting its payment/repayment obligations to the lender and has siphoned off the funds so that the funds have not been utilised for the specific purpose for which finance was availed of, nor are the funds available with the unit in the form of other assets.

The information pertaining to wilful defaulters of Rs. 25 lakhs and above pertaining to suit-filed accounts is maintained by CIBIL and it is in the public domain. However, information on wilful defaulters pertaining to non suit-filed accounts is not available to lenders other than scheduled commercial banks/notified FIs. In the interest of improving/systemic stability, the defaulters list could be made public to all lenders including non-banks.

Annex 5.1: Regulatory Structure of the Indian Financial System – Institutions and Markets

* deposit-taking activities only; controlled by State Governments
** PFRDA Bill 2005 is awaiting Parliamentary approval
*** SIDBI regulates State Finance Corporations
+ NABARD has supervisory responsibilities over rural credit institutions –RRBs and co-operatives
@ interest rate ceilings fixed by RBI; controlled by Ministry of Corporate Affairs
++ NHB has supervisory responsibilities over Housing Finance Companies

Annex 5.2

Major Models of Financial Regulation and Supervision

Internationally, six main models of regulation and supervision are prevalent:

- The 'US model', where each group of financial institutions have their own specialist regulator;
- The 'Mexican model', where banking and securities are combined within one agency;
- The 'South African model', where securities and insurance are combined within one agency;
- The 'Canadian model' where banking and insurance (and usually pensions) is combined in an agency outside the central bank;
- The 'UK model', where all financial sector regulation is vested in an agency outside the central bank; and finally,
- The 'Singaporean model', where all financial sector regulation rests within the central bank.

Supervisory responsibilities

Supervised activity	Within central bank	Outside central bank
1	2	3
Banks only	US, India (present system)	
B and S		Mexico
B and I		Canada
S and I		South Africa
B, S and I	Singapore	United Kingdom

B= banks; S=securities; I=insurance

The following points are indicative in this regard:

(a) *The extent of activity by financial conglomerates:* The extent of activity by financial conglomerates is one of the key factors for a single financial supervisor. Having a number of financial conglomerates comprising a large proportion of the financial system is linked to the possibility of a single supervisor improving aspects of the effectiveness of supervision, lowering costs of conducting supervision and improving efficiency. However, the extent to which financial conglomerates make up the financial system varies across countries, and hence the case for single supervisor varies as well.

(b) *The objective of supervision:* The objective of supervision might differ across countries. If for instance, the rationale for supervision is the maintenance of systemic stability, then there might be justification for placing responsibility for prudential supervision with the central bank, given this role complements its other roles, including the wider responsibilities for promoting financial stability and the efficiency of the financial system as a whole. By contrast, if the objective of financial supervision is consumer protection and there is perhaps a depositor protection scheme, then there might be a case for placing the responsibility for prudential supervision with a separate authority, whose core focus is consumer protection.

(c) *The type of central bank:* The question of whether a central bank should have responsibility for banking supervision will also depend on its other responsibilities, creating conflicts of interests, causing reputational risks, or simply distracting attention from its main role of

monetary policy. However, if the central bank does not control monetary policy, the relevance of these factors becomes limited. The national central banks that encompass the jurisdiction of ECB provide a good example of this. With the introduction of the euro, formulation of euro wide monetary policy was assumed by ECB.

(d) *Size of the financial sector:* The size of the financial sector may also play a part in the appropriate institutional structure of supervision. If the size of the financial sector is small, there are likely to be economies of scale in having one supervisor, resulting in the lowering of overheads by merging the administrative and data processing requirements of various supervisory agencies.

(e) *Level of economic development:* It has been argued that developing countries are most in need of banking supervision, given the several issues that make them particularly prone to financial instability. Inadequate legal systems, nascent accounting standards and practices and a paucity of financial instruments to hedge financial risks are a few factors relevant to developing countries. However, to attain even a sufficient level of supervision, this role may have to be the responsibility of the central bank.

A major issue in the setting up of a separate supervisory body, if outside the central bank, is that of culture and funding. Supervision is a costly exercise and with growing sophistication and inter-linkages across markets and institutions, requires increasingly sophisticated tools and techniques. In India at present, supervision costs are borne by the Reserve Bank. In the event that the budgetary support needs to be provided by the Government, then it might compromise on the resource independence of the supervisory authority. The independence of supervisory function from political interference is often a *sine qua non* and has been reiterated by the BCBS. It seems that the issue of co-ordination of policy and in fact of coordinated action is likely to gain prominence with the emergence of financial conglomerates. An explicit mechanism detailing the modalities of achieving such a regulatory coordination deserves a closer look.

Recognising the relevance of supervisory coordination in a world where multiple agency regulation is the norm, the *Joint Forum* on Financial Conglomerates, set up by the BCBS, IOSCO and IAIS examined ways and suggested several principles on which information sharing and coordination could be based. Although intended for different supervisors of the regulated firms in the conglomerate, these can be equally applied to coordination among all regulators in the financial sector.

A possibility in this context is a re-examination of the role of the Board for Financial Supervision (BFS). With the major disturbances in financial markets in the past decade having been linked to the penetration of firewalls between banks and capital markets, and given the entry of banks and the emergence of NBFCs as major players in the insurance business, the coordination mechanism among various supervisors like RBI, SEBI and IRDA may need to be significantly strengthened.

Annex 5.3

Large and Complex Banking Groups

It is important to identify and monitor the activities of banking groups whose size and nature of business is such that their failure and inability to operate would most likely have adverse implications for financial intermediation, the smooth functioning of financial markets or other financial institutions operating within the system. If the disturbances were large enough to threaten, it could be transmitted through various channels – including payment systems and markets – but would most likely originate from an institution being unable to meet its payment and settlement obligations. The degree to which individual banking groups are 'large' in the sense that this could be a source of systemic risk would therefore seem to depend on the extent to which they can be a conduit for diffusing systemic and idiosyncratic shocks through a banking system.

A simple and common approach for identifying such institutions – often grouped under the heading large and complex banking groups (LCBGs) – is to rank them by the size of their balance sheets. However, asset size alone may fail to shed much light on the importance and complexities of the interconnections that a banking group may have within a financial system, especially given the growing importance of banks' off-balance sheet activities. Knowledge about such interconnections is important because it can help in mapping how, or if, strains in a large banking group could spread to other institutions or markets.

The 'largeness' of a banking group clearly depends on the size of its balance sheet. Indeed, the most rudimentary method for identifying large banking groups is to rank institutions by their total assets.

In practical terms, this approach has at least two shortcomings 1) there is no commonly agreed threshold for the percentage of banking sector assets, or the number of large banking groups, that should be monitored. 2) in view of the growing importance of off-balance sheet activity, the size of a financial institution's balance sheet may not necessarily reflect accurately its complexity or the importance of the role it plays in the various forms of financial intermediation, risk transformation and management processes that take place within the financial system. For instance, should a banking group fail that is relatively large, but which has few linkages with other parts of the financial system, it may have little systemic impact. By contrast, a smaller bank with few but important linkages could have a disproportionately larger adverse impact on the functioning of financial markets or other financial institutions.

To assess how important a banking group is for the smooth functioning of the various intermediation, risk transformation and management processes that take place within the system, a wide set of key business activity characteristics is needed. Clearly, the wider the set of activities that are considered to be important for the stable functioning of the financial system, the more complex the conceptual and technical challenges to ranking - or even selecting a large banking group.

The European Central Bank (December 2006) has adopted a 'cluster analysis' for identifying large and complex banking groups for financial system stability assessment. This approach enables a sample population into natural groups according to measures that define the characteristics of the population. Banks are classified into distinct groups (small, medium and large) based on values of the characteristic indicators. The indicators typically used include, not only traditional balance

sheet items (loans, other earning assets, deposits and contingent liabilities) and indicators of banking activity (net interest revenue and net non-interest revenue), but also inter-bank assets and liabilities and aspects of the book-runner role (proceed amount in equity, bond and syndicated loans markets) and custodian role (world wide assets under custody).These indicators are used because a banking group's total assets may not necessarily provide an indication of the institution's complexity or of the importance of the role it plays in various forms of financial intermediation, risk transformation and management processes.

In the Indian case, the traditional indicators for select bank groups (5 within each ownership category) for 2006-07 revealed the following correlation with total asset:

Indicators	Large Public Sector Banks	Large Private Sector Banks	Large Foreign Banks
1	2	3	4
Deposits	1.00	1.00	0.99
Advances	1.00	1.00	0.97
Inter-bank liabilities	0.68	0.96	-0.52
Contingent Liabilities	0.99	0.92	0.92
Inter-bank assets	0.37	0.98	-0.02
Other assets	0.99	1.00	0.87
Net interest revenue	0.99	0.95	1.00
Net non-interest revenue	-0.98	-0.63	-0.56

Note: 1. Large public banks: Banks with assets in excess of Rs.14,00,00 crore
2. Large private banks: Banks with assets in excess of Rs.25,000 crore
3. Large foreign banks: Banks with assets in excess of Rs.17,500 crore

Source: RBI

This indicates that these banks/bank groups exhibits high correlation with total assets in respect of all the concerned variables; exceptions to the same are primarily evidenced in case of large foreign banks, *viz.*, the negative correlation with inter-bank liabilities and very low correlation with inter-bank assets.

Annex 5.4

Laws Relating to Financial Stability

1. Companies Act, 1956 - The provisions of Companies Act are applicable to banking companies (*i.e.*, private sector banks and foreign banks) to the extent BR Act provisions are not in conflict with them. Other financial companies like private insurance companies, housing finance companies and other non-banking financial companies fall within the purview of the Companies Act.

2. Securities and Exchange Board of India Act, 1992 has established SEBI to protect the interest of investors in securities and to promote the development of, and to regulate, the securities market.

3. Depositories Act, 1996 provides for regulation of depositories in securities and under the Act, SEBI has been conferred with such powers.

4. Securities Contract Regulation Act, 1956 provides for recognition of stock exchanges and regulates the securities transactions in such exchanges.

5. Foreign Exchange Management Act, 1999 intends to facilitate external trade and payments and to promote the orderly development and maintenance of foreign exchange market in India.

6. Insurance Regulatory and Development Authority Act, 1999 has established IRDA as the insurance regulatory authority, to protect the interests of holders of insurance policies and to regulate, promote and ensure orderly growth of insurance industry.

7. Consumer Protection Act, 1986 – The definition of 'service' in this Act includes 'facilities in connection with banking, financing, insurance *etc.*' Consequently, deficiency in any such service has also been brought within the ambit of consumer dispute and amenable to the jurisdiction of Consumer Forums/Commissions.

8. Negotiable Instruments Act, 1881 was amended in the year 1988 to effectively deal with dishonour of cheques and at the same time encourage the culture of use of cheques and enhancing the credibility of the instrument. A new Chapter XVIII was incorporated for penalties in case of dishonour of cheques due to insufficiency of funds in the account of the drawer of the cheque. In the year 2002, further amendments were made to NI Act to introduce electronic cheque and truncated cheques.

9. Transfer of Property Act, 1882 – particularly provisions of Section 48 regarding priority of rights and Section 58 which deals with various kinds of mortgages.

10. Indian Contract Act, 1872 – particularly provisions dealing with special contracts like indemnity, guarantee, bailment, pledge, agency (Section 124 onwards).

Chapter VI

Developmental Issues

6.1 Introduction

Developmental issues are an important pillar of financial sector assessments. Recognising this, financial sector stability assessments tend to address key developmental issues that have a bearing on the fair and efficient functioning of the financial institutions and markets and the legal/institutional infrastructure. There are two facets of the developmental issues that should be addressed. Issues emanating from the analysis of stability and those which pertain to fairness and equity. The first set of issues have been discussed in the earlier chapters relating to institutions, markets and infrastructure. This chapter focuses on the second set of issues and analyses some of the important developmental issues that have bearing, in the Indian context, such as customer protection, inclusiveness, Small Scale Industries (SSI) credit and related issues.

6.2 Customer Service

Customer service is an important concern for policymakers. Therefore, efforts are underway to expand the reach of formal finance to achieve meaningful financial inclusion. This is being buttressed by financial education to generate greater customer awareness and an understanding of financial products and services. A process of credit counselling has been encouraged to help borrowers in distress to overcome current financial problems and gain access to the structured financial system. A Banking Codes and Standards Board of India (BCSBI) has been instituted which has released a voluntary code laying down banks' commitment to customers. It sets the minimum standards of banking practices which the banks ought to follow while dealing with customers. Finally, a Banking Ombudsman facility has been established covering all States and Union Territories for redressal of grievances against deficient banking services.

Based on the recommendations of the Committee on Procedures and Performance Audit of Public Services, banks were advised to put in place an institutional machinery comprising the following:

(a) A Customer Services Committee of the Board including, as invitees, experts and representatives of customers, to enable the bank to formulate policies and assess the compliance thereof internally;

(b) A Standing Committee of Executives on Customer Service, in place of the earlier *ad hoc* committees, to periodically review the policies and procedures and working of the bank's own grievance redressal machinery;

(c) A branch-level Customer Service Committee, involving customers to encourage a formal channel of communication at the branch level; and

(d) A nodal departmental official for customer service at the Head Office and each Controlling Office, whom customers with grievances could approach in the first instance and with whom the Banking Ombudsman and the Reserve Bank could liaise.

Additionally, a Customer Service Department was constituted in the Reserve Bank in 2006 to serve as the interface between customers and banks.

Apart from safeguarding the interest of bank depositors, the Reserve Bank has also been seeking to ensure that the borrowing community also gets a fair deal from the bankers. A Fair Practices Code for Lenders was formulated (revised in March 2007) to protect the interests of borrowers and guard against undue harassment by lenders.

Transparency in service charges and their reasonableness constitutes an important ingredient of customer service. In order to ensure fair practices, the Reserve Bank has made it obligatory for banks to display and update, on an ongoing basis, in their offices/ branches as also on the home page of their websites, the details of various service charges and fees, in a format approved by it, to provide for better comparability. A hyperlink to the websites of the banks has also been provided on the Reserve Bank's website (www.rbi.org.in) to enable customers to have a single-point access to the websites of various banks, particularly for information on the charges and fees for various services. The broad principles for determining the reasonableness of bank charges for identified basic banking services, following the recommendations of a Working Group to this effect, was conveyed to banks in February 2007.

In many instances, although the guidelines are in place, gaps in implementation have led to customer grievances and complaints. The dissemination of information from the head office to the branch-level is slow, engendering costly delays and inadequacies in service. The lack of awareness regarding customer rights, both among bank staff and customers, does not help in improving the situation.

Requirements of customer service differ across persons depending on their age, educational background, profession and the like. A key ingredient in developing customer-driven banking is to rely on the database of the customers. This, in essence, constitutes the bedrock on which banks can develop value-added customer services. But often the customer's database is in a disparate and heterogeneous form. In such cases, the Panel is of the view that codifying the data into a form amenable to customising service requirements across different customers requires priority action.

A key to leveraging an ever-expanding customer database is intensive and focused use of technology, which is crucial for servicing all customer segments. The Panel is of the view that the increasing sophistication, flexibility and complexity of products and servicing offerings makes the effective use of technology

critical for managing risks as also customer service.

Technology can also enable banks to tailor their products and services in line with customer demands. Most banks today have their own websites where they feature various products on offer to customers. Banks can ascertain the level of popularity of its services from the number of 'hits' on their websites. They can also find out the preferences for products and services and accordingly modify the products and services to best suit the customer. In addition, they can also elicit a feedback for their products by developing an appropriate questionnaire on their sites as to what value-added features would the customer like to have or would like to be informed about at regular intervals. Through a process of closer and continuous interaction, they can foster lasting relationships with the customer.

The Panel believes that relationship pricing can play an important role in this context. Relationship pricing strategies encourage customers to have multiple facilities and services with banks. In this context, entry point information plays an important role. Many banks have re-designed their account opening forms that elicit a lot of information to serve the twin purposes of establishing an abiding relationship and cross-selling the banks' existing and also emerging products. Banks can undertake periodic surveys of their customers to ascertain the level of satisfaction. Several banks have introduced schemes with customised features to attract new customers as also establish long-standing relationship through a spectrum of products.

Monitoring of Bank's performance regarding customer service is a must. Banks failing to achieve a threshold minimum rating on customer service could be denied privileges in terms of branch licensing *etc.*

6.3 Financial Inclusion

Notwithstanding the extended reach of Indian banking, large regional differences exist in the distribution of financial services, both in terms of volume of transactions and branch density.

The Government-appointed Committee on Financial Inclusion (Chaired by Dr. C. Rangarajan) submitted its report in 2008. It noted that 45.9 million farmer households in the country out of a total of 89.3 million households (or 51 per cent) do not have access to credit, either from institutional or non-institutional sources. It observed that exclusion is most acute in the central, eastern and north-eastern regions, with 64 per cent of all financially excluded farmer households in the country. In terms of occupational groups, only about 20 per cent of indebted marginal farmer households have access to formal sources of credit. The Committee recommended a four-pronged strategy for building an inclusive financial sector:

(a) effecting improvements in the extant formal credit delivery mechanism;

(b) suggesting measures for improving credit absorption capacity, especially amongst marginal and sub-marginal farmers;

(c) evolving new models for effective outreach; and,

(d) leveraging technology-based solutions.

The Committee made several recommendations:

- the launching of a National Rural Financial Inclusion Plan (NRFIP) with a clear target to provide access to comprehensive financial services, including credit, to at least 50 per cent of financially excluded households by 2012, through rural/ semi-urban branches of commercial and regional rural banks;
- disaggregating the national targets state-wise with adequate focus on districts having a large percentage of population not accessing bank credit;
- setting targets for rural/semi-urban branches of commercial banks (including RRBs) to provide access to credit to at

least 250 hitherto excluded rural households;

- Constitution of two funds with NABARD: Financial Inclusion Promotion and Development Fund towards meeting the cost of developmental and promotional interventions and a Financial Inclusion Technology Fund, to meet the costs of technology adoption, each with an initial corpus of Rs.500 crore and a start-up funding of Rs.250 crore[86].
- Expansion of effective outreach by allowing banks to appoint ex-servicemen/retired bank staff as their business facilitators. In addition, banks may also facilitate easy roll-out of the mobile banking model through simplification and rationalisation of the back-end processes and front-end procedures to make banking operations more customer-friendly[87];
- Leveraging technology to open up channels beyond branch network and create the required banking footprints to reach the unbanked so as to extend banking services similar to those dispensed from branches.

The Panel believes that these recommendations need to be reviewed and implemented in a phased manner so as to promote and achieve financial inclusion.

The spread of branches appears to be associated, to an extent, with the size of the population in different regions. Thus, the eastern and central regions have larger shares of population and therefore, despite their low share in all-India Net Domestic Product (NDP), have relatively more bank branches. However, the presence of branches alone does not ensure access to finance. The eastern, central and north-eastern regions account for 54 per cent of population and 40 per cent of total branches but only 25 per cent of outstanding deposits and less than a fifth of outstanding credit (Table 6.1).

Another disquieting feature of regional differences is the skewed provision of banking services. Not only has the share of the top 100 centres in terms of both deposits and credit remained high, it has also been increasing over time. At the all-India level, the top 100 centres accounted for a quarter of bank offices, but over three-fourths of total credit and nearly 70 per cent of aggregate deposits at end-2007 (Table 6.2).

On the demand side, there is evidence of reduced access to credit. For instance, the share of credit to rural and semi-urban credit in total credit decreased from around 25 per cent to less than 20 per cent over 1996-2007. The growth of rural banking relative to GDP in rural and semi-urban areas has been modest (Table 6.3).

[86] The Union Budget 2007-08 proposed the establishment of two funds: the Financial Inclusion Fund for meeting the cost of developmental and promotional interventions and the Financial Inclusion Technology Fund to meet the costs of technology adoption. Each fund will have an overall corpus of Rs. 500 crore, with initial funding to be contributed by the Central Government, RBI and NABARD.

[87] The Union Budget 2008-09 has proposed to allow individuals such as retired bank officers, ex-servicemen etc to be appointed as business facilitator or business correspondent or credit counsellor.

Table 6.1: Regional Differences in Financial Services

(Shares in per cent)

Region	Share in all-India NDP 2005	Share in population 2001	Share in all-India credit 2006	Share in all-India deposits 2006	Share in all-India bank branches 2006*
1	2	3	4	5	6
Northern	17.7	13.8	21.0	23.6	16.8
North-Eastern	2.9	4.0	0.9	1.6	2.8
Eastern	15.6	23.6	7.7	11.4	17.4
Central	16.4	26.5	7.4	12.1	20.0
Western	23.0	15.4	37.0	29.1	15.5
Southern	19.3	16.8	26.0	22.3	27.6
Total	100.0**	100.0	100.0	100.0	100.0

The adding of state-level NDP into regional NDP suffers from several shortcomings and is merely indicative.
** including errors and omissions.
* end-June.
Source: Computed from RBI data.

Although increasing the number of bank branches in rural areas may be another step towards financial inclusion and provide the convenience of banking to the rural population, it may not be cost-effective and viable for the bank. On the other hand, technological improvements in banking like ATMs, Internet banking and phone banking are comparatively cheaper and have the ability to penetrate into remote geographical areas, provided the use of such technologies in rural areas is supported by adequate infrastructure and financial literacy and awareness are created among the rural population. The solution, thus, could lie in looking for other simpler technologies like vernacular language ATMs, e-choupals *etc,* which the rural

Table 6.2: Share of Top 100 Centres in Aggregate Deposits and Credit

(Shares in per cent)

As at end-March	Deposits		Credit	
	Offices	Amount	Offices	Amount
1	2	3	4	5
2000	21.9	59.0	21.5	74.7
2003	22.7	61.0	22.4	75.9
2005	23.8	65.3	23.7	75.9
2007	24.9	68.9	24.8	77.7

Source: RBI.

Table 6.3: Trends in Rural Banking

(Amount in Rs. crore; ratios in per cent)

Indicator	Year	Rural & semi-urban	Urban and metropolitan
1	2	3	4
Share of deposits	1996	33.9	66.1
	2001	34.3	65.7
	2006	25.3	74.7
	2007	23.7	76.3
Share of credit	1996	24.5	75.5
	2001	21.6	78.4
	2006	18.3	81.7
	2007	17.7	82.3
Deposits/GDP	1996	12.1	23.6
	2001	15.5	29.7
	2006	14.8	43.8
	2007	14.9	48.1
Credit/GDP	1996	5.2	16.1
	2001	5.5	20.1
	2006	7.8	34.7
	2007	8.4	38.9
Deposits	1996	1,44,500	2,81,619
	2001	3,25,619	6,23,814
	2006	5,28,274	15,62,900
	2007	6,10,409	19,86,635
Credit	1996	75,505	1,79,188
	2001	1,39,988	3,98,446
	2006	3,74,217	11,39,624
	2007	4,48,457	14,98,643

Source: RBI.

population could have access to and be conversant with.

6.3.1 Micro Finance

In the light of the inefficiencies that characterise the rural financial market and the relative lack of success of formal rural financial institutions in delivering finance to the poor, several efforts are underway to develop newer delivery approaches. These approaches, popularly termed 'micro-finance programmes', have been designed to overcome some of the risks and costs associated with formal financing arrangements. The objective is to integrate the safety and reliability of formal finance with the convenience, flexibility and timeliness of informal finance.

One approach to micro-finance that has gained prominence is the Self-Help Group (SHG)-Bank linkage programme. The linkage involves organising the poor into small, cohesive groups and inculcating a habit of savings within the group. The group is linked to a bank and the saved and borrowed funds are rotated through lending within the group. The lenders (banks) are often refinanced by NABARD at below market rates[88]. During 2006-07, 6.8 lakh SHGs were credit-linked by the banking system, taking the cumulative number of SHGs credit-linked to 2.9 million since its inception in 1992-93 with cumulative loan disbursement and refinance support aggregating Rs.18,000 crore and Rs. 5,400 crore, respectively. In terms of shares in the cumulative loan disbursed, commercial banking had an overwhelming share of 63 per cent, followed by RRBs (28 per cent) and co-operative banks (9 per cent).

Notwithstanding its success, outreach remains limited in terms of the number of households served, and its scale has been modest. Outstanding loan disbursements under the SHG-Bank linkage in March 2006 were around 5 per cent of outstanding rural bank credit. Another disconcerting feature has been its uneven regional spread: the cumulative share of the southern region was over 70 per cent at end-2001. Although this share has since declined to 52 per cent at end-2007, it ignores the fact that the bulk of this decline has been accounted for by an improvement (of the order of 10 per cent) in the eastern region. To address this aspect, a set of 13 states outside the southern region with a large population of poor have been identified for focused attention.

The Panel believes that a key constraint is the lack of capacity to promote and maintain groups to ensure quality. Groups promoted by institutions lack the required skills and local knowledge. While the scale objectives may be fulfilled in this manner, the longer-term viability and quality will remain problematic.

Another issue, in the view of the Panel, relates to the cost of group formation. Promotion of quality groups requires both time and money. The Government acting through the Ministry of Rural Development has established a norm of Rs.10,000 per group.

[88] For example, during 2006-07, interest rates on refinance under investment credit (including SHGs) in the NER, Sikkim and Andaman & Nicobar Islands were 6.5 per cent (for borrowings upto Rs.50,000) and 7 per cent (for borrowings above Rs.50,000). In other parts of the country, for loans to SHGs, interest rate of 7 per cent was charged to all agencies irrespective of the quantum of per capita loan (6.5 per cent to StCBs/SCARDBs for per capita loan upto Rs.50,000).

Thus, reaching NABARD's target of one million groups by 2008 will entail an estimated cost of Rs.1,000 crore. The source of these funds remains unclear. Moreover, even after a group is formed, efforts are needed to monitor and strengthen its internal capability to undertake administrative tasks and commercial activities. There is an urgent need for purposive action in this regard.

6.3.2 Kisan Credit Cards/ General Credit Cards

A recent approach to providing credit to the agricultural sector, including small farmers, is the Kisan Credit Card (KCC) offered by commercial banks, RRBs and co-operative banks. Since its inception in 1998-99, around 76 million KCCs have been issued by August 31, 2008. Over time, the scope of KCCs had been enlarged to cover term loans for agriculture and allied activities, including a reasonable component of consumption needs, besides the existing facility of providing a crop loan limit.

Banks and regional rural banks (RRBs) have been permitted to introduce the General Credit Card (GCC) at any of their branches to their constituents in rural and semi-urban areas, based on the assessment of income and cash flow of the household similar to that prevailing under normal credit cards, without an insistence on security or end-use of credit. Total credit extendable per individual under GCC has been capped at Rs.25,000. The rate of interest to be charged has been left to banks, as considered appropriate and reasonable.

6.3.3 No Frills Account

On the deposit side, banks were advised in November 2005 to make available a basic 'no-frills' account with low or nil minimum stipulated balances as well as charges to expand the outreach of such accounts to vast sections of the population. In order to ensure that persons belonging to low income groups, both in urban and rural areas, did not encounter difficulties in opening bank accounts because of procedural problems, the know-your-customer procedures for opening accounts have been simplified. Since January 2006, banks are permitted to utilise the services of non-governmental organisations (NGOs/ SHGs), micro-finance institutions (other than non-banking finance companies) and other civil society organisations as intermediaries in providing financial and banking services through the use of business facilitator and business correspondent models.

6.3.4 E-Choupals

A leading player in the agri-commodity business, ITC Ltd., has leveraged information technology and communications networking to pioneer e-choupal, an initiative involving the use of desktop computers with Internet connectivity. Initiated in 2000, the e-choupal delivers real-time information and customised knowledge to improve the farmer's decision-making ability, thereby better aligning farm output to market demands; securing better quality, productivity and promoting improved price discovery. The E-choupal also enables the farmer to seek technical advice, obtain weather forecasts and order agricultural inputs. In addition, it provides potential avenues for lenders, agricultural commodity traders and farmers to interact in a relatively seamless manner with low transactions costs and improved (credit and market) information. At present, roughly 4 million farmers in nine states spanning 38,500 villages are covered. It is planned to increase the coverage to 10 million farmers across 15 states and a hundred thousand villages by 2010. With rapid expansion plans that aim to cover a fifth of India's villages, e-choupals provide a vivid illustration of the powers of information technology. Though not directly connected with financial inclusion, e-choupals help increasing the financial literacy and awareness among the rural population.

6.3.5 Recommendations

The Panel recognises that in order to motivate banks to be effective conduits for achieving the goals of financial inclusion, they should be in a position to cover their costs. As per existing guidelines, banks are allowed to lend to small borrowers for priority sector loans below Rupees two lakh at their BPLR. This rate is fixed by the bank, while the regulator has stipulated the loan limit subject to interest rate regulation. Often, the rate of interest is not enough to cover costs of providing small ticket loans. There is therefore a need for operational flexibility on the part of banks to decide the interest rates at which they lend to small customers so that they can cover their risks and recover the costs associated with such lending. Even if the rate charged is higher than BPLR, it is expected to be lower than the average interest rates charged by village money lenders (48 per cent) and micro finance institutions (24.3 per cent). Another issue that needs addressing is the simplification of documentation for bank loans. This is one of the main reasons for the persistence and dominance of village money lenders.

One possible approach towards greater financial inclusion could be to explore new design principles. The basic elements of these principles could be as follows[89]:

- Segregating customer handling, risk origination, risk measurement, risk transfer and risk aggregation. This is because entities differ markedly in their ability to manage each of these risks and processes.
- Identifying entities best suited to perform each of these functions and ensure that for each function there is clarity on the manner in which the risks are transferred and warehoused.
- Allowing local credit institutions (such as PACS and RRBs) to freely partner all manner of local and national partners so as to enable optimum utilisation of the existing infrastructure.
- Working with a back-end partner, which offers end-to-end solution to a local financial services partner and acts as a bridge between the mainstream bank and the local entity.

If this is done, the local financial institution would serve as the client interface. These institutions in turn can tie up with partner financial institutions (such as public or private sector banks) by forming mutually beneficial linkages (such as partnership model or business correspondent model) to insure themselves against idiosyncratic risks relating to the specific areas in which they operate. The associated synergies ensure that the national-level financial entity is able to lower its cost of provision of financial services by allowing it to operate without having to invest in rural branches.

6.4 Sustainability Issues

The sustainable development of the financial sector is a key element of the risk assessment. Sustainability combines environmental, social, ethical and governance factors. It defines business excellence,

[89] See N. Mor and B.Ananth (2006). Inclusive Financial Systems: Some Design Principles and the Case Study of ICICI Bank. Working Paper. Institute for Financial Management and Research.

innovation and the licence to operate as a financial institution. Modern day financial corporations are increasingly broad-basing their attention away from the narrow objective of increasing shareholder value towards maximising benefits to stakeholders. This leads to two broad gains.

First, the principles of sustainability help gear companies' strategies towards future products and services that are considered sustainable, while at the same time reducing and avoiding a number of costs and risks. Second, by integrating sustainability into business practices and policies, there is also the perception that companies have better risk management structures in place. It is, therefore, important for banks to develop a culture of socially responsible investing. Globally, several countries have undertaken pro-active measures towards undertaking responsible investments (Box 6.1).

In the Indian context, some banks have developed a fund to generate long-term capital growth from an actively managed portfolio of equity and equity-related securities, primarily of socially responsible companies focusing on sustainable development. Accordingly, in collaboration with rating agencies, an extensive set of sustainability criteria has been developed, encompassing environmental, social and corporate governance aspects to objectively assess the company's orientation towards sustainability responsibilities. Subsequently, scores have been developed for 500 Indian companies which comprise the S&P CNX 500 Index companies. With the launching of the S&P ESG India Index in January 2008 (comprising 50 Indian companies that meet certain ESG criteria and drawn from the largest 500 companies listed on the NSE through a two-stage screening process) the Panel feels that the aspiration among companies to rank well on this index would create a motivation to enhance their sustainability disclosure standards. In this process, they could realise much of their latent capitalisation potential by attracting large sustainability oriented investors[90].

6.5 Access to Finance for Small Scale Industries (SSIs)

Small Scale Industries (SSIs) constitute an important segment of the economy in terms of their contribution to the country's industrial production, exports,

Box: 6.1: Socially Responsible Investment – Country Practices

In Brazil, the Bovespa Corporate Sustainability Index is the first index tracking the economic, financial, corporate governance, environmental and social performance of leading companies listed in the Sao Paolo stock exchange. It was launched in 2005 to provide asset managers and investors with a reliable and objective benchmark of the best corporate social responsibility practices in the country.

In South Africa, the Johannesburg Stock Exchange's Socially Responsible Investment (SRI) Index was launched in 2004 in response to the burgeoning debate around sustainability globally and particularly, in the South African context.

In Malaysia, a leading consulting firm is in process of establishing a Corporate Social Responsibility (CSR) responsible business rating tool for Malaysian companies. The new reporting tool, called Responsibility™ will enable firms to measure their performance against a set of comparable standards based on other international indices which have been customised to reflect the values and perceptions of stakeholders in Malaysia. The ratings system will enable the company to provide a clear and effective way to demonstrate to stakeholders that the highest standards of social and environmental practice are applied in the management and production of your products and services.

Source : Boston Consulting Group (BCG)

[90] The Panel observes that conservative 'green accounting GSDP adjustments in many Indian states are already negative, and in excess of -9 per cent, so that on a holistic basis, there is in fact, negative economic growth.

Table 6.4: Performance of SSI Sector				
Year	Units (million nos.)	Production at current prices (Rs. crore)	Employment (million nos.)	SSI exports (Rs. crore)
1	2	3	4	5
2000-01	10.1	2,61,297	24.1	69,797
2003-04	11.4	3,64,547	27.5	97,644
2004-05	11.9	4,29,796	28.8	1,24,417
2005-06	12.3	4,97,842	29.9	1,50,242
2006-07	12.8	5,85,112	31.3	..

Source: RBI

employment and creation of entrepreneurial base. During 2006-07, there were a total of 12.8 million SSI units with production aggregating Rs. 5,85,112 crore and employment of 31.3 million persons (Table 6.4). In 2006, the 'Micro, Small and Medium Enterprises Development (MSMED) Act, 2006' was passed. The Act broadened the concept of industries to that of enterprises and definitional clarity was provided to the classification of these entities (Table 6.5)[91].

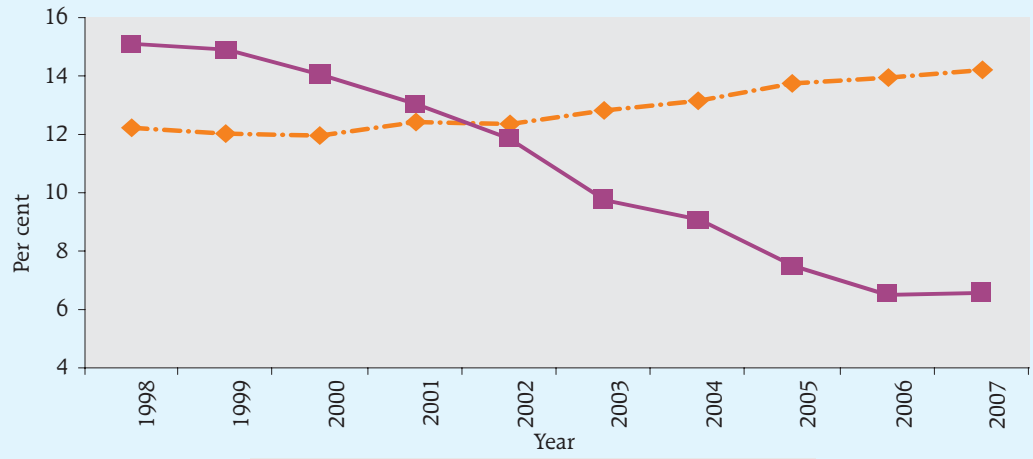
But, in spite of their numbers and importance in job creation, SSIs have traditionally faced difficulties in obtaining formal credit or equity. The maturities of bank loans extended to SSIs are often limited to a period far too short for them to pay off any sizeable investment. Access to competitive interest rates is often reserved for a few selected blue-chip companies. These preferences and tendencies have exacerbated financing problems for SSIs. This is seen in Chart 6.1 which shows that the share of credit to SSI has declined from around 15 per cent in 1998 to less than 7 per cent in 2007, while their share in GDP has remained at around 13 per

Table 6.5: Definition of Micro, Small and Medium Enterprises		
	Investment in plant and machinery/ equipment (excluding land and building)	
	Manufacturing	Services
1	2	3
Micro	Upto Rs. 25 lakh	Upto Rs. 10 lakh
Small	More than Rs. 25 lakh and upto Rs.5 crore	More than Rs. 10 lakh and upto Rs. 2 crore
Medium	More than Rs.5 crore and upto Rs.10 crore	More than Rs 2 crore and upto Rs. 5 crore

Source: Ministry of Micro, Small and Medium Enterprises

[91] The MSMED Act came into effect on October 2, 2006. Accordingly, the coverage and the investment ceiling have been widened and the sector is presently called as micro, small and medium (MSM) enterprises sector. There is an immediate requirement to update the database accordingly. A fresh census is going to be conducted during 2007-08 to serve the purpose.

Chart 6.1: Share of Credit to SSI vs. Share of SSI in GDP



Source: RBI

cent. Traditional commercial banks and investors have been reluctant to lend to SSIs for a number of reasons.

- SSIs are regarded by creditors and investors as high-risk borrowers due to insufficient assets and low capitalisation, vulnerability to market fluctuations and high mortality rates.
- Information asymmetry arising from SSIs' lack of accounting records, inadequate financial statements or business plans makes it difficult for creditors and investors to assess the credit-worthiness of potential SSI proposals.
- High administrative and/or transactions costs of lending or investing small amounts do not make SSI financing a profitable business.

As a result, commercial banks have a tendency to prefer large corporate borrowers, who provide better business plans, have formal credit ratings, more reliable financial information, better chances of success and higher profitability prospects for the banks. When banks do lend to SSIs, they tend to charge them a commission for assuming risk and apply tougher screening measures which drive up costs.

Given the average share of SSIs in GDP at 13 per cent over 1998-2007 and the declining credit flow to this sector, an attempt has been made to ascertain the 'credit gap', if the share of SSI credit to gross bank credit (GBC) is to remain at 13 per cent. The 'credit gap', expressed as a percentage of actual credit to SSI, indicates that this gap has steadily increased from 9 per cent in 2002 to nearly 100 per cent in 2007, the average gap being 69 per cent over this period. In other words, in order to maintain their share in GBC at 13 per cent, SSIs would require roughly double the amount of credit in 2007 than at present (Table 6.6).

The Panel observes that a well-functioning and sustainable mechanism for SSI financing requires institution-building and a market based approach. Lending institutions must improve their ability to provide financial services to SSIs through commercial mechanisms that lower costs and minimise their risk exposure. Reducing the transmission cost of evaluating SSI credit could be a way of levelling the playing field with evaluating the cost of loans to large credits. Only in this way will financial institutions find SSI lending to be more profitable and thus be encouraged to construct lending programmes targeted at them.

Table 6.6: "Credit Gap" for SSI			
Year	**SSI share in GDP**	**SSI share in GBC**	**Credit gap**
1	2	3	4
1992	12.3	14.9	
1993	11.2	14.3	
1994	11.4	15.5	
1995	12.0	14.9	
1996	12.4	14.4	
Average 1992-96	*11.9*	*14.8*	
1997	12.2	14.3	
1998	12.3	15.1	
1999	12.0	14.9	
2000	11.9	14.1	
2001	12.4	13.1	
Average 1997-2001	*12.2*	*14.3*	
2002	12.4	11.9	9.2
2003	12.8	9.7	34.0
2004	13.2	9.0	44.4
2005	13.8	7.5	73.3
2006	13.9	6.5	100.0
2007	14.2	6.5	100.0
Average 2002-07	*13.4*	*7.7*	*68.8*

Note : "Credit gap" is computed as (potential credit flow *if* SSI share in GBC were to remain at 13 per cent *less* actual credit flow to SSI)*100/Actual credit flow to SSI
Shares are in percentage terms;
Source: Computed from RBI data

6.6 Concluding Remarks

It is often argued that in dealing with issues relating to social stability (fairness and equity) rather than financial stability, the risk is that the implementation of the social stability policies can compromise financial stability. Further, it is argued that access to finance and information requires investments in social infrastructure that need to be tackled fiscally, rather than by relying totally on private sector initiatives. However, the social challenge of growth and development goes beyond deprivation caused by illiteracy, malnutrition, drinking water, sanitation *etc.*, and includes aspects related to economic deprivation. In the present context areas like customer service, financial inclusion and access to finance for SSIs are relevant in this regard.

Chapter VII

Assessment and Recommendations

7.1 Macro Economic Environment

7.1.1 Assessment

Macroeconomic developments and shocks can impact financial sector which are inter-linked through various channels and particularly impact banks' balance sheets. Since the stability of the financial system is vital to achieve the objectives of sustained growth and low inflation, macro stress testing assumes significance to assess the resilience of the system to macroeconomic shocks. In India, such stress testing is currently constrained by availability of requisite data and models.

(Section 1.2)

The sub-prime meltdown in the US and the consequent financial turmoil has resulted in a moderation of global economic activity from the erstwhile buoyant conditions till 2007. Consequently the global economic growth is expected to slow down. According to projections, global economic growth is expected to decline to 3.4 per cent in 2008 from 5.2 per cent in 2007 with the downturn led by the advanced economies. The global GDP growth is projected to decelerate further to 0.5 per cent in 2009. There are also concerns about the liquidity management in banks and the general functioning of credit markets.

(Section 1.3)

Though there will be a moderation in India's growth rate in the immediate future, the current trend of 8 per cent growth rate of the Indian economy is sustainable over the medium-term in view of the manifold positive factors at work. However, there is a need to initiate further measures in order to sustain this growth.

(Section 1.5.1)

The following aspects are identified as potential areas of macroeconomic vulnerability:

- The low growth in agriculture could be a challenge for sustaining economic growth and there is a need to step up the growth rate of the agriculture sector.

  (Section 1.5.2)
- Given the current pressures on the economy, it would not be possible to contain fiscal at the budgetary levels for the year 2008-09. The interim budget for 2008-09 has also shown a slippage.

  (Section 1.5.3)
- Meeting the huge financial requirement of the infrastructure sector remains a challenge.

  (Section 1.5.4)
- Governance issues are among the leading deterrents for doing business in India.

  (Section 1.5.5)

- While the composition of the labour force in India provides comfort to exploit demographic dividend, the educational infrastructure needs to be upgraded to adapt to the evolving needs of growing industry and service sectors.

(Section 1.5.6)

- The increased FII flows till 2007-08 reversed its trend in 2008-09. The judgment about excess volatility of capital flows will depend not merely on the quantity of the flow, but to some extent on the quality in terms of components of the capital flow *i.e.*, whether capital flows are of enduring nature or temporary. Strategic management of the capital account would warrant preparedness for all situations.

(Section 1.5.9)

The financial system in India comprising financial institutions, markets, instruments and services is characterised by two major segments – a growing organised sector and a traditional informal sector. Financial intermediation in the organised sector is conducted by a large number of financial institutions (banking and non-banking) like commercial banks, cooperative banks, regional rural banks and development banks. Non-banking financial institutions include finance and leasing companies and other institutions like the insurance companies, mutual funds, provident funds, post office banks *etc.* Banks are the most important of the financial intermediaries, accounting for nearly 67 per cent of total assets and commercial banks dominate the sector, comprising around three-fifths of the financial system assets.

(Section 1.6.1)

India's financial markets were relatively underdeveloped and dormant till the mid-1980s because of tight regulation and administrative restrictions. Financial sector reforms, introduced in the early 1990s have encompassed all segments – money, credit, government securities, foreign exchange, equity and to a lesser extent, the corporate debt market. While deregulation, globalisation and liberalisation have engendered several benefits, they also pose several risks to financial stability. In recognition of the possible destabilising factors, India has been following a gradualist approach in liberalising its financial markets with appropriate prudential safeguards being put in place that take into account the impact of reforms across institutions and markets.

(Section 1.6.2)

7.1.2 Recommendations

In view of its importance for monetary and financial stability, there is a need to put in place a macroeconomic stress testing framework for macro-prudential assessment and surveillance on an ongoing basis by strengthening institutional arrangements.

(Section 1.2)

Sustaining growth will require further policy reforms in the country. Better fiscal discipline, management of portfolio inflows, rapid capacity additions through investments and productivity improvements and improvement in the effectiveness of

Government intervention in critical social overhead capital to achieve a more inclusive growth is critical.

(Section 1.5.1)

There is a requirement of modernising and diversifying agriculture through better credit delivery, investment in irrigation and rural infrastructure, improved cropping pattern and farming techniques and developing food processing industry and cold storage chains across the entire distribution systems.

(Section 1.5.2)

Development of infrastructure is a key requirement. Financial intermediaries are constrained by the time profile of their own liabilities, as the resources of banks are essentially short-term in nature, whereas the maturity requirements for infrastructure funding are often long-term. In view of these concerns, the Panel recommends that alternate sources of financing infrastructure projects needs to be actively explored. Private participation in financing of infrastructure projects is a necessity. Development of corporate bond market is also vital in this regard.

(Section 1.5.4)

With volatile oil price and high exposure to mineral oil imports, a more efficient use of petroleum products would be warranted, such as through improved public transportation systems. New investments in upgrading public transport systems would not only contain the high dependency on mineral oil, but also have positive externalities in terms of curbing climate change emissions.

(Section 1.5.7)

Though more capital flows need to be encouraged, liberalisation could be used strategically to help evolution of financial markets in alignment with associated improvements in macro-economic developments like fiscal consolidations.

(Section 1.5.9)

7.2 Aspects of Stability and Performance of Financial Institutions

7.2.1 Commercial Banks

7.2.1 (a) Assessment

The assets of listed banks comprise around 85 per cent of total commercial banking assets; both deposits and credit have increased markedly, leading to a significant financial deepening. The growing pressures of competition have led to a gradual decline in the share of public sector banks in total commercial bank assets. The evidence of competitive pressure is supported by the low Herfindahl concentration index. The cost-income ratio, a measure of efficiency, has improved over time and also displayed convergence across bank groups. The assessment of financial soundness indicators show that there has also been a significant improvement in bank performance, judged in terms of prudential and financial parameters, such as capital adequacy, asset quality and profitability indicators. Financial intermediation costs have reduced over the years. Solvency of the banking system has also increased over time.

(Sections 2.2.1, 2.2.3, 2.2.4)

Public sector banks play an important role in fostering stability in the financial system. They have also shown improvements in efficiency. The goal of promoting efficiency in PSBs will be better served if steps are taken to improve the incentive structure in these banks so as to foster greater innovation as also diversify the income stream of these banks.

(Section 2.2.2)

In spite of the significant government ownership of banks, the cost incurred by India for recapitalising the PSBs is low (around one per cent of GDP) and such forbearance has not led to any significant increase in fiscal cost.

(Section 2.2.4 (d))

Regulation of the operations of large global banks in an economy such as India needs to recognise the fact that their Indian operations form only a small proportion of global operations and some of the key decisions relating to risks may be taken abroad, whereas the impact is felt locally. The Panel endorses the RBI's standpoint on the roadmap for foreign banks and reiterates the fact that developing appropriate risk management skills for domestic banks remains a *sine qua non* at the present juncture.

(Section 2.2.2)

In the absence of adequate data to link macroeconomic scenarios with financial soundness indicators and also the lack of any serious systemic 'stress events' in the Indian financial system for the last fifteen years, the current assessment has used single factor sensitivity analysis to assess the resilience of the financial system to exceptional but plausible events by applying "judicial" criteria on "selected" indicators based on its experience of the Indian financial system.

(Section 2.2.4(a)

Though asset slippage of banks over the past few years provides limited cause for concern, there is a need to exercise caution in the event of the economic downturn. There has been a marginal uptrend in the impaired loans in the banks' retail portfolio. The vulnerability could lie in housing loan where there may be an increase in NPAs owing to one or a combination of (a) inadequate risk assessment; (b) sudden increase in Loan-to-Value (LTV) ratio due to fall in housing prices; and (c) increased delinquency in housing loan segment. Additionally, a significant portion of other personal loans are uncollateralised.

(Section 2.2.4(f))

Stress test of credit risk shows that, under the most stringent scenario, when the maximum asset slippage since 2001 is assumed to occur, the overall capital adequacy of the banking sector declines to 11.6 per cent as at end March 2008. Fifteen banks accounting for roughly 15 per cent of commercial banking sector assets at end March 2008 would not be able to meet the minimum regulatory capital requirements. Although credit risk concerns thus remain low at present, there is a need for closer and continuous monitoring of such risks in order to avoid any unforeseen possibilities of significant asset quality deterioration over the medium-term.

(Section 2.2.4(f))

Although interest income has generally remained the mainstay for banks, the diversification of banks' portfolio has resulted in rising share of non-interest income, especially for new private and foreign banks. An analysis of the dynamics underlying the profit augmentation process of banks indicates that the profit margin has increased, while asset utilisation has witnessed a decline in the same period.

(Section 2.2.4 (g))

There is a gradual and growing dependence on purchased liquidity coupled with an increase in illiquid component of banks' balance sheets. Excessive reliance on borrowed funds rather than low-cost stable deposits as a mode for funding asset growth can engender serious asset liability

mismatches, which can be called into question in times of stress.

(Section 2.2.4 (h))

The banks have been actively managing the interest rate risk in their portfolios. The duration of equity, which was 14 years in March 2006 had come down to eight years by March 2008. The daily yield volatility of liquid government securities of 15 years residual maturity using the exponentially weighted moving average (EWMA) method was estimated at 6.6 bps which translates into a 244 bps shock for the securities. Given a DoE of eight years, a 244 bps increase in yield would result in around 19.5 per cent erosion in capital and reserves. From an economic value perspective, the estimated erosion in capital funds (regulatory capital) due to a 244 bps increase in the interest rate would reduce the system CRAR from 13.0 per cent to 10.9 per cent in March 2008.

The stress test result on the banking book shows that for a 244 bps interest rate shock, the CRAR would reduce from 13.0 per cent to 11.9 per cent in March 2008. The effect on the trading book will be marginal and CRAR would move to 12.0 per cent after imparting the shock.

(Section 2.2.4 (i))

The recent years have witnessed a spurt in credit growth, a combined result of robust macroeconomic performance and a shift in asset preference from investments towards loans partly due to hardening of yields. With the growing exposure on housing loans and real estate along with growth in exposure to infrastructure sector, there has been an increasing asset liability mismatch. Dependence on bulk deposits to fund the credit growth also has liquidity and profitability implications. The increase in sub BPLR loans raises concern about risk pricing. The quality of retail assets has shown a marginal downtrend and points to the need to exercise better credit discipline in loan administration.

(Section 2.6.1(c))

Banks' exposure to capital market remains low. The impact of equity price risk on banks' capital therefore does not appear significant.

(Section 2.6.1(d))

Given the spurt in off-balance sheet exposure, the propensity of participants to use derivatives to assume excessive leverage coupled with the lack of prudential accounting norms remains a significant concern. In the backdrop of knowledge concentration and reporting issues, the use of risk mitigation techniques remains a *sine qua non* in this area. The approach of the Reserve Bank towards prudential norms has been of gradual convergence with international best practices, tailored to country-specific considerations.

(Section 2.6.1 (e))

7.2.1 (b) Recommendations

The off-site monitoring and surveillance mechanism could be augmented to include collection of data necessary to monitor financial stability. An inter-disciplinary Financial Stability Unit is required to be established for ongoing monitoring of systemic vulnerabilities and publish stability reports.

(Section 2.2.4 (a))

Capital augmentation in PSBs could be effected through (a) Government providing matching capital to these banks and/or (b) making amendments to have enabling legal provisions. In this context, a selective relaxation could be granted to banks having government ownership at the borderline of 51 per cent and the extent of dilution could be decided on a case-by-case basis. Several other possibilities like issue of perpetual preference share, golden share, *etc.*, can also be explored.

(Section 2.2.4(c))

The internal assessments of capital requirements conducted under Pillar II of the new Basel Accord should be supported by appropriate stress and scenario testing arising out of liquidity shocks. In addition, these can be supplemented by system-wide modelling of liquidity using different levels of margins and risk spreads to ensure that the macro-prudential supervisor has an understanding of where liquidity pressures may build up in the system as a whole, rather than in specific institutions. Dependence on purchased liquidity enhances the liquidity risk of banks and it should be suitably factored into the internal assessment of capital. It may also be worth considering a specific regulatory capital charge if banks' dependence on purchased liquidity exceeds a threshold. A Working Group could be constituted to examine aspects related to liquidity risk in totality.

(Section 2.2.4(h)(IV))

The adoption of techniques and methodology of RBS at an early date needs to be actively considered. This will enable a clearer profile of the bank, highlight the attendant risks and vulnerabilities and enable better tailoring of the supervisory cycle for the bank.

(Section 2.6.1(a))

PSBs would need to undertake a thorough assessment of the competence levels of officers within the organisation and effect redeployment tailored to their skill level in order to address the skill gap in the medium term. Over the longer-run, there is a need to develop comprehensive human resource development and management policies for better utilisation and deployment of these resources. There is also a requirement for capacity building of the regulator.

(Section 2.6.1 (a), Annex 2.7)

In the case of derivative products, it is felt that the on-site examination process should be supplemented by a forensic "follow the evolution of the product" approach. Such "forensic" examination would require training examiners to understand complex products and the risks at each stage of evolution of a derivative product.

(Section 2.2.4(h), Section 2.6.1 (a))

The rationale for PSB consolidation in general is not clear, although it might be appropriate in case of some troubled banks. Consolidation would prove useful only if certain enabling conditions, such as suitable progress in terms of industrial relations and human resource issues, are adequately addressed. The time is opportune though for old private banks to explore the possibilities of consolidation, more so given that several of them are already listed. The regulators can also play a pro-active role in facilitating consolidation within this segment.

(Section 2.6.1(b))

Risk management functions could be centralised and seamlessly integrated into the business process. All risks – credit, market, liquidity and operational – will have to be combined, reported and managed on an integrated basis. The focus should be on Risk adjusted Return on Capital (RAROC) to drive pricing, performance measurement, portfolio management and capital management.

(Section 2.6.1(f))

While the provisioning practices in India are presently on par with international standards, there is a need to explore the possibility of introducing a system of dynamic provisioning in the Indian context.

(Section 2.6.1(f))

Any suggestion that Government must exit its monitoring function and leave governance entirely to a duly constituted board is unrealistic in the present environment and that such a move might, perhaps, be undesirable as well. A more appropriate route to enhance corporate governance would be to improve flexibility of decision making of bank management, unhindered by government interference. The fit and proper guidelines stipulated for bank boards need to be followed in both letter and spirit.

(Section 2.6.1(g))

While well-defined trigger points have been provided by way of prudential/financial parameters breaching defined thresholds under the Prompt Corrective Action guidelines, a suitable time frame for the delineated action points would need to be categorically documented for effective implementation.

(Section 2.6.1 (h))

The remuneration/incentive structure of the public sector banks would need to be commensurate with the responsibility that the job entails and more aligned to market trends. At the same time the incentives for top management and key executives need to be linked to their performance over a longer-term economic cycle and both cash and non-cash (e.g., ESOPs) payments need to be monitored. This is important in the context of the recent subprime turmoil. In case of banks where incentives for risk-taking are high, it may be appropriate to mandate a higher level of regulatory capital.

(Section 2.6.1(i))

7.2.2 Regional Rural Banks

7.2.2 (a) Assessment

Given their small size, the RRBs appear to present minimal risk, though risk of contagion remains. The asset quality of RRBs remains a cause for concern. The Panel endorses the measures undertaken to expand the avenues towards augmenting the non-interest income of RRBs. Multiple institutions, *viz.* the RBI, NABARD, Government of India and the sponsor commercial banks, monitor the performance of RRBs.

(Section 2.3)

7.2.2 (b) Recommendations

Given the varying status of RRBs as regards their financial health, computerisation, amalgamation, quality of governance, *etc.*, these banks could be appropriately categorised and differential time-frame and roadmap could be prescribed for operationalisation of the Basel I norms.

(Section 2.6.3 & 2.3)

7.2.3 Urban Co-operative Banks

7.2.3 (a) Assessment

There has been a decline in the proportion of weak and sick UCBs.

(Section 2.4.1)

Though there has been some improvement in capital adequacy of UCBs, high gross NPA ratio and low profitability are causes of concern. High NPAs are also a function of cumbersome write-off procedures.

(Section 2.4.1(a), 2.6.2)

Stress tests of credit risk for scheduled UCBs reveal significant vulnerabilities in this sector. At the system level, the CRAR would decline from 11.40 per cent to 5.6 per cent at 25 per cent stress on NPAs and 2.8 per cent at 50 per cent stress.

(Section 2.4.1 (b))

In order to address the problem of dual control, MoUs have been signed between the Reserve Bank and Central/State Governments. Till January 2009, MoUs have been signed with 24 states and the Central Government.

(Section 2.6.2)

7.2.3 (b) Recommendations

The multiplicity of command centres and the absence of clear-cut demarcation between the functions of State Governments and the Reserve Bank have been the most vexatious problems of urban co-operative banking movement. Though from a medium-term perspective, the issue is partly circumvented through MoUs with the State and Central Governments, there is a significant scope for achieving increased regulatory/supervisory efficacy.

(Section 2.6.2)

Procedural simplification by enhancement of the power of the regulator could enhance the process of merger / amalgamation of UCBs and help restructure the sector.

(Section 2.6.2)

Many of the problems faced by UCBs are due to governance issues and related lending activities. Since board members are elected by borrowers, there is a tendency of the elected board to neglect depositors' interests in some cases. There is a need to improve standards of corporate governance by inducing greater professionalism on boards of UCBs and increasing the involvement of depositors in the boards through encouraging membership of depositors.

(Section 2.6.2)

7.2.4 Rural Co-operative Banks

7.2.4 (a) Assessment

The rural co-operative banking segment is almost totally dependent on NABARD refinance. The high level of delinquent loans of this segment coupled with poor profitability remains a source of risk. In addition, their recovery performance is also less than adequate.

(Section 2.4.2)

The Panel endorses the view of the Vaidyanathan Committee that a stipulated minimum of 7 per cent CRAR could be implemented for StCBs and DCCBs.

(Section 2.6.3)

7.2.4 (b) Recommendations

Necessary amendments in the relevant sections of the BR Act to enhance the powers of the regulator may be explored. There is a need to squarely address the regulatory and supervisory governance structure. The limited enforcement powers of NABARD require to be enhanced.

(Section 2.6.3)

7.2.5 Non-Banking Finance Companies

7.2.5 (a) Assessment

NBFCs have been playing a crucial role in broadening access to financial services, enhancing competition and bringing in greater diversification of the financial sector which also enables risk diversification in the system. They have shown a great deal of flexibility in meeting the increasingly complex financial needs of India's growing economy. The NPA levels in the NBFC sector are low and profitability levels comfortable.

(Section 2.5.1)

Though small in size, the RNBC segment accounts for over 90 per cent of public deposits with high gearing ratios, defined as public deposits as a multiple of NoF. The NBFCs-ND-SI is the fastest growing segment in the NBFC sector.

(Section 2.5.1)

7.2.5 (b) Recommendations

There are strict norms relating to banks' exposure to NBFCs which could lead to funding constraints. The urgency of developing an active corporate bond market assumes importance, so that NBFCs have alternative financing sources, without disrupting systemic stability.

(Section 2.5.1)

The regulatory framework for banks and NBFCs needs to be appropriately defined. It is important to create a regulatory structure that prevents regulatory arbitrage.

(Section 2.6.4)

Given that foreign entities have evinced significant interest in NBFC sector, there is a need to explore the possibility of formalisation of the relationship with foreign regulators that encompass a transparent method of information sharing.

(Section 2.6.4)

The major acquisitions of the NBFCs cannot be reviewed by the supervisor. The Reserve Bank may explore the option of obtaining information on names and holdings of significant shareholders of NBFCs who exert controlling influence. The Reserve Bank could also be empowered regarding appointment, rejection and rescinding of external auditors.

(Section 2.6.4)

7.2.6 Development Finance Institutions

7.2.6 (a) Assessment

There has been a gradual shrinkage in the size of the DFI sector, with several major all-India financial institutions having amalgamated with their banking counterparts. Some other Development Finance Institutions have turned into NBFCs.

(Section 2.5.2)

7.2.7 Housing Finance Companies

7.2.7 (a) Assessment

The entry of banks in the housing finance business resulted in a rapid expansion of the market. While the HFCs also witnessed an increase over time in their business, banks garnered larger share of this market over time due to their lower cost of funds and wider distribution network.

(Section 2.5.3)

Available evidence indicates that HFCs are well-capitalised and have low delinquent loans; their profitability levels are also quite comfortable.

(Section 2.5.3 (a) & (b))

The compounded annual growth rate of housing loans has been higher than the growth in household income in recent years. This, coupled with the increase in interest rates, has led to an increase in household debt burden and elongation of repayment period, raising concerns of loan delinquency.

(Section 2.5.3 (c))

7.2.7 (b) Recommendations

Owing to non-availability of systemic data on housing demand and prices, gauging the impact of activity in this segment becomes a challenging task for policy makers. The construction of a national housing price index must be taken up on a priority basis.

(Section 2.5.3 (d))

Housing price index should be supplemented by a house start up index to provide insights on the elasticity of property supply to property prices as well as the cost of hosing credit. In this context, the report of the Technical Advisory Group (TAG) set up by the Reserve Bank for this purpose requires to be submitted early.

(Section 2.5.3 (d))

7.2.8 Non-Financial Sector

7.2.8 (a) Assessment

The manufacturing sector had witnessed a significant improvement in the financial performance, during the period between 2003-04 and 2006-07, though there has been a pressure on their profits in 2008-09.

(Section 2.5.4 (a))

The absence of updated data in respect of household indebtedness is a serious concern and is all the more pronounced in view of the recent increase in the retail loan portfolio of the banks and the increasing housing demand.

(Section 2.5.4 (c))

7.2.8 (b) Recommendations

The quantum of unhedged foreign currency exposure of corporates is difficult to estimate. A practical way forward could be a two-pronged strategy comprising periodic survey by the Reserve Bank, based on returns collated by authorised dealers (ADs), supplemented with mandated, (through Institute of Chartered Accountants of India) disclosures in companies' balance sheets.

(Section 2.5.4 (b))

7.2.9 Insurance Sector

7.2.9 (a) Assessment

The Indian life insurance sector, both public and private, has been experiencing robust growth since its opening up in 2000. The nature of product mix has significantly changed. The need for long-term care product is gradually gaining momentum in the face of increasing life expectancy. Non-life industry has moved towards risk based pricing and health insurance products are being introduced. The concentration in the insurance industry, though high, has been reducing over time.

(Section 3.2)

An analysis of the key financial soundness indicators in the life insurance sector shows that the life insurance industry is reasonably comfortably placed. There is increase in link based business in the life sector.

(Section 3.4.1)

While non-life sector also displays comfortable solvency, there are some concerns on the earnings and profitability indicators, adequacy of premium and liquidity front.

(Section 3.4.2)

Major risk factors that impact the life insurance companies are market risk including interest rate risk, longevity risk, insurance risks, credit risk and operational risk. With regard to non-life insurance companies the risks major risks stem from market and insurance specific risks.

(Section 3.5)

Stress tests have been carried out for two life insurance companies with diverse business models. Depending on the portfolio composition of its business, interest rate shock and expense variation exert the most significant effect on the solvency ratios of life insurance companies.

(Section 3.6.3)

A reasonable degree of comfort is visible in the sector due to regulatory norms. In spite of stringent entry level capital requirements,

there is significant international interest in entering into the Indian insurance sector.

(Section 3.7)

7.2.9 (b) Recommendations

There would be a need to move towards a more sophisticated Risk based Capital (RBC) model and Risk based Supervision (RBS) by the supervisor and such initiatives would require changes in the statute and the overall approach towards supervision. A precondition for introduction of RBS would be the development of adequate data base through introduction of a robust and risk focused off-site surveillance and monitoring mechanism.

Going forward, companies have to pay more attention in their expense management.

It is important for insurance companies to put in place an asset-liability management (ALM) framework in order to measure and manage the market risk and the interest rate risk which can have a pronounced impact on the financial stability – particularly for life insurance companies which have significant levels of non-linked business.

Life insurance companies also sell health and pension products. Hence, a suitable set of indicators should be developed so as to capture the risks in this business. More emphasis will also be needed to be given on the pay out structure which will enable life insurers to share or transfer one or more risks to the annuitants.

Given the evolving state of the industry and the significant opportunities as well as challenges that it faces, both the regulator and companies will have to develop a system to ensure availability of relevant data on a regular basis and its continuous updation, so as to conduct meaningful stress tests in sync with evolving market realities.

Development of skill sets particularly in respect of actuaries and treasury managers is a necessity. As many life insurance companies have entered into joint ventures with banks, it could be appropriate for treasury managers in insurance companies to acquire skill sets from bank treasuries.

(Section 3.7)

7.3 Financial Markets

The gradual removal of structural bottlenecks in the Indian financial markets and a shift away from the administered interest rates has led to greater market integration. Some of the markets which show strong correlation are money and government securities markets, exchange rate and stock markets and foreign exchange forward and money markets.

(Section 4.2)

7.3.1 Money Market

7.3.1 (a) Assessment

Regulatory initiatives like introduction of Section 45W (Chapter III D) in the RBI Act has brought further clarity to the power of RBI to regulate, monitor and supervise money market. Transparency has improved with the OTC market being replaced by screen based trading.

(Section 4.3.2)

The relative importance of call money to tide over overnight mismatches has declined with the share of market repos and collateralised borrowing and lending obligation (CBLO) gaining in prominence. Based on data on bid-ask spreads, the market appears to be liquid. Since the introduction of financial market reforms, there has been a significant reduction in volatility in the money market. The absence of term money market has led to the entire swap market concentration on overnight benchmark.

(Section 4.3.3 (a))

7.3.1 (b) Recommendations

The term money market could be developed by phasing out cash credit, allowing interest rate futures and letting banks take

trading position in IRF. Short selling of all kinds of money market instruments could be allowed in a phased manner. Re-introduction of longer term LAF and introduction of a term liquidity facility by the Reserve Bank could also help develop the term money market. The last named initiative have already been introduced by the Reserve Bank to address the liquidity crisis in 2008-09.

(Section 4.3.4 (a))

Repo on AAA rated corporate bonds could be allowed to significantly enhance the trading volumes in repo market. This would require a reasonably well developed corporate bond market along with a transparent and efficient clearing and settlement system.

(Section 4.3.4 (b))

Giving a full-fledged SRO status to FIMMDA could be a viable option to streamline money market and related derivatives regulation.

(Section 4.3.4(c))

All commercial papers should be rated keeping in view the availability of appropriate liquidity back-up. The disclosure of the nature of liquidity back-up by issuers is also recommended.

(Section 4.3.4(d))

7.3.2 Foreign Exchange Market

7.3.2 (a) Assessment

There has been a significant increase in foreign exchange market turnover with spot market being the most important market segment. In derivatives segment, the swap market has highest turnover. There is a perceptible increase in liquidity in foreign exchange market. Off-shore (NDF) market in Indian Rupees is also picking up.

(Section 4.4.3)

7.3.2 (b) Recommendations

As proposed by the Committee on Fuller Capital Account Convertibility in 2006, electronic trading platform for the conduct of all foreign exchange transactions (including derivatives) should be introduced (currency futures has since been launched from August 2008 in major stock exchanges).

(Section 4.4.5(a))

To address the regulatory gaps in respect of foreign exchange brokers, a process of on-going surveillance and monitoring with suitable disincentives for breach/ violation of the code of conduct could be considered.

(Section 4.4.5(a))

Disclosure of foreign exchange derivative transactions by non-bank entities need to be introduced at an early date to enable market participants (banks, regulators, rating agencies, equity analysts) to assess the risks assumed by the entities. Pending ICAI disclosure guidelines, the Reserve Bank could collate and disclose derivative transactions between banks and corporates above a certain volume.

(Section 4.4.5(b))

CCIL could consider extending guarantees to settlement of forward trades to reduce risk and consequently capital charge.

(Section 4.4.5(c)

The evidence indicates that varied derivatives products for Indian credit, interest rate and equities are being traded in off-shore

locations. This clearly indicates that the demand for such products exists. There is a need for less restrictive and more pro-active regulations and development of products in this regard. With the gradual advent of fuller CAC, the Reserve Bank can consider allowing onshore banks to trade NDFs directly with authorised dealers in India because the onshore market is presently much deeper than the offshore market.

(Section 4.4.5(d))

The concerns relating to impact of carry trade positions need to be addressed by allowing restructuring of open rupee derivative trades and introduction of stricter accounting norms. At the point of sale, banks should have in place a pre-agreed cap on losses on carry trades entered into by customers.

(Section 4.4.5(e)

High priority is required to be given on 'customer suitability' and 'appropriateness standards' as also capacity building among both the market participants and the regulators.

(Section 4.4.5(f))

The Reserve Bank should consider abandoning AGL/TAGL and replace it with a flexible system of reporting based on VaR and PV01 criteria, with bank managements held accountable for implementing the principles thereof to market standards. These may be considered adequate to ensure that ADs are correctly recognising, recording, reporting and managing interest rate risk. This process, if implemented requires supervisory validation of VaR and related models. Supervisory capacity building becomes essential in this regard.

(Section 4.4.5(g))

7.3.3 Government Securities Market

7.3.3 (a) Assessment

There have been significant developments in government securities market in terms of market infrastructure, price discovery, fiscal prudence, *etc.* Though the market witnessed considerable growth, the investor base has not extended to the same extent and retail participation in the market remains low. There has been an increase in transparency through introduction of screen based trading.

(Section 4.5.2)

The outstanding stock of government securities has increased significantly, both in absolute terms and in relation to GDP. Market borrowings (net) financed around 67 per cent of combined gross fiscal deficit of the centre and states in 2007-08. The weighted average maturity of primary issuances of the central government securities increased to 14-15 years during the current decade as compared with 5.7 years in 1995-96.

(Section 4.5.3)

The yield curve in India has generally remained flat and has become flatter over time.

(Section 4.5.4)

Almost entire trade in the derivatives segment is concentrated in over-the-counter (OTC) IRS. Inadequate transparency in this market has prompted the Reserve Bank to introduce a reporting mechanism which has taken off in August 2007 and this is expected to improve the pricing transparency and consequently the volume significantly. A Working Group constituted by the Reserve Bank has examined the ways of activating the interest rate futures market. An RBI-SEBI Technical Committee is considering operationalisation of the recommendations of the report and it is expected that products as per recommendations of the Group shall be introduced in early 2009 along with supporting changes in regulatory / accounting framework.

(Section 4.5.5)

The regulatory accommodation, since September 2004 of allowing banks to hold a higher portion of their investment portfolio

in the HTM category to immunise them from MTM losses in the increasing yield scenario has resulted in rapid depletion of trading stock in the government securities market.

(Section 4.5.6(a))

7.3.3 (b) Recommendations

There is a need for further development of the government securities market by scaling down mandated investment, developing diverse instruments and take proactive regulatory initiatives like enhancement of short selling period, allowing lending and borrowing of government securities and encourage investors to increase the size of their trading books. FIMMDA could be accorded the status of an SRO by statutorily defining its jurisdiction and delegating powers accordingly and bringing it within the ambit of RBI regulation.

(Section 4.5.6 (a,e,f))

Availability of varied hedging instruments for effective mitigation of interest rate risk across the gamut of market participants by developing the derivatives market is a necessity.

(Section 4.5.6(b))

The recommendations of the Working Group on Liquidity of State Government Securities like introduction of short sales, introduction of non-competitive bidding in primary market of securities, alignment of tax structures in small savings with government securities should be implemented early.

(Section 4.5.6(c))

The limit on foreign investment in government securities need to be enhanced. Fuller capital account convertibility would imply freeing investment in government securities by foreign entities. This would necessitate better transparency – tighter and more elaborate disclosures; and accounting norms in line with international best practices. (The limits of FII investments in government securities markets stands at USD 5 billion per year).

(Section 4.5.6(d))

Granting a limited purpose bank licence could help in addressing the liquidity concerns of CCIL.

(Section 4.5.6(g))

7.3.4 Equity Market

7.3.4 (a) Assessment

Due to improved regulations, market infrastructure and transparency, India's rate of growth in equity market activity has been one of the highest in the world. The setting up of SEBI to regulate securities markets, demutualisation and corporatisation of stock exchanges and improvement in corporate governance practices have aided growth.

(Section 4.6.1)

Various measures in areas of trading infrastructure, improved clearing and settlement systems, risk management, monitoring and surveillance systems have been initiated by SEBI.

(Section 4.6.2)

The size of the market as measured by market capitalisation which had increased sharply between April 2004 and December 2007, witnessed a sharp decline in 2008-09. The secondary market transactions in the stock markets increased significantly. SEBI has,

among other things as part of market development initiatives, taken steps like permitting mutual funds to launch real estate MFs, introducing short selling, offering securities lending and borrowing scheme and reducing time period for completion of rights issues.

(Section 4.6.3)

The size of the public issue segment of capital market remained relatively small. Although the private placement segment of the market has increased sharply, it lacks transparency and a large number of investors are left out of the market.

(Section 4.6.4 (a))

7.3.4 (b) Recommendations

The payment upfront by Qualified Institutional Buyers (QIBs) is generally only 10 per cent of the total commitment (the minimum permissible amount) resulting in avoidable hype about over-subscription. There is a strong case for getting institutional bidders pay upfront the total amount bid and not a small percentage thereof.

(Section 4.6.4(a))

The elevated prices in the stock market make it vulnerable to potential and abrupt loss of confidence and reassessment. This has been evident in the current decline in stock market indices. In this context, the daily 'VaR' levels for each stock should be stress tested. The confidence level for computing 'VaR' may also need to be stressed. Many equity houses set 'stop loss' triggers by aligning them with 'VaR' levels. A breach in the value may induce large scale selling, further depressing the value. To rectify this deficiency, simulation models need to be developed to assess the impact of such market practices.

(Section 4.6.4(c))

For the purpose of reducing the time taken in IPO process it would be desirable to leverage the wide network of brokers and setting up a Central Integrated Platform (CIP) connecting multiple nodes including the Internet and broker terminals to enable investors to apply in public issues electronically.

There should be strong oversight of demutualised exchanges to address potential conflict of interest that may arise due to its commercial objectives and regulatory role. Inter-exchange/cross market surveillance needs strengthening to contain contagion risks. There is a need to give SRO status to trade associations like AMBI, AMFI, ANBI and FPSBI.

There is a need for faster convergence of Indian accounting standards with IFRS.

(Section 4.6.5)

7.3.5 Corporate Bond Market

7.3.5 (a) Assessment

Though there is significant primary issuance particularly by way of private placements of corporate bonds, the secondary market activity remains low. While various steps have been taken by SEBI in recent times to activate the corporate bond market, the lack of transparency and gaps in the market infrastructure along with legal impediments still remain and appear to be the root cause for non-development of the corporate bond market.

(Section 4.7.3)

7.3.5 (b) Recommendations

A careful prioritisation and sequencing of reform measure needs to be adopted. The parallel development of government securities markets, including the term money markets in government paper and related derivatives, is necessary to establish a risk free yield curve that would facilitate the pricing of corporate bonds.

The Panel recommends that the recommendations of the High Level

Government-appointed Committee on developing the corporate bond market needs to be expeditiously addressed. Besides the measures undertaken in the Union Budget 2008-09, the Panel recommends the following:

- Reduction in statutory pre-emptions.
- Rationalisation of stamp duty.
- Abolition of TDS in corporate bonds.
- Amendment to Section 60A of Companies Act 1956 with a view to rationalising public issues and listing of corporate bonds in stock exchanges.
- Introduction of DVP in corporate bonds market – introduction of settlement guarantees.
- Allow corporate bonds to be repoable (market repo); LAF repo needs to be considered at a later stage.
- Expedite market development of hedging instruments *e.g.*, CDS. Allow shorting within specified limits for banks and PDs.
- There should be phased movement towards anonymous order matching trading system if there is demand from the market.
- Enhanced transparency – consolidation and disclosure of all trades reported in different trading platforms.
- Timely, efficient and effective bankruptcy regime.
- Opening up of the insurance sector.
- Pension reforms are one of the necessary prerequisites for development of the corporate bond market. Expeditious passing of the Pension Regulatory and Development Authority Bill would bolster the process of pension reform.

(Section 4.7.4(d))

7.3.6 Credit Market

7.3.6 (a) Assessment

The credit derivatives market in India is in the nascent stage of development. While the subprime crisis points to a somewhat cautious approach to the development of this market, given the capital raising concerns faced by the banking sector, the credit risk transfer mechanism requires to gain ground, subject to prudential safeguards, to maintain the rate of credit growth and improve the flexibility of credit market operations in general.

(Section 4.8.1)

There is a need for development of the securitisation and credit derivatives market subject to appropriate regulatory safeguards. Disclosure requirements in respect of such markets need to be enhanced.

(Section 4.8.2) & (Section 4.8.3)

7.3.6 (b) Recommendations

Regulatory agencies may consider asking financial entities such as banks, NBFCs as well as all-India financial institutions to disclose the amount of securitised assets being serviced by them and, perhaps, stipulate certain threshold levels beyond which suitable actions may be taken by the regulator, in terms of say, higher capital adequacy requirements.

(Section 4.8.2)

The credit derivatives market can be developed by allowing more participants and

products. The participants should be well regulated and should follow transparent practices. Entry norms for participants should be clearly stipulated. FIMMDA could play a pro-active role by ensuring stable market infrastructure for proper settlement of trade.

(Section 4.8.3)

To mitigate risks associated with the credit risk transfer (CRT) instruments, regulation and supervision should be geared not only on credit, market and operational risks but also on liquidity risk. Liquidity risks emanating from off-balance sheet items and the inter-linkages of CRT instruments with other markets need to be recognised. Enhanced regulatory co-operation is needed for effective regulation of both entities and activities. Appropriate valuation and provisioning norms as also proper recognition of prevailing governance and legal impediments is required and factored in the pricing of the product. CRT instruments could be exchange traded to enhance transparency.

(Section 4.8.3)

Adequate disclosure norms require to be in place. In respect of credit default swap (CDS) exposures, both year end and peak positions, should be disclosed. All CDS transactions should be mandatorily reported in a common reporting platform like NDS. There should be greater mandated disclosure of banking book assets and rating wise classification of outstanding protection sold.

(Section 4.8.3)

7.4 Financial Infrastructure

7.4.1 Regulatory and Supervisory Structure

7.4.1 (a) Assessment

A multiplicity of regulatory bodies characterise the regulatory structure. While regulatory jurisdictions are demarcated, there exist areas of gaps, overlaps and multiple compliance requirements requiring stronger regulatory cooperation and coordination.

(Section 5.2.1)

Whereas the objectives, role and functions of the relatively new authorities such as SEBI, IRDA and PFRDA are well defined both in terms of markets and institutions, the ambit of the Reserve Bank in terms of objectives, instruments and operational independence is diverse.

(Section 5.2.2)

A number of challenges remain with regard to sustaining a level playing field in the regulation of the financial sector. This would require more stringent prudential norms across regulated financial entities, close monitoring of intra-group linkages, clarity in regulation of financial conglomerates, proper regulatory co-operation *etc.*

(Section 5.2.3)

The Reserve Bank, SEBI and IRDA Acts vest the Government with extensive powers to issue directions including those on policy to these agencies. The grounds for removal of the heads/board members are well established and the members get a 'reasonable opportunity' of being heard prior to possible removal under the SEBI Act or IRDA Act. But the RBI Act lacks such provisions.

(Section 5.2.4)

The Reserve Bank has multiple objectives which can be in conflict. Further, the Reserve Bank owns some financial institutions that they are responsible for financial oversight. In addition, many regulators have a market development role. Also, various arms of the Government have a somewhat segmented, but at times overlapping regulatory jurisdiction over the functioning of the system. The functional demarcation and co-ordination

between regulators require to be pro-actively addressed.

The Indian regulatory system is predominantly rule based and has been working generally satisfactorily for last decade and a half.

(Section 5.2.6)

There has been an increase in the number of financial conglomerates (FCs) in India in the recent years. As a first step to regulation and supervision of financial conglomerates, the Reserve Bank introduced consolidated supervision of banks in 2003. In terms of the amendment proposed in the Banking Regulation (Amendment) Bill, 2005, the Reserve Bank will be empowered to inspect the associate enterprises.

(Section 5.2.7)

The BR Act does not contain provisions for the regulation of holding companies.

(Section 5.2.8)

A High Level Co-ordination Committee on Financial Markets (HLCCFM) with members from the Reserve Bank, SEBI, IRDA and PFRDA was established by the Ministry of Finance in 1992 in an effort towards ensuring better regulatory and supervisory coordination. There are some legal impediments regarding information sharing among regulatory agencies. There are also questions regarding the information sharing mechanism between home/host regulators.

(Section 5.2.9)

7.4.1 (b) Recommendations

It is imperative to reduce the scope of regulatory arbitrage across institutions and markets by enhancing and strengthening the existing arrangement of inter-regulatory cooperation.

(Section 5.2.3)

There is a need for thorough review of various Acts in line with modern banking and financial practices.

(Section 5.2.4)

A clear demarcation between "principles-based" from "rules-based regulation is impractical. The basic approach that should be followed is that, at the outset, the basic principles and objectives should be clearly enunciated and the regulations should be built around these principles. This would be helpful to both the regulator and the regulated entity to refer back to the principles whenever in doubt.

(Section 5.2.6)

A 'cluster analysis' of the sort followed by European Central Bank could be considered for identification of systemically important FCs. The performance of conglomerates needs to be closely monitored, and only when the firm-level risk management gets sufficiently integrated, would it be appropriate to consider institutional integration at the supervisor level. In this context regulatory co-operation and co-ordination assume paramount importance.

(Section 5.2.7)

Legislative underpinning of the regulatory apparatus to deal with the emerging reality of financial conglomerates needs to be appropriately addressed in order to foster market-based evolution and innovation. Full disclosure of related-party transactions between different arms of the conglomerate is a *sine qua non* in this regard.

(Section 5.2.7)

The absence of a holding company structure exposes investors, depositors and creditors of the parent company to risks, strains the parent company's ability to fund its own core business, and could restrict the growth of the subsidiary business. In this context, the Panel feels that the legal and regulatory gaps would need to be expeditiously addressed.

(Section 5.2.8)

A significant amount of co-ordination is needed among supervisors on accounting standards and information exchange. The role of HLCCFM and the jurisdictions of each agency and the scope of regulatory oversight, including exchange of information and market development areas may have to be made more formal and necessary institutional arrangements have to be put in place.

(Section 5.2.9)

With regard to the debate whether regulation and supervision functions can be divested from the central bank, leaving it with only responsibilities relating to monetary management, the Panel is of the opinion that in order to exploit synergies more efficiently, the regulation and supervision of institutions could remain with the Reserve Bank.

(Section 5.2.10)

7.4.2 Payment and Settlement Infrastructure

7.4.2 (a) Assessment

There have been rapid developments in payment and settlement systems in India with the introduction of Real Time Gross Settlement Systems (RTGS), National Electronic Fund Transfer (NEFT), *etc.* To have focused attention on Payment and Settlement systems, a Board for Regulation and Supervision of Payment Systems (BPSS) was set up in March 2005 as a Committee of the Reserve Bank Central Board. A number of legal reforms to enhance the stability of the payment systems like the introduction of Information Technology (IT) Act, 2000 recognising electronic payments, amendment to NI Act, 1881 to enable cheque truncation and to define e-cheque has been carried out. Parliament passed the Payment and Settlement System Act providing the Reserve Bank with explicit legal powers to regulate and oversee the payment and settlement systems in the country. The Act also provides legal recognition to multilateral netting and settlement finality.

(Section 5.3.1)

The efficient management of liquidity is of prime importance to banks in RTGS system. Systemic risk can arise whenever there is a long chain of interdependent payments queuing-up and no appropriate mechanisms are there to cover a possible default in any one link of the chain. Further, as these batches settle on 'all-or-none' basis, the shortage of funds with one participant can result in the batch not being settled, which can manifest itself in a liquidity problem for other banks. The assessment of Indian RTGS and High Value clearing system against the BIS CPSS Core Principles for Systemically Important Payment Systems reveals that the system is broadly in compliance with the Core Principles.

(Section 5.3.2, 5.3.3)

The presence of a paper-based clearing system, like the High Value Clearing System which handles large values and settles on an unsecured deferred net settlement basis, could lead to financial vulnerability.

(Section 5.3.5)

The setting up of NSDL and CDSL for the capital market settlements and CCIL for government securities, foreign exchange and money market settlements have improved the efficiency in transaction and settlement process.

(Section 5.3.7, 5.3.8)

Among the various constituents of Systematically Important Payment Systems (SIPS), RTGS constituted the largest segment in terms of value, over 80 per cent. A salient feature of the retail payment system is the

dominance of conventional cheque payment systems.

(Section 5.3.9)

While there are a significant number of debit and credit cards in circulation (27.5 million credit cards and 102.4 million debit cards in March 2008), the average spends per card is still considerably low.

(Section 5.3.11)

Given the rapid growth of mobile telephony, it is felt that in the medium term, telecom system providers would be playing a growing role as payment system facilitators through mobile phones. However, several impediments need to be ironed out in the interim, including the development of appropriate risk management skills. The Reserve Bank has recently issued operative guidelines to banks for mobile payments systems in India. These guidelines take into account aspects on security, fraud prevention and the relationship between the telephone service provider and the banking system.

(Section 5.3.13(c))

CCIL has been successful in bringing efficiency in the clearing and settlement operations in money, securities and foreign exchange market its settlement guarantee and risk mitigation measures. Being the only CCP catering to these markets, over the years the role of CCIL has been expanding. The concentration of such wide spectrum of activities leads to concentration of risks on one entity. Moreover, in case of CCIL, its inadequate lines of credit to ensure liquidity for carrying out settlement is another potential risk. As the transaction volumes have now increased manifold, the LoC available to CCIL is grossly inadequate to complete the settlements. This has resulted in the Reserve Bank having to intervene to complete the settlement on many days. The inadequacy of their risk management can have system-wide implications, which could be more catastrophic than the decentralised systems. The concentration can also lead to 'moral hazard' problems if the central counterparty is considered 'too big to fail'.

(Section 5.3.13 (e))

7.4.2 (b) Recommendations

Shifting of high value transaction to more secure electronic payment system like RTGS or NEFT would be a useful step in circumventing the risks emanating out of dependence of High Value Clearing System. Initiatives require to be taken by regulators other than the Reserve Bank in respect of markets within their respective regulatory jurisdictions to route more transactions through RTGS.

(Section 5.3.13(a))

Since credit/debit card frauds are constantly evolving, safeguards adopted can only address part of the problem. It is critical to stay abreast of the latest developments in this area to combat fraud effectively.

(Section 5.3.13(b))

The Reserve Bank should engage with TRAI and DoT to educate them of the adverse impact any dilution in encryption standards could have on the entire e-commerce infrastructure. In respect of the importance of security measures to combat terrorism, as well as the need for effective telecommunication

regulations, there needs to be a balance between encryption standards and maintaining a supportive business environment. It is important for the Reserve Bank to be party to any steps by other regulators so that adequate balance is maintained.

(Section 5.3.13(d))

Currently, the CCIL follows the end of the day settlement. Efficient functioning of payment system requires that settlements are spread throughout the day. To facilitate such a system, the CCIL would require large intra- day liquidity requirements which Reserve Bank may have to consider providing.

In order to address the liquidity risk faced by CCIL, either the LoC could be increased or liquidity could be provided through back to back repo arrangement or limited purpose banking license could be granted to CCIL so that it can access liquidity facility from the Reserve Bank. Net debit caps also could be considered in the CBLO and government securities segments.

(Section 5.3.13(e))

7.4.3 Business Continuity Management

7.4.3 (a) Assessment

Select market participants falling within the ambit of the Reserve Bank were assessed as regards their level of preparedness in respect of Business Continuity Management. This assessment was based on the High Level Principles enunciated by the BIS Joint Forum. Similarly, the level of preparedness of RBI and CCIL was also assessed.

(Section 5.4.1)

From the assessment, it can be concluded that with regard to critical physical infrastructure, major banks / institutions are in a position to respond in a suitable manner to disruptions by recovering from the adverse situations and ensuring continuity in many of the critical systems. However, the business continuity processes of vendors and suppliers are not given adequate importance. Also, human resource management and development issues are not yet adequately integrated as a part of the BCM exercise.

(Section 5.4.2)

Despite its resilience, the BCM policy of CCIL exhibited some shortcomings in relation to procedure of communication and management succession in case of emergency and training of alternate staff.

(Section 5.4.3)

The DR drill conducted by the Reserve Bank in February 2008 indicated that although the drill was completed in a satisfactory manner, some participants, in spite of having systems to take care of business continuity, needed to ensure that these systems operated with ease in the event of contingency.

(Section 5.4.5)

7.4.3 (b) Recommendations

The Panel gives a detailed list of recommendations. The recommendations are broadly in the areas of risk assessment, outsourcing issues, challenges in technology upgradation, impact of computer malware, cross border cyber laws and internal control and HR issues.

(Section 5.4.6)

7.4.4 Legal Infrastructure

7.4.4 (a) Assessment

With the progress of financial sector reforms, several of the relevant Acts were modified, primarily by enabling legislative amendments, for providing greater operational flexibility to the Reserve Bank. There are still several pending amendments in the relevant laws relating to the financial sector which are expected to have a bearing on the stability of the financial sector. There are some amendments regarding BR Act 1949 pending consideration of the Parliament. Some of the other important bills awaiting Parliamentary approval are The State Bank of India

(Amendment) Bill 2006 and replacement of the Board for Industrial and Financial Reconstruction (BIFR) with National Company Law Tribunal (NCLT).

(Section 5.5.1)

Issues relating to duality of control and amalgamation of co-operative banks, in as much as that they can only be amalgamated with another co-operative bank, remain. There are similar constraints in amalgamation of RRBs. The delay in debt recovery proceedings in respect of Debt Recovery Tribunal (DRT) results in locking up of huge amount of public money. The passing of Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002 has resulted in decline of NPAs in the banking system. However a central registry for registration of securitisation, reconstruction and security interest transactions have not been set up so far. This is required to reduce frauds. There is also the impediment of DRT granting stay orders when banks propose to sell securities under SARFAESI Act.

(Section 5.5.2 (a))

Various provisions of the revised Competition Act could impinge on the functioning of the financial sector; particularly in respect of potential conflict with other regulatory jurisdictions.

(Section 5.5.2 (b))

While the provisions of the laws are, in general, in compliance with the World Bank Principles for Effective Insolvency and Creditor Rights Systems, there are significant delays in implementation resulting in long pendency of suits. This is particularly evident in insolvency proceedings. There are no clear legal provisions in respect of bank insolvency, is the lack of a formal legal mechanism for sharing of information with other regulatory bodies and overseas regulators and the extent of co-operation between them.

(Section 5.5.2 (c))

The Payment and Settlements Systems Act, 2007, which has recently been brought into force, gives the Reserve Bank wide regulatory and supervisory powers in respect of payment systems. This legislation also gives legal recognition to the netting procedure and settlement finality. This Act provides that, the insolvency of any participant in a payment system would not affect any settlement that has become final and irrevocable, and the system provider will have a right to appropriate any collateral contributed by that participant towards the settlement of obligations in that system.

(Section 5.5.2 (d))

7.4.4 (b) Recommendations

Necessary steps need to be taken for early setting up of the Central Registry.

A suitable provision may be inserted into the SARFEASI Act to safeguard the interest of the lenders particularly in relation to the conflict with the DRT.

(Section 5.5.2(a))

The areas of potential conflict between RBI Act and the Competition Act need to be addressed, particularly in areas relating to applicability of Competition Act in respect of banks and bank merger and amalgamations.

(Section 5.5.2(b))

Enactment of appropriate laws to ensure speedier insolvency resolution.

(Section 5.5.2(c))

7.4.5 Liquidity Infrastructure

7.4.5 (a) Assessment

The Reserve Bank has been managing liquidity using MSS, LAF and CRR in recent times. As regards exchange rate management, the Reserve Bank has been following a policy that allows underlying demand and supply conditions to determine exchange rate movements over a period in an orderly way, while intervening to contain volatility.

(Section 5.6.2)

There is significant volatility in overnight rates which at times breaches the LAF determined corridor.

(Section 5.6.4 (a))

It is observed that often banks access the LAF window as the 'first resort', and not the last, and then arbitrage their positions across market segments like CBLO, call and market repo. The operation of LAF is constrained by the availability of securities with the Reserve Bank when the liquidity has to be absorbed and with the availability of SLR surplus securities with the market participants if they have to avail of liquidity from the Reserve Bank.

(Section 5.6.4 (c))

CRR as an instrument of monetary management has been reactivated. In a market-oriented financial system, a high CRR, when unremunerated, causes distortions in term structure of interest rates. However the quantum of the impact is dependent on several factors, particularly, on the ability of the banks to pass on the burden to the customers and the vibrancy of the money market. The CRR which was increased in phases by 400 bps between September 2004 to August 2008, has been reduced by 400 bps since then, on a review of the liquidity conditions.

(Section 5.6.4 (c))

The present LAF, by itself, does not adequately address the liquidity needs of the banking system in periods of market tightness.

(Section 5.6.4 (d))

Liquidity management has been rendered complex by large capital flows witnessed in recent years. In the context of large capital movements, more attention needs to be paid to the macro economic implications of its volatility.

(Section 5.6.4 (e))

One major concern in relation to financial integrity in respect of international capital movements is the amount of investments through the participatory note (PN) route by the FIIs.

(Section 5.6.4 (e)(I))

There is a high correlation between FII inflows and rupee-dollar exchange rate. With the vast bulk of FII inflows focused on the equity markets, the stock indices are very highly correlated with these flows. It is often noted that volatility in the Indian stock market triggers a sell-off in Indian stocks, which in turn increases exchange rate volatility. In response to the volatility in exchange and stock markets and consequent pressure on domestic resources, the Reserve Bank has taken a number of steps to augment the domestic and foreign exchange liquidity.

(Section 5.6.4 (e)(II))

Unhedged open position of corporates could impact corporate profitability in case the exchange rate turns adverse.

(Section 5.6.4 (e)(IV))

The indicators of reserve adequacy suggest that India's current level of foreign exchange reserves can be considered adequate as a cushion against potential disruptions to trade and current transactions as well as external debt servicing obligations.

(Section 5.6.4 (e)(V))

Though India has not directly contributed to the global imbalances, any disorderly unwinding of global imbalances has global ramifications and affect the Indian economy indirectly. Though the exposures of banks, corporates and households in India to the external sector are not significant, there is a need to be alert to domestic and global shocks and pro-actively manage the risks.

(Section 5.6.4 (e)(VI))

7.4.5 (b) Recommendations

There is a simultaneous requirement of strengthening management of government cash balances and asset liability management of banks. In this context it might be worthwhile to consider introducing auction of central government surplus balances with the Reserve Bank in a non-collateralised manner which would also make available the government securities in the Reserve Bank's investment books for its own market operations. Other than reduction in volatility of overnight rates and resulting in a more efficient money market, the Government could also expect a reasonable return on its idle cash balances.

(Section 5.6.4(a))

There is a definite requirement of skill development of the market participants to assess their own liquidity requirements going forward. At the same time, capacity building on the part of the monetary authority to develop appropriate liquidity forecasting models becomes imperative. This, together with improved government cash management practices, will ensure a better ability to forecast the day to day liquidity swings in the system.

(Section 5.6.4(b)

There is a case for moving towards a narrower corridor for overnight money market rates and eventually shift to a single overnight target rate on the lines of the Fed funds target rate in the US. This single target rate may be bound by a penal rate.

(Section 5.6.4(c))

Reduction in the statutory pre-emptions in the form of SLR to free some stock as collateral for managing liquidity needs consideration.

(Section 5.6.4(c))

Accepting collaterals such as high quality AAA-rated paper for conducting repo may be explored. However, further institutional progress in the form of better transparency, delivery and settlement procedures, *etc.* in respect of corporate bond market is necessary before this could be considered.

(Section 5.6.4(c))

Reintroduction of a general refinance facility against loan assets and government securities to commercial banks, subject to limits and at a spread of say about 100 bps above the repo rate, as a standing term liquidity facility may be put in place. Banks could activate this facility in times of tightness due to skewed supply condition. This facility could continue as an interim measure, till such time the CRR remains above 3 percent and SLR say above 20 percent. The facility should ideally be operative at the initiative of the Reserve Bank, on a temporary basis. It should be based on the forecasts of size and durability of bank reserve variations and use market determined prices and standardised products that can also help develop market benchmarks.

(Section 5.6.4(d))

Banks should have the freedom to operate two-way in the short term money market.

(Section 5.6.4(d))

Market participants need to employ better risk management practices to monitor unhedged position.

(Section 5.6.4(e)(IV))

7.4.6 Safety Net – Deposit Insurance

7.4.6 (a) Assessment

Given the present limit, as much as 93 per cent of deposit accounts (79 per cent in 1961) and 60 per cent of assessable deposits (23 per cent in 1961) are fully protected as on March 2008. The coverage limit is roughly 2.4 times the per capita GDP.

(Section 5.7.1)

The premium is charged on a flat rate basis. Juxtaposition of the trends in claim settlement by the DICGC over the last five years separately in respect of commercial and co-operative banks with the premium received, suggests a significant element of cross-subsidisation in the process.

(Section 5.7.2)

There is a statutory ceiling at present on the premium of assessable deposits, which can act as an impediment in the efforts to strengthen the DIF. The premium is not risk-based. However, certain issues need to be taken on board before switching over to risk-related premia. Firstly, systemic risks posed by big banks and its conglomerates needs to be considered. Secondly, the supervisory system for the banking sector as a whole need to stabilise and also be similar across the sector. Finally, the banking sector is still evolving with consolidation process underway in certain segments.

(Section 5.7.2)

Stress tests to ascertain the adequacy of DRR shows that while DICGC is in a position to meet the claims, the DRR would be significantly impacted in the worst case scenario (when it is assumed that all Grade IV UCBs are liquidated and the liability is met out of the Deposit Insurance Fund).

(Section 5.7.3)

DICGC is fully owned by the Reserve Bank. Access to any credit line from the central bank could curtail the incentive to build up a stand-alone deposit insurance fund, besides having monetary implications.

(Section 5.7.5)

The time lag between the issue of liquidation order and actual reimbursement to the depositors often is unduly large. There also appears to be lack of clarity regarding priority of claims of DICGC over other claims.

(Section 5.7.7)

7.4.6 (b) Recommendations

Keeping in view the existing issues in implementing risk based premium structure; legislative amendments to the DICGC Act to raise the ceiling of flat rate premium may be examined.

(Section 5.7.2)

It would be necessary to constantly monitor the DIF and perhaps, if situation arises, there will be a need to take a view on the issue of raising the premium in order to strengthen the DIF.

(Section 5.7.3)

There is a case for providing tax-exemption to DICGC. This will help in augmenting reserves without the need for charging a higher premium.

(Section 5.7.4)

The need for building up a stand alone insurance fund assumes relevance if the deposit insurance organisation is to be provided *de jure* independence from the central bank. The independent role of deposit insurance will assume greater importance as the banking sector is further opened up to foreign and private sector participation. In such a case, a fund, financed solely through

premia paid by insured parties would incentivise the deposit insurance provider to not only perceive a direct stake in the financial health of the insurance system, but also provide motivation for them to scrutinise deposit insurance operations and maintain industry self-policing.

(Section 5.7.5)

A committee, comprising of the regulatory/supervisory departments of the Reserve Bank and DICGC may be constituted on a standing basis for regular sharing and exchange of information on regulated entities. This will also be useful in times of bank restructuring and/or amalgamations wherein the DICGC can be *a priori* informed on the health of the concerned institution.

(Section 5.7.6)

DICGC should be actively involved in the resolution process. To improve efficacy of the DICGC in the long term, an 'extended pay box' mandate ensuring loss minimisation for it may be considered.

Appropriate amendments to the DICGC Act may be made to explicitly provide that the claims of DICGC will have priority over those of other creditors during liquidation proceedings.

(Section 5.7.7)

7.4.7 Credit Information

7.4.7 (a) Assessment

To address the credit information asymmetry the Credit Information Bureau (India) Ltd. was set up in 2004. However, information on non-suit file account is not available to lenders other than scheduled commercial banks/notified FIs.

(Section 5.8.1)

7.4.7 (b) Recommendations

In the interest of improving systemic stability, defaulters list could be shared with all banks as also rating agencies. The Credit Information Companies (Regulation) Act 2005 has already paved the way in this regard. In the interest of improving systemic stability, wilful defaulters list could be made public to all lenders including non-banks.

(Section 5.8.1)

7.5. Developmental Issues

7.5.1 Customer Service

7.5.1 (a) Assessment

Though various guidelines are in place, there are significant gaps in implementation which leads to customer grievances and complaints.

(Section 6.2)

7.5.1 (b) Recommendations

A key ingredient to developing customer driven banking is to build up a database of customers. Codifying the data into a form amenable to customising service requirements across different spectrum of customers remains an area of priority action. Effective use of technology should aid, *inter-alia*, customer service.

Banks failing to achieve a threshold minimum rating on customer service could be denied privileges in terms of branch licensing, *etc.*

Banks can undertake periodic surveys to ascertain levels of customer satisfaction.

(Section 6.2)

7.5.2 Financial Inclusion

7.5.2 (a) Assessment

There is a significant region-wise disparity in access to finance. This is accentuated by a skewed presence of banking services. Notwithstanding the success of micro finance through the Self Help Group (SHG)-Bank linkage programme, the outreach remains limited in terms of number of households served. Some other initiatives taken in this regard are Kisan Credit cards/ General Credit cards, E-Choupals and No-frills accounts.

(Section 6.3, 6.3.1,6.3.2)

7.5.2 (b) Recommendations

The recommendations of the Rangarajan Committee on Financial Inclusion would need to be reviewed and implemented in a phased manner so as to promote and achieve financial inclusion.

(Section 6.3)

Banks could enhance financial inclusion by implementing simple technologies like vernacular language ATMs, e-choupals etc, which the rural population could have access to and be conversant with.

(Section 6.3)

In order to motivate banks to be effective conduits for achieving the goals of financial inclusion, these institutions should be in a position to cover the costs thus incurred. Operational flexibility to banks to decide the interest rate charged to the small borrowers need to be given so that they are in a position to cover their costs. Documentation for bank loans could be simplified for small borrowers below a particular threshold of borrowing.

(Section 6.3.5)

A possible approach towards greater financial inclusion could be to explore new design principles by segregating customer handling, risk orientation, risk measurement, risk transfer and risk aggregation. Local financial institutions can serve as client interface. These institutions can tie up with banks and financial institutions to insure themselves against risks arising out of the operations. In this context, working with a back end partner which offers end-to-end solutions to the local service provider and act as bridge between the mainstream bank and local entity could be helpful.

(Section 6.3.5)

7.5.3 Sustainability Issues

7.5.3 (a) Assessment

With the launching of the S&P ESG India Index in January 2008, the aspiration among companies to rank well on this index would create a motivation to enhance their sustainability disclosure standards.

(Section 6.4)

7.5.4 Access to Finance for Small-Scale Industries

7.5.4 (a) Assessment

The share of credit to SSIs has witnessed a declining trend over the last few years. The 'credit gap' for the SSI sector has been steadily increasing in recent times and would need to be suitably addressed.

(Section 6.5)

7.5.4 (b) Recommendations

Lending institutions must improve their ability to provide financial services to SSIs through commercial mechanisms that lower costs and minimise their risk exposure. Reducing the transmission cost of evaluating SSI credit could be a way of levelling the playing field with evaluating the cost of loans to large credits. Only in this way will financial institutions find SSI lending to be more profitable and thus be encouraged to construct lending programmes targeted at SSIs.

(Section 6.5)

Comments of the peer reviewer V. Sundararajan and stance[92] of the Advisory Panel

NOTE : Since the Report has undergone considerable changes / amendments since it was made available to the Peer Reviewer, the sections referred to by him in the Peer Review may no longer pertain to the subject matter mentioned there.

Comments of the peer reviewer V. Sunderarajan and stance of the Advisory Panel

I am grateful for the invitation to be a reviewer of the above report prepared for the Committee on Financial Sector Assessment (CFSA). I enjoyed reading this report, and concur broadly with its conclusions. The scope and comprehensiveness of the assessments, and their technical quality are impressive. I note that this is one of the four Advisory Panel Reports, and that the findings of other Panel Reports dealing with financial supervision, financial infrastructure, and transparency will also have to be taken into account in assessing the overall stability of the financial system, because of their implications for how well prospective risks would be identified and contained by the financial supervision framework and market discipline. My comments on this report are focused mainly on methodology, and partly on substance and drafting and are divided into general comments and specific chapter by chapter comments.

Professor Andrew Sheng has also reviewed this Advisory Panel Report, and has sent his comments separately.

General Comments

1. Overall Stability Assessment

The Report presents a wide range of assessments and recommendations to strengthen stability and foster further development of the financial sector; assessments, issues, and recommendations are grouped and presented separately for each of the following aspects: macroeconomic environment, different groups of financial institutions, different segments of financial markets, and a set of specific financial development and stability issues. The overall assessment that emerges from all this seems as follows:

The overall financial system, particularly the banking system, which is its major component, is stable and is expected to remain stable; the potential threats to stability that could arise from the currently benign macroeconomic and external environment and from the specific features of the financial

[92] The views of the Advisory Panel have been added to the peer review comments (in bold, italics) wherever appropriate.

structure and reforms seem either limited or manageable owing to the improvements already effected in financial soundness and performance of financial institutions and markets, and in the related policy framework, and the prospective policies already - or being – identified. Specific areas of weaknesses and strengths that reinforce this conclusion are summarised below:

- While the rural and urban sector co-operative banks and regional rural banks and also some older private sector banks are financially weak, they are collectively still small and do not pose systemic risks. Varieties of measures to address this situation, and also strengthen financial inclusion in rural areas in the process have been identified and actions are underway.
- The risks to domestic growth – due to possible fall in world economic growth, in domestic agricultural output and inadequate investments in infrastructure can give rise to a range of financial risks in the short to medium term. However, further development of the financial sector in key areas can, by itself, help mitigate some of these risks that could arise from the real sector. In particular, further development of 'missing' markets – such as corporate bond markets, asset securitisation markets, credit risk transfer market, *etc.* together with policies to strengthen financial inclusion, can help contain financial vulnerabilities and sustain financial development and economic growth.

Stance of the Panel : The issues relating to 'missing markets' have been commented upon in Chapter 4 of the report.

- Certain structural and conjunctural factors have contributed to financial stability. These include:
  - Sizeable reductions in the debt to equity ratios of non-financial corporate sectors(Cross country evidence shows that this has strong positive correlation with reductions in NPL ratios.)
  - Dominance of public sector banks and the associated perceptions of safety and depositor confidence.
  - Strategic management of capital account.

While the stability benefits of these factors are unquestionable, they could also have consequences that can adversely impact on medium-term financial development and stability. Therefore, the challenge going forward is to achieve an improved balance between financial development and financial stability, so that financial development can proceed more rapidly, while maintaining stability.

Stance of the Panel : No Comments.

2. The Financial Sector Assessment Methodology

The overall assessment framework, as outlined in the 'Financial Sector Assessment – A Handbook' by The World Bank and International Monetary Fund (Handbook for short) is summarised in Chapter 1 of the

Handbook. The assessment framework has three pillars:

Pillar I – Macro prudential Surveillance and financial Stability analysis (including stress testing) to identify risks and vulnerabilities.

Pillar II – Assessing financial system supervision and regulation against international standards and good practices, to assess how well the identified risks and vulnerabilities are being managed.

Pillar III – Assessing financial system infrastructure using international standards where available and relevant to see how well they support effective financial supervision and financial sector performance.

These three components form the core of financial system stability assessment and also provide the essential input into financial sector development assessment. Together with an analysis of financial sector development and structure indicators and related issues, these three pillars provide the common analytical platform for the prioritising and sequencing of financial sector policy measures. A comparison of the assessment approach used in this Panel Report with the methodology outlined in the Handbook would provide indications of the areas where further work could be helpful to strengthen the assessment going forward.

The Report provides an excellent presentation of developments in a range of key indicators of financial structure, soundness , and the state of development of banking and non – bank financial institutions and markets; It assesses financial system risks, vulnerabilities using the analysis of Financial Soundness indicators and some stress testing, assesses financial sector structure, development needs, competitiveness and access; and analyses both financial supervision and financial infrastructure to indicate areas to be strengthened. Thus a comprehensive range of assessments and recommendations emerge.

Stance of the Panel : No comments.

While the methodology is broadly in line with the assessment methodology in the Handbook, several aspects of the methodology used in the report may benefit from further elaboration and refinement.

a) From a stability assessment perspective, analysis of macroeconomic and external environment and sectoral developments (e.g. Housing) should be systematically and explicitly linked to an assessment of the likelihood of shocks from the macro economy and external sector – for example reflecting corrections of imbalances, or possible exogenous shocks — that are likely to impact on the financial system. For example threats to GDP growth or vulnerabilities in the external environment are analysed, but these are not translated explicitly into the sort of shocks that could cause financial risks. The plausible shocks and vulnerabilities arising from domestic macroeconomic and external sector and from financial structure and reforms are not systematically linked to the formulation of a set of stress scenarios. Ideally, stress scenarios need to be linked to a macroeconomic framework. Sometimes a macro econometric or simulation models can be used to formulate forward looking and internally consistent set of values for key variables that define a stress scenario.

Stance of the Panel: Accepted. A skeletal representation of linkages between macro economic variables and financial indicators has been included (Chart 1.1). A separate section on stress testing detailing the approach followed and the constraints has been added (Sec 2.2.4 Assessment of Financial

Soundness Indicators). However, since sectoral models / data are not available, such 'scenario' stress testing could not be attempted at present, but is included as a forward looking recommendation in the Panel's report. Similarly, linking of macroeconomic shocks with financial stability indicators is recommended as a necessary step going forward (Sec 2.2.4.(a) – Stress Testing).

b) The macroeconomic and institutional determinants of financial soundness indicators are not clearly spelled out in some instances and the likely evolution of FSI's in response to various shocks needs further analysis. The computation of the impact of various scenarios on balance sheet and income statements would require an analysis of the determinants of FSI's.

Stance of the Panel : Is included as a forward looking recommendation (Sec 2.2.4.(a) – Stress Testing).

c) In view of the growing use of purchased funds to support asset expansion, analysis of second round contagion effects – by stress testing the data on a matrix of bilateral inter bank exposures should be developed. This methodology is briefly outlined in the Handbook (Appendix D, Section D.3.5 of the Handbook). For an empirical illustration, with a brief survey of literature on this methodology, see Degryse Hans and Gregory Nguyen, 'Interbank Exposures: An Empirical Examination of Contagion Risk in the Belgian Banking System' *International Journal of Central Banking*, June 2007, Vol.3 No. 2, P123-171.

Stance of the Panel: Accepted. However there are data limitations at present. The breakdown of aggregate interbank loans and deposits are not available according to type of loan or deposit, the geographical origin of the lender and borrower, etc. The need to build up a data base is recognised and which has been incorporated as a recommendation by the Panel (Sec 2.2.4.(a) – Stress Testing).

d) The identified sources of risks and vulnerabilities in the financial system should be systematically linked to assessments of financial system supervision and regulation. A broad summary of how well financial supervision conforms to international standards-cross referencing the relevant Panel Reports, should be provided along with an analysis of how the actions to strengthen compliance help to address the identified risks and vulnerabilities in the financial system. Such analysis is helpful to formulate priority areas of action in supervision and regulation and in financial development in order to address the identified sources of risk exposures and vulnerabilities, and thereby formulate an overall stability assessment.

Stance of the Panel : Accepted. Cross referencing to other Panel reports has been done in appropriate places. These assessments have been separately made by other Panels.

e) While the Report provides an excellent analysis of the infrastructure components legal framework, safety nets, governance and transparency, systemic liquidity framework, etc, progress in the observance of relevant international standards could be more systematically mentioned with suitable cross referencing of other Panel Reports with an assessment of how this progress would contribute to addressing the priorities in financial sector development and financial supervision.

Stance of the Panel : Accepted. Cross referencing to other Panel Reports has been done in appropriate places.

3. Role of Fuller Capital Account Convertibility

The assessment mentions the potential for turbulence in capital flows – depending upon the quality of the inflow – but does not emphasise enough the role well managed capital account can play in strengthening of domestic markets. The Panel Report draws on the work of the Committee on Fuller Capital Account Convertibility, and rightly emphasises the importance of developing domestic financial markets, and strengthening the integration among domestic markets as necessary conditions for moving toward fuller capital account convertibility, and accordingly lists policy measures to develop or further strengthen various domestic markets, drawing on numerous Working Groups and Taskforces on various financial sector issues. But the possibility that judicious capital account opening can by itself be a tool to foster deeper and more liquid domestic markets is not explicitly recognised and analysed. Assuming that the measures to liberalise external capital flows and the associated prudential safeguards are implemented in tandem, a well-sequenced move toward fuller capital account can be a powerful financial sector development tool.

Stance of the Panel : Accepted. The comments have been appropriately incorporated in Sec 1.5.9 – Managing the Impact of Capital flows.

The Report highlights the potential turbulence in capital flows due to sudden shifts in market sentiment or global liquidity conditions, as a risk that needs flexible 'strategic management of capital account'. Policy requirements for an enhanced integration of domestic markets with the global markets – such as greater transparency, better risk management, greater depth in domestic markets, *etc.* – are also noted. However, in light of the imperatives of developing the 'missing' markets, and taking into account the progress already made in the developing various linked markets, and the on-going capacity improvements to strengthen risk management and macro prudential surveillance, a greater emphasis could and should be placed on the role further external capital liberalisation can play in strengthening domestic financial markets. In other words, the sequencing and prioritisation of capital account policies, and the associated prudential measures can be driven by the priorities for the development of domestic financial markets and the associated financial stability policies, and need not be phased in over time mainly on the grounds of caution.

Stance of the Panel : The issues relating to 'missing markets' have been commented upon in Chapter 4 of the report. (Section 4.7.4 (d) - Recommendations for Development of the Corporate Bond Market).

Some of these general comments above will be taken up in greater detail in the comments on the specific chapters that follow.

Specific Comments By Chapter

Chapter I: Macro Economic Environment

I agree with the assessment that the current GDP growth rate is sustainable in view of the various enabling factors, but that risks

to growth could arise from several sources, including slowing of agricultural growth, insufficient progress in fiscal consolidation, and inadequate financing of infrastructure requirements. Some of the external factors bearing on domestic growth and inflation include: the level of oil prices, potential volatility of external capital flow, and world economic slowdown in the aftermath of sub-prime crisis and the on-going adjustments to global imbalances.

Some of the implications of the above for financial development and financial stability are noted in the Report. Development of corporate bond market, particularly private cash-flow based securitisation markets (Box 1.2) are needed to support higher growth and particularly debt financing of infrastructure projects. This is a key finding that is further developed in Chapter V.

On the financial stability implications of these conjunctural factors, the assessment is relatively silent. The sort of potential shocks and vulnerabilities that could arise from the current macroeconomic conjuncture and what that could imply for various scenarios that could stress the financial system are not fully explored and developed.

Stance of the Panel : Macro stress testing as recommended is constrained by data availability and lack of a comprehensive macroeconomic model. The ideas have generally been accepted and several modifications to the Panel Report have been made: (sec 1.2 – Linkages between Macro-economic Performance and Financial Stability. The impact of (a) Petroleum prices (Sec 1.5.7 –Oil Prices) and (b) the Food situation (Sec 1.5.8- Food Prices) on Inflation; and Sec 2.2.4.(a) – Stress Testing).

However concern is expressed about the quality of capital inflow, in terms of whether they are of enduring nature, or temporary causing excess volatility. Concern is also expressed regarding the sizeable inflows through private equity and venture capital, which the report argues have a lower time horizon than classical firm FDI. It is not clear that this later concern is necessarily valid in practice. Also, in my view, the determinants of capital flow volatility needs to be studied more closely in country specific circumstances, and can not be prejudged.

Stance of the Panel : The Panel felt that the concern of lower time horizon of inflows through private equity and venture capital is valid.

Chapter II: Institutional and Financial Market Environment *(Since merged with Chapter I)*

The Chapter provides an excellent overview of the structure of the Indian financial institutions. Table 11-1 provides relative shares of different groups of institutions in total assets of all financial institutions listed in the table. Insofar as some financial assets (e.g. equities, bonds) are held by private individuals and non-financial corporates, these assets are not part of the liabilities of the financial institutions listed in Table II.1, and hence the total assets of the financial sector shown in the table could underestimate the actual size of the financial system. For example, value of equities is already well in excess of 100% of GDP, and a sizeable

share of this is held by households and foreign institutional investors, who are not listed in Table 11-1.

Stance of the Panel : Accepted. Qualifying remarks in this regard have been incorporated (Sec 1.6 – Institutional and Financial Market Environment).

Table II.2 on comparison of different financial market segments compares annual turnover members for various markets, which are not readily comparable. For example, turnover data on markets cannot be compared with stock of loans of credit institutions. It is best to present data on outstanding volume of different instruments or asset types at different points in time (as %of GDP) to compare the sizes of different markets, as is the normal practice, and separately present data on turnover and turnover velocity in different markets as a means to compare the liquidity of these markets.

Stance of the Panel:Accepted. Modifications introduced:

(i) Additional data on equity and debt market turnovers and total financial system assets as per fund flow analysis included (Table 1.8 – Relative Importance of Various Financial Market Segments).

(ii) Outstanding figures of financial instruments as a percent of GDP included (Table 1.9 – Select Financial Instruments and Credit (outstanding to GDP) Ratio).

(iii) Credit market portion in Table I.10 deleted.

(iv) The column depicting the turnover as ratio to GDP has been deleted.

Chapter III: Analysis of Financial Soundness

Structure, soundness, and performance indicators and their comparison with other countries and overtime provide a wealth of information on the Indian financial institutions and the non-financial sectors from both development and stability perspectives. Significant improvements in banks' financial soundness, efficiency, and profitability are evident from the data, supported by improvements in prudential supervision towards international best practices. The strengthening of prudential supervision of banks by RBI is mentioned briefly in section III.2.1 in the context providing international comparison of selected financial soundness indicators for banks. In particular, a brief mention is made of the extent of compliance with Basel Core principles (BCP). The extent to which on-going improvements in banking supervision–in order to strengthen compliance with BCPs–help address the main sources of risks and vulnerabilities identified through the analysis of FSI and stress testing should be discussed.

Stance of the Panel : Accepted. A brief write up on compliance with BCPs has been incorporated (Sec 2.2.1- Cross-Country Perspective).

While I agree that the predominant Government ownership of commercial banks augurs well for systemic stability – owing to implicit government guarantees -, (as noted in Section III.2.2), this conclusion should be qualified upfront to reflect the possible adverse consequences, insofar as Government ownership causes regulatory forbearance that might lead to larger fiscal costs over the medium-term. These concerns impacting on supervisory independence and level playing field are mentioned later in Section VI.2.3 (Chapter VI), and could be cross-referenced at the outset. Governance safeguards against such outcomes (recommendation in Section III.6.1.6 on PSB Board composition) should also be cross-referenced and highlighted in the Summary Chapter. The Report (III.2.2) appropriately stresses the need to develop appropriate risk management skills in domestic banks in order to cope with increased

competition from the planned entry of foreign banks. The supervisory implications of this—and in particular the urgency of adopting Risk Based Supervision methodologies—are emphasised in Section III.6.1.1 and Section III.6.1.5. I agree with this emphasis.

Stance of the Panel : The extent of regulatory forbearance in Indian context has so far been negligible. For example the recapitalisation of banks did not have any serious fiscal implications. On the contrary, the market capitalisation of Government owned banks has increased manifold. (This is supported by data on (a) recapitalisation as a % of GDP and (b) market capitalisation of Government owned banks) - Section 2.2.4.(d) Capital Augmentation Measures. Cross- referencing has been appropriately done.

The analysis of financial soundness indicators for commercial banks, estimates of bank capital requirements to support the anticipated credit growth, the likely impact on capital adequacy of a sharp deterioration in asset quality (through a stress testing exercise) are all very helpful and gives some confidence that system is reasonably resilient in light of the capital buffer already built up. The chosen credit risk stress test is based on shocking each balance sheet (and income statement) by raising the level of NPLs and provisions by some percentage (either by some plausible high percentage such as 25%,0r 50%, or a percentage to reflect a deterioration of the sort historically witnessed), and computing the impact on Capital adequacy. Similar stress tests were also reported in the IMF Country Report No. 06/56, February 2006, Chapter V, available in the IMF website. Thus the stress scenarios are not explicitly anchored to a macro framework, but simply take historical experience in NPL variation as the basis.

Stance of the Panel : Accepted. Anchoring the stress scenarios to a macro environment is taken to be a forward looking recommendation by the Panel. This has been added to the section on Stress Testing (Sec 2.2.4.(a) – Stress Testing).

A more comprehensive stress testing exercise, based on well articulated scenarios that correspond to a combination of macroeconomic and sectoral shocks should be attempted when data becomes available. The specified stress scenarios can be applied to individual bank portfolios in order to estimate their impact on the bank balance sheets and income statements , and these bank-by-bank results can then be analysed using various statistical methods (as a minimum, by looking at the mean and median impact and the standard deviation of the impacts for various banks). Alternative to this bottom-up approach is to apply the scenarios on the aggregated balance sheet for a group or subgroup of institutions. This would require estimation of econometric relationships between key Financial Soundness indicators and key macro economic and sectoral variables (using historical regressions of aggregate data or panel regressions). These issues are discussed in Appendix D, Section D.2.3 of the Handbook. Several published FSAP reports contain empirical illustrations.

Stance of the Panel : The Panel agrees with the suggestions. This is added as a recommendation in the Panel Report (Sec 2.2.4.(a) – Stress Testing).

The detailed analysis of liquidity risk indicators and liquidity scenario analysis in commercial banks (in Section III.2.4.6, and Annex III.4) is well researched, thorough, and most helpful; the Report rightly stresses the need to upgrade liquidity risk management in light of the growing asset – liability maturity mismatches, and the growing use of the purchased funds. In light of the increased recourse to purchased funds, an interbank contagion analysis, based on data on a matrix of interbank exposures, should be initiated.

Stance of the Panel : Accepted. But there are issues regarding availability of appropriate data. Included as a forward looking recommendation (Sec 2.2.4.(a) – Stress Testing).

The stress testing of interest rate risk in the banking book (Annex III.5, and Section III.2.4.6.4), using 'Duration of Equity', seems to suggest a fairly sizeable impact on bank capital adequacy (CRAR falling to 9.8%). Even if the actual impact could be less due to current accounting rules, the focus should be on economic capital. The supervisory implications of the significant interest rate risk should be further discussed in the relevant assessment sections.

Stance of the Panel : Accepted. As data on system level economic capital is not available, the erosion in economic value has been related to both accounting and regulatory capital. The analysis was based on the entire balance sheet (including rate sensitive derivatives) in the banks' books. A further attempt has been made to bifurcate banks' balance sheet into trading book and banking book and calculate the duration of equity in each case (Annex 2.5 – Interest Rate Risk – Scenarios and Results).

The financial structure and weaknesses of co-operative banks and regional rural banks are well explained (Sections III.3, and III.4), and the weaknesses in supervision and governance are highlighted. The supervisory actions to address the identified weaknesses should be briefly mentioned or appropriately cross referenced to later chapters.

Stance of the Panel : Accepted. Suitably cross-referencing to other Panel Reports has been made.

Paragraph III.4.1.2 on stress test of credit risk within co-operative banks does not explain the stress event that is supposed to cause the weakening of capital to risk asset ratio (CRAR). A redraft will be helpful.

Stance of the Panel : Accepted. Paragraph has been suitably amended (sec 2.4.1.(b) – Stress Test of Credit Risk). Annex 2.2 Credit Risk – Scenario and Results – Urban Co-operative Banks has been amended.

The investments that the RNBC's are permitted to undertake should be more clearly stated in Section III.5.1. Simply to say that they are not permitted discretionary investments with depositor's money, or that they have to invest according to authorities directives, does not explain the safety and soundness of NBFC's.

Stance of the Panel : Accepted. This has been incorporated (Sec 2.5.1 – Non Banking Finance Companies).

The factors governing the decline in debt to equity ratio of public limited companies, and low ratios of private companies (Section III.5.4.1) require further explanation and analysis. How far does this reflect the changes in the relative cost of equity to debt? Is the observed improvement in D/E ratio sustainable?

Stance of the Panel : Accepted. Table 2.41 – Indicators of Financial Stability in Manufacturing has been suitably modified along with the write up in Sec 2.5.4.(a) – Corporate Sector.

Lack of recent data on household financial soundness and indebtedness (section

III.5.4.3) should be corrected, in light of the growing share of retail credit in bank balance sheets.

Stance of the Panel : Accepted. Suitably incorporated as a recommendation (Sec 2.5.4.(c) – Household Sector).

More systematic analysis should be undertaken of the relationship between FSI's for non-financial corporations and household sector and corresponding FSI's for banking sector, and between FSI's and macro variables, so that FSI's can be projected based on projected developments in non-financial sectors. Such forward looking analysis of FSIs is needed, because current levels of FSIs are a lagging or at best contemporaneous indicators of financial health. Also Stress test results themselves can be viewed as Financial Soundness Indicators. Thus results of some standard stress tests e.g. specific increase in bench mark interest rate, or a change in exchange rate, or shift in volatility etc should be monitored periodically to capture any balance sheet deterioration over time, while carrying out scenario analysis and scenario based stress testing in order to capture current developments.

Stance of the Panel : Accepted. But, no adequate time series data are available for several variables. Development of database has been incorporated as a forward looking recommendations (Sec 2.2.4.(a) – Stress Testing).

The issues analysed in Section III.6 are quite pertinent for financial development with stability. I agree with the assessments and recommendations, and I only add a few points below for emphasis and also suggest a regrouping of sections.

1. Transparency of aggregate information on the soundness and performance of supervised institutions is a key practice among others recommended by the IMF Code Good Practices in Transparency of Monetary and Financial Policies. This Report already provides a wealth of statistics on financial soundness and structure for different groupings of financial institutions. Nevertheless, compiling high quality aggregate information on Financial Soundness Indicators based on internationally accepted Guidelines, and building sufficiently long time series of these indicators, will be essential in order to estimate empirical relationships among FSIs and between FSIs and macro economic variables. Such aggregate analysis is the core component of Macro prudential surveillance, and this task goes hand in hand with moving toward risk based supervision of individual financial institutions. The importance of early adoption of RBS is rightly emphasised in the report.

Stance of the Panel : Accepted. An internal group in RBI has identified a manageable set of core indicators relating to financial stability & vulnerability (Sec 2.2.4.(a) – Stress Testing).

2. In the context of building up the capital cushion in public sector banks in order to implement Basel II, a relaxation of Government share from the current 51% minimum would be helpful, and attempts to maintain the government share or control, by diluting the quality of private sector capital should be avoided.

Stance of the Panel : The Panel's recommendation is that selective relaxation could be granted to banks having government ownership at the borderline of 51 per cent and the extent of dilution could be decided on a case-by-case basis (Section 2.2.4 (c) - Capital Requirement).

3. Country experiences analysed in various studies (see references in IMF Country report No. 06/56, Chapter 5 on Credit Growth and Related risks) clearly point to the financial stability issues posed by rapid credit growth, such as the rates recorded in the Indian banking system in the last few years, driven by demand for retail and real estate credit. The sharp increase in asset prices and sub-prime rate lending seems to suggest a relaxation of lending standards. In this context, the proactive approach in prudential supervision taken by the RBI, and the recommendation to develop credit derivative markets are appropriate.

Stance of the Panel : No comments

4. In Sections III.6.1.5 to III.6.1.8, a series of recommendations are considered in order to strengthen the supervision process and bank governance, including in the areas of risk management, provisioning rules , corporate governance, including composition of Boards, and executive compensation schemes , the need to strengthen the Prompt corrective action framework, *etc.* These measures should be set in the context of strengthening compliance with the Basel core principles (BCPs) and addressing the vulnerabilities and risks highlighted through macro prudential surveillance of sections III.1 to III.5 above.

Stance of the Panel : While the assessment of compliance to BCPs has been suitably cross-referenced, the Panel did not link the recommendations pertaining to Chapter 2.6.1.(e) to 2.6.(i) to BCPs compliance.

5. The analysis of sectoral concentration of credit (section III.6.1.9), asset quality by type of credit (Section III.6.1.10), risks due to off balance sheet exposures (III.6.13), and analysis of income diversity, and compliance with single borrower limits (Section III.6.1.14), should all be moved to the earlier sections focusing on an analysis of financial soundness and performance indicators. Then the section III. 6 could focus on overall assessment of commercial banking sector, the special issues in stability and development, and the policies to strengthen supervision in order to observe BCPs, and to exceed these standards where needed in light of special risks in the Indian context *etc.*

Stance of the Panel : Some of the editorial suggestions accepted.

6. Section III 6.2 on co-operative banks and Regional rural banks provides a comprehensive analysis of problems in the supervisory architecture applying to these institutions, and complements the financial weaknesses identified in Section III. 3 and Section III.4. The speedy implementation of the identified improvements in the supervisory regime and governance arrangements would be critical to the stability and development of these institutions.

Stance of the Panel : No comments.

7. The strong dependence of NBFCs on bank funding (highlighted in Section III.6.4) suggests that NBFCs should be included in the interbank contagion analysis recommended as part of the stress testing methodology. The NBFCs which play a significant role in broadening access to financial services, seem to pose important regulatory (weaknesses and gaps in regulatory powers) and development issues (need to expand funding sources, including through bond issues). I agree with the Panel's concern that these issues need to be addressed expeditiously, in order to avoid regulatory arbitrage and to liberalise restrictions on NBFC activities.

Stance of the Panel : Accepted. Incorporated as a recommendation (Sec 2.6.4 Non-Banking Finance Companies).

Chapter IV: Aspects of Stability and Performance of Insurance Sector

The presentation of range of financial soundness and performance indicators is very helpful. The industry, following the recent liberalisation measures, is growing rapidly, but is still in a developing phase, and the Insurance regulator is in the process of strengthening its supervisory and regulatory approaches. In these circumstances, stress testing of the industry is difficult. Therefore, the detailed discussion of the issues relating to stress testing in Section IV.6.3, belongs more appropriately in the earlier sections on stress testing of the banking system. In particular, the bottom up approach to stress testing can be a powerful tool of macro prudential surveillance, as mentioned in my comments on Chapter III.

Stance of the Panel : Some editorial modifications have been carried out.

Also it would be good to have a summary of the assessment of India's observance of IAIS Core principles of Insurance Supervision, and the priority areas where further work is underway to strengthen compliance and promote healthy further development of the industry. There is only a brief mention of selected aspects of insurance regulation, including portfolio regulation, policy holder protection, priority sector obligations, etc, but a good overview of the status of Insurance regulation against international standards does not emerge.

Stance of the Panel: Accepted. This has been incorporated (Section 3.3 – Macroeconomic Context).

Chapter V: Aspects of Stability and Functioning of Financial Markets

This Chapter provides an excellent analysis of the growing integration of various segments of the domestic financial markets, followed by a discussion of structure, growth, composition, and various stability and development issues in each of the markets. Some specific comments on the analysis and assessments are as follows:

1. In Section V 3.3.1 on cash segment of the money market, the analysis of factors contributing to money market development in India should also mention the significant transformation of monetary operations framework toward market based arrangements as a key factor in stimulating money market development. Similarly, measures to develop the term money market should include, longer term operations in LAF at the initiative of RBI, and the development of term liquidity facility by RBI as recommended in Chapter VI of the report.

Stance of the Panel : Accepted. Suitably incorporated (Section 4 3.3.(a) – Cash Segment; 4.3.4.(a) – Term Money Market).

2. After presenting evidence on the growth in the liquidity and efficiency foreign exchange markets, Section V.4 of the report goes on to highlight the need to strengthen the infrastructure, transparency and disclosure, and product range in the FX derivative markets. I agree that strengthening the trading

infrastructure, market conduct, and transparency of OTC derivatives (in FX) market, including disclosures by non-bank corporates, is important. It would be helpful to highlight the financial policy implications of the above and the extent to which current regulations and supervisory practices need to change or have been changed to facilitate the strengthening of FX derivative markets. Another example, the recommendation to replace the reporting of Aggregate Gap Limit (AGL) , by a reporting of Banks' own risk measures such as VAR seems appropriate , but would require supervisory validation of VAR and related models. Such supervisory implications need to be mentioned.

Stance of the Panel: Accepted. Suitably incorporated (Sec 4.4.5.(g) – Aggregate Gap Limits).

3. Section V.5 provides an excellent overview of the high quality reforms undertaken by RBI (as debt manager), in co-ordination with Government, in developing the Government Securities market, illustrates the impressive lengthening of maturities that has occurred , while reducing costs, and goes on to make recommendations for further development . The yield curve has remained surprisingly flat. These developments seem to reflect the still dominant role of statutory pre-emptions through various portfolio requirements on financial institutions. Therefore, the recommendation to relax these requirements in a phased manner is most welcome. The proposal to set up a separate debt management office is also appropriate, because the financial markets have now reached a level of maturity that would warrant a more risk focused approach to managing the overall public debt and contingent liabilities. The continued development of Government securities and treasury bills markets, including interest rate futures market as proposed, both supported by adequate infrastructure ,prudential controls , and RBI operations to manage the liquidity of the markets at the short end, all should allow an appropriate yield curve to emerge, thereby facilitating the further development of Corporate bond market.

Stance of the Panel : No comments.

4. In Section V.6 provides a good summary of growth, composition, and structure of Indian equity markets. Specific comments are as follows.

- It will be helpful to have a summary of the extent to which Security market regulation in India –which has undergone significant changes in the last few years— conforms to the IOSCO Standards, and the key areas where further work is underway to strengthen compliance, or to exceed the standards.

Stance of the Panel : Accepted. Suitably incorporated (sec 4.3.2- Regulatory Backdrop and Market Infrastructure).

- The report highlights a possible increase in volatility of equity prices— owing to currently high valuations and growing presence of foreign Institutional investors—as a concern for stability. The policy implication of this—in terms of need to further strengthen risk management and disclosure of market intermediaries, the monitoring of contagion risks, stronger market supervision, etc may be further highlighted in the context of assessing compliance with IOSCO standards.

Stance of the Panel : Accepted. These issues have been specifically addressed in the Advisory Panel Report on Financial Regulation and Supervision and appropriately cross-referenced.

- The continued focus on various development issues, such as further strengthening Public issue volumes, strengthening IPO process etc is most

welcome. The report is silent on the need for further consolidation of the numerous demutualised stock exchanges in India, and competition from alternative trading systems, as among the development issues.

Stance of the Panel: Suitably incorporated (4.6.5 – Further Measures for Development). The Panel's view is that consolidation of small demutualised stock exchanges would be dependant on emerging market forces.

- On Table V.10 on trends in Market capitalisation, it is not clear if the figures refer only to BSE, or also include both BSE and NSE. In any event, it is best to provide separate figures for the two stock exchanges.

Stance of the Panel: Accepted. Both BSE and NSE figures have been shown separately (Table 4.10 - Trends in Market Capitalisation).

5. In light of the urgency of developing the corporate bond market, highlighted in the earlier chapters as a key reform to foster infrastructure development and growth, Section V.7 provides a comprehensive analysis and recommendations for the development of this market. The recommendations clearly show the comprehensive range of reforms that are needed, and hence a careful prioritisation and sequencing of the needed measures becomes a must. In particular, reforms that will take time to implement must start early, such as the strengthening of the corporate bankruptcy regime; at the same time, the opening up of the market to foreign investors and issuers, with suitable prudential safeguards, can go a long way to expedite the development of this segment of the market. The parallel development of government securities markets, including the term money markets in Government paper and related derivatives, is necessary to establish a risk free yield curve that would facilitate the pricing of corporate bonds. Again, Implementation of a strategy to liberalise entry of foreign investors in Government securities markets is important, supported by adequate strengthening of Monetary and Financial Policy Transparency. This point is briefly mentioned in Section V.5.6.4, without any clear recommendation for further reforms. I understand that currently FIIs are subject to a $2 billion annual investment ceiling on their investments in central and State government securities, and a $1.5 billion ceiling on corporate debt securities. Relaxation of these rules, complemented by appropriate strengthening of market conduct regulations should be expedited.

Stance of the Panel: The Panel's recommendation is that judicious opening of capital account convertibility may be a tool that could be utilised to help create investor demand and result in expeditious development of corporate bond market (Section 4.7.4.(d) – Recommendations for Development of the Corporate Bond Market).

6. In view of the rapid credit growth in the Indian banking system, including in the retail and real estate segments, the development of markets for credit derivatives, and asset securitisation products can play critical role in fostering stability (through

improved credit risk transfer), and in promoting corporate bond markets. Some comments on Section V.8 on credit markets are as follows.

- It is important to draw the right lessons from the sub-prime crisis for the strategy to develop credit derivatives, and asset backed markets. An early emphasis on adequate disclosure by all counterparties, as well as by the rating agencies of their rating methodology, and strong liquidity risk management procedures, together can make these instruments a valuable tool for risk mitigation and capital management, without the adverse effects recently witnessed in the course of the sub-prime crisis. The phased and calibrated development of credit derivatives market proposed by the Panel is most welcome, as it emphasises both liquidity risk management, and strong mandatory disclosures.
- On section V.8.1, second full para needs some redrafting, as it seems to suggest that India was not impacted by the global subprime crisis, because RBI guidelines on securitisation made investments in securitised instruments to be unattractive. The reason for not facing such problems seems to be that the market for such instruments is still embryonic in India and hence not familiar to Indian investors, and in any case, capital account restrictions constrain investments in such products issued abroad.

Stance of the Panel Accepted. The paragraph has been rephrased (Section 4.8.1- Issues Related to Credit Market – Introduction).

Chapter VI: Financial Infrastructure

The frank and detailed analysis of a range of financial architecture and infrastructure issues in Chapter VI is most welcome. My comments are designed to highlight a few issues for emphasis.

- The report provides a frank and forthright assessment of the multiplicity of regulatory bodies, including the government with overarching powers and with majority ownership in many banks, and the consequent need to ensure adequate co-ordination, minimise opportunities for regulatory arbitrage, prevent conflicts of interest, and most important, to ensure adequate independence of the regulator so that regulatory forbearance is avoided. I concur with these concerns, and the need to address them in a practically efficient manner. In my view, it is much more important to focus on co-ordination, collaboration, and information sharing among the different regulators, than on institutional integration of agencies or separation of functions.

Stance of the Panel : Accepted. Suitably incorporated (Section 5.2.6 – Multiple and Conflicting Roles and Objectives of Regulatory Agencies).

In this context, I strongly support the proposed formalisation of the role of HLCCFM, with appropriate MOUs and a Secretariat. However, the performance of conglomerates needs to be closely monitored, and only when the firm level risk management gets sufficiently integrated, would it make sense to consider institutional integration at supervisor level.

Stance of the Panel : Accepted. Suitably incorporated (Section 5.2.7 – Financial Conglomerates).

- One area where additional discussion would be warranted is an assessment of monetary and financial policy transparency as part of the regulatory and governance issues, in view of its importance for Capital account opening to support financial sector development and domestic financial stability.

Stance of the Panel : Accepted. The assessment has been separately carried out by the Advisory Panel on Transparency Standards and the same has been cross referenced.

- The first para of Section VI.2.9 on regulatory co-ordination should distinguish more clearly between transparency of aggregate information on the supervised institutions by various supervisors (for macro prudential surveillance, and accountability), and the disclosure of information, including risk disclosures (under Pillar 3 of Basel II to support micro prudential supervision)) of individual institutions. In both cases, significant co-ordination is needed among supervisors on accounting standards and information exchange.

Stance of the Panel : Accepted. Suitably incorporated (Section 5.2.9 – Regulatory Co-ordination).

- In light of the dominant and growing role of CCIL as the Central Counterparty in Government and money market securities (and FX) settlements, the assessment of its observance with CPSS-IOSCO recommendations is welcome. The work to enhance its access to lines of credit and capital to manage the concentration of risks should be expedited. Since CCIL is also guaranteeing net settlements in the money market, it will be important to form a view on the adequacy of risk controls in the net settlement arrangements. Section VI.3.6 mentions the risk controls in a general fashion, and does not say or assess what CCIL actually does. Also Is the panel satisfied with the risk controls and governance of other Securities Settlement systems operated by NSE and BSE?

Stance of the Panel : The settlement guarantee that CCIL provides in money market pertains to CBLO. The Panel assessing standards and codes on payment and settlement systems has observed that CCIL has in place adequate risk management tools in respect of CBLO settlements. The assessment of observance of CPSS-IOSCO recommendation for CCPs in respect of the settlement systems operated by NSE and BSE also shows full compliance to the recommendations pertaining to risk control.

- An appropriately designed term liquidity facility can provide powerful incentives to develop the term money market. Therefore, the emphasis of the Panel on developing such a facility (Box VI.4) is welcome. The key is to operate the facility at the initiative of the RBI, based on forecasts of the size and durability of bank reserve variations, and using market determined prices, and standardised products that can help develop market bench marks.

Stance of the Panel : Accepted and incorporated (Sec 5.6.4.(d) – Introduction of a Term Liquidity Facility).

- The section on Capital flows (starting on page 62, including Tables VI.9, VI.10, V.11, and V.12) should be incorporated more appropriately in Chapter I on the macroeconomic environment. The role of capital account policies to promote

market integrity, foster financial stability, and support financial development, can then be taken up in other relevant sections.

Stance of the Panel : The Panel felt that no change is required.

On P 64, it is stated that "FII investments have contributed towards increasing volatility". It will be helpful if the relevant empirical evidence is cross referenced. Presumably the FII inflows caused appreciation, but it is not clear that they raised volatility.

Stance of the Panel : Accepted. This has been elaborated upon (Chart 5.4 – Stock Markets are Directly Fuelled by the FII Inflows and Chart 5.5 – INR/USD Volatility During Same Period).

- The assessment of deposit insurance system is very thorough, and the stress tests seem to suggest that the system is robust. I agree with the recommendations, including in particular the suggestion that the DICGC should be actively involved in the failure resolution process. However, the sentence on country experiences on this topic (lines 6-9, page 78, section VI.8) is not clear and needs a redraft.

Stance of the Panel: Accepted. Suitably amended (Section 5.7 – Safety net issues – Deposit Insurance).

Chapter VII : Developmental Issues

- Chapter VII focuses on development issues related to fairness and equity, and appropriately places emphasis on customer service, Corporate Social Responsibility of Banks , financial inclusion, including micro finance and access to finance of Small Scale Industries. I broadly agree with the findings and conclusions. I was struck by the Panel's suggestion that RBI on-site inspection should check compliance with customer service standards (Section VII.2, page 3). I believe that it is a Board and management responsibility of the concerned financial institution, and the numerous bank level committees on customer service should be able to handle compliance with customer service standards, with periodic reporting to RBI's Customer Service Department, and disclosures to markets. There is no need for heavy supervision.
- Also, it may be worth examining if achievement of the objectives of enhanced access to finance and financial inclusion in some regions or communities could be enhanced by the provision of Islamic financial services.

Stance of the Panel : The phrase 'onsite inspection' has been deleted (Section 6.2 - Customer Service). The Panel supported the present approach to financial inclusion.

Chapter VIII : Assessment and Recommendations

This Chapter essentially compiles in one place the assessments and recommendations developed in the previous chapters, and hence I do not have much to add. In any case, it will be good to start chapter VIII with an Overall Stability Assessment, pulling together, in a broad brush summary fashion, the various components of the analysis along the lines of Handbook methodology (Pillars I , II, and III of the Handbook plus analysis of financial development and structure indicators and comments on country specific special issues), before proceeding to sector by sector assessments and recommendations.

I have two further comments on the recommendations.

- With the emergence of numerous demutualised exchanges, it is not clear

why an SRO is proposed as a front line regulator of market intermediaries; While in many countries, demutualised exchanges serve as self regulatory organisations looking after market surveillance, compliance inspections, and investigation of violations, etc, complex governance issues arise in managing the conflicts of interest between commercial objectives of a demutualised exchange and its developmental and regulatory role; A strong oversight by the primary regulator is, in any case, necessary.

Stance of the Panel : Accepted. Suitably incorporated in Section 4.6.5 – Further Measures for Development.

- On liquidity infrastructure (Section VIII.4.4.2) the development of liquidity forecasting for day to day monetary management should be with the monetary operations unit. It is not the job for the Financial Stability Unit/ Division, which should focus on macro-prudential surveillance.

Stance of the Panel: Accepted. Suitably incorporated in Section 5.6.4.(b) – Volatility in Overnight Rates.

Note : Chapter VII on Summary of Recommendations has been appropriately redrafted after consideration of Peer Reviewers' comments.

Comments of peer reviewer Andrew Sheng and stance[93] of the Advisory Panel

NOTE : Since the Report has undergone considerable changes / amendments since it was made available to the Peer Reviewer, the sections referred to by him in the Peer Review may no longer pertain to the subject matter mentioned therein.

Comments of peer reviewer Andrew Sheng and stance of the Advisory Panel

Terms of Reference

A Committee on Financial Sector Assessment (CFSA) has been constituted by the Government of India in consultation with the Reserve Bank with the objective of undertaking a self-assessment of financial sector stability and development. One of the analytical components of financial sector assessment would encompass a comprehensive assessment of financial stability and stress testing of the Indian financial sector.

The Advisory Panel has the following terms of reference:

(i) to conduct an analysis of macro-prudential surveillance and financial stability (including business continuity and disaster recovery) and to assess the impact of potential macroeconomic and institutional factors (both domestic and external) on the soundness (risks and vulnerabilities) and stability of financial systems;

(ii) to analyse relevant data and information and apply techniques and methodologies as relevant to Banking, Insurance, Securities Markets and Non-banking financial sectors

(iii) to subject the assessment of stability to stress testing duly taking into account potential impact of macroeconomic and institutional factors and risks on the stability (including business continuity and disaster recovery) indicators, including natural and man-made disasters/catastrophe; and

(iv) based on the assessment, suggest measures for strengthening the financial structure and system and its development in a medium-term perspective.

Mr V. Sundararajan and Mr. Andrew Sheng acted as Peer Reviewers of the Draft Report.

General Comment

I want to commend the Indian authorities on the tremendous achievements in reforming the Indian Financial System through their pragmatic and gradualist approach. The fact that India has not gone through any financial crisis as a result of financial deregulation is not only remarkable, but a testimony to the correctness of the judgment that reforms to global standards need to be adjusted appropriately to local conditions. The results have been impressive by any standards and the quality of the analysis and policies adopted are professional and objective.

The comparison against FSAP methodology, however, does not come out clearly in the chapters. There are references to what principles are compliant and not compliant, but it may be useful to have in each chapter a box or Appendix that shows what

[93] The views of the Advisory Panel have been added to the Peer Review comments (in bold italics) wherever appropriate.

principles are considered compliant and non-compliant or requires further action.

Stance of the Panel: Accepted. The Panel observes that this pertains to the assessments of various international standards and codes. These have been separately undertaken by other Panels. In this Report however, a summary of the assessments, wherever relevant have been added, highlighting the major gaps in appropriate places.

The following are some comments on the views and recommendations of the CFSA. They may reflect my lack of understanding of the Indian system, but are offered as suggestions for consideration.

Comments by Chapter

Chapter 1: Macroeconomic Environment

I consider that the Indian authorities have managed the difficult transition towards globalisation in an appropriate manner. Interest rates have not been kept low and are still positive in real terms, which would allow market forces to adjust the resource allocation. Exchange rates have been flexible, even though there is still some exchange control and there are plans to move towards greater capital account convertibility. Fiscal consolidation is entirely appropriate. The analysis that there are challenges for the banking system to fund the infrastructure need is correct, as is the need to develop the corporate bond market. The real issue appears to me how to engineer a stable shift in the financial sector from a bank-dominated system to a capital market-oriented system, so that long-term funding is available to channel to finance the long-term needs of the economy, such as housing and infrastructure. This would call for greater development of the pension and social security system in preparation for an aging population, as well as the creation of a secondary mortgage market for India. The former will help fund the long-term infrastructure as well as the housing market, whilst the latter would help the intermediation and securitisation process.

Stance of the Panel : Accepted. The development of the secondary mortgage market has been incorporated in Section 4.8.4 – Conclusion.

Even though there are lessons to be drawn from the subprime crisis, it is not securitisation that is wrong, but the due diligence on such mortgages and their securitisation process. Banks cannot go on funding long-term housing mortgages on short-term deposits without getting into huge maturity mismatches. Consideration could be given to create one or two Government sponsored secondary mortgage vehicles (with private management and ownership participation) to develop the mortgage market healthily.

Stance of the Panel: The Panel is in agreement with the comments for development of securitisation. (Section 4.8.2 – Securitisation) gives a variety of measures to develop the securitisation market.

Development of government sponsored secondary mortgage vehicle –

Though the Panel is in favour of developing a secondary mortgage market as it would reduce the liquidity mismatch in the

banks' books, in view of the fiscal implications involved (as observed during the recent bail out of Fannie Mae and Freddie Mac by the US Treasury) a government sponsored/ guaranteed secondary mortgage vehicle is not considered appropriate at this juncture.

The development of the capital market would play a major role when the rupee becomes more internationalised, as this is a matter of time. It is therefore important to build this on a solid foundation, while the macroeconomic conditions remain favourable due to the young demographics and growing savings.

Stance of the Panel : This has been dealt with in Sec 1.5.9 - Managing the Impact of Capital Inflows.

Chapter II – Institutional and Financial Market Environment (Since merged with Chapter I)

The success of the transition from a government dominated banking system to a publicly listed banking system with significant government ownership shows how the introduction of timely and appropriate incentives (listing plus some foreign and private competition) can change the banking system behaviour. The problems with the regional rural banks and co-operative banks are clearly issues of ownership and governance, so I would have thought the encouragement of consolidation through mergers and acquisitions with private and PSBs would be the right way forward.

Stance of the Panel : The process of consolidation of RRBs is already on. As regards co-operative banks, the Panel was of the view that since the governance structure is completely different from commercial banks there could be legal issues regarding amalgamations (Sec 2.6.3 – Rural Financial Institutions).

I agree that the move towards market-determined and price-based instruments of policy is entirely correct. However, I would suggest that the macro-prudential regulation start using more quantity-based instruments than hitherto, such as margin requirements (on loan-to-value ratios). It was the unwillingness to use such tools in the US that allowed asset markets to be excessively fed by liquidity and credit. Prudential LTV ratios have been used to good effect to protect banks in Hong Kong and Spain against asset bubbles.

Stance of the Panel : Accepted. RBI has been using prudential measures such as increasing risk weights on exposures to certain sensitive sectors. As regards the LTV ratios, the issue is one of availability of data. Only recently there have been some efforts to develop a housing price index. Development of a National housing price index is a Panel recommendation (Sec 2.5.3.(c) – Earnings and Profitability) Section 2.5.3 (d) - Housing Price Index).

Chapter III – Aspects of Stability and Performance of Financial Institutions

This chapter identifies developing risk management skills as a sine qua non (III.2.2). Risk management is inextricably linked with governance. Hence, particularly for PSBs, changes in the governance structure will be critical to their ability to manage their risks. As long as pay is constrained relative to private bank compensation, PSBs are unlikely to develop the kind of risk management capacity needed for global banks. They may lose valuable staff with entrepreneurial skills to the higher paying private financial institutions.

Stance of the Panel : The Panel agrees that development of risk management capacity in PSBs is necessary and that higher compensation to PSB management is also required. The Panel concluded that the two

are not directly linked (Section 2.6.1 (f) - Risk Management and Section 2.6.1 (i) - Executive Compensation in Banking).

On the 51 per cent state ownership constraint, I would argue that as long as the state, plus public pension funds, own more than 51%, the state could own directly less than 51%. In other words, public pension funds could be counted as 'state'. This may be a useful 'transition' to a more market-oriented PSB environment, whilst the state is seen to be still broadly in control.

Stance of the Panel : The Panel felt if pension funds are counted as part of 'state', there would be legal issues as the banks would no longer be treated as Government Companies (Sec 617 – 619 of Companies Act 1956) and therefore lose their 'public' status.

The section on Liquidity is well written and researched. Strictly speaking, as long as banks hold more than 25 per cent government paper, they have more than enough liquidity. Indian banks are not yet at the 'originate to distribute' model, which required almost total reliance on central bank lender of last resort facilities to anchor individual bank liquidity. If the RBI could consider what appropriate paper could be used as collateral for LAF repos, then liquidity of the commercial and secondary mortgage paper market will be assured.

Stance of the Panel : The Panel agrees. It has suggested for inclusion of high quality AAA rated paper for the purpose of LAF (Section 5.6.4.(c) – Limitations in LAF Operations).

To avoid the repeat of sub-prime, the bank supervisors will have to adopt two techniques. First, the use of more stress tests by individual institutions, supplemented by system wide modelling of liquidity using different levels of margins and risk spreads. The latter is to ensure that the macro-prudential supervisor has an understanding of where liquidity pressures may build up in the system as a whole, rather than in specific institutions.

Stance of the Panel : Accepted. This has been incorporated in Section 2.2.4.(h) – Liquidity Risk Management.

Second, the on-site examination process should be supplemented by a forensic "follow the evolution of the product" approach. Instead of examining institution by institution, the examination process follows the evolution of a derivative product through its origination to final holder to check whether the final institutions, infrastructure and trading, clearing and settlement, risk management processes along the trading chain are adequate with sufficient due diligence and risk controls/ audit trail. The purpose of the 'forensic' examination is threefold (a) train examiners to understand complex products and "follow the money", (b) alert market participants (including originators) that the regulators are kicking the tires and checking the controls at every level of transaction, so that they would all be at risk of being tested, and (c) reveal to examiners how embedded leverage is increased and risks can transform (or missed) at each stage of evolution of a derivative product. (Paper on this forthcoming)

Stance of the Panel : Accepted. Incorporated in Sec 2.2.4(h)(III) - Liquidity Scenario Analysis.

I agree that bank regulators should have much better understanding of Off-balance sheet liabilities of banks and that there should be better coordination with Accounting Standards and Disclosure on whether such liabilities are likely to become On-Balance Sheet. A centralised netting, collateral custody and clearing system for derivatives would mitigate some of these risks (III.6.1.13).

Stance of the Panel : Accepted. This has been incorporated in section 2.6.1.(e) - Off-Balance Sheet Exposures.

On construction of Housing Price Index, I agree this is a matter of priority (III.5.3)

On Corporate Sector (III.5.4), whilst corporate profits have been healthy and leverage ratios are down, I believe that monitoring of corporate leverage, particularly for SMEs, and their foreign exchange mismatch (III.5.4.2), is necessary. Such reporting should be done as part of Listed Company disclosure and also such data to be captured for Credit Information to be shared amongst banks.

Stance of the Panel: This has been incorporated in Section 2.5.4.(b) – Unhedged Foreign Currency Exposure of Corporates.

On household affordability, the creation of GSE (government sponsored secondary mortgage corporations) could standardise information on house affordability and mortgage credit quality (III.5.4.3).

Stance of the Panel: The Panel was of the view that while the creation of a secondary mortgage market should be explored, a government sponsored/guaranteed secondary mortgage corporation could have fiscal implications.

I completely agree with the need for dynamic provisioning and a forward looking system in managing credit risks. (III.6.1.5).

Globalisation of large Indian banks may come sooner than expected if capital account liberalisation is planned to be earlier (III.7). Governance changes (which are critical to risk management and their readiness for globalisation's competitive challenges) may not be able to wait too long.

Stance of the Panel : The Panel suggests reduction of Government ownership on a case by case basis (Section 2.2.4 (c) - Capital Requirement).

Chapter IV: Aspects of Stability and Performance of Insurance Sector

It is difficult to comment on this sector, which is fairly prudently managed, but only because it is fairly protected. The number of insurance companies in India is still very small relative to the size of the market and its potential. Further opening up would open up the range of competitive products and development of human and professional skills that can only help complement the growth of the banking and other financial sectors.

Stance of the Panel : Inspite of stringent capital requirements, a number of international players have shown interest in the Indian insurance sector. The sector is opening up.

Most emerging markets underestimated the potential for the growth of the insurance market as a driver for growth. Large economies with sectoral specialist risk needs, such as agriculture and SME credit, may be fertile ground for innovative insurance schemes. This can only evolve if there is more competition in the system. Development of insurance industry cannot be divorced from manpower needs. Training of actuaries will be an important foundation, since actuarial skills are fundamental to development of risk management, not only in insurance, but in the rest of the financial sector.

Stance of the Panel : The Panel agrees on development of manpower needs. This has been incorporated in the report (Sec 3.7 – Concluding Remarks).

Chapter V: Aspects of Stability and Functioning of Financial Markets

I wonder whether the lack of a term money market is related to the development of the whole Government bond market and its relationship with the short-term yield curve. And the shortage of the Government paper is due to the banks avoiding the mark-to-market losses of the Government papers being classified as hold to maturity 'HTM', so that the amount of papers available for 'HFT', held for trading is shrinking. Given the rising profitability of banks in general, I would argue for the artificial separation of the banks' holdings of Government securities to be eliminated. Banks should be encouraged to mark to market all holdings and to provide for the losses through profits, so that there are more papers available for liquidity and trading (see V.5.6.1).

Stance of the Panel : The Panel felt that it is an internationally accepted norm to segregate investments into HTM and AFS/HFT. The option for HTM should remain with the bank. It may be too drastic to eliminate segregation between HFT/AFS and HTM - though there is a need to reduce the HTM component.

This will need to work with IASB on accounting and disclosure treatment to make sure these are consistent. At a point of time when profits of banks are rising due to widening spreads, it is opportune to write off all the embedded losses in their investment portfolio, so that in future, they will be able to handle better the growing market risks.

Stance of the Panel : A stress testing to show the impact after separating Investments in Trading book / banking book has been attempted. (Annex 2.5 – Interest Rate Risk – Scenarios and Results). The introduction of IFRS accounting in India from 2011 and the present Pillar III prescriptions of Basel II, would address these concerns.

On price discovery of derivatives and Accounting and Disclosure (V.4.5.1 and V.4.5.2), I would support centralised clearing, netting and monitoring of derivative positions (see comment on III.6.1.3 above).

Stance of the Panel : This has been incorporated. 2.6.1.(c) – Off Balance Sheet Exposures.

I am surprised that with greater interest rate liberalisation and market flexibility, the benchmark yield curve has remained generally flat. I support the recommendations of the Working Group on Interest Rate Futures (Box V.3).

On equity market, I would agree with the recommendations of the Committee (V.6.5).

Stance of the Panel: No comments.

On corporate bond market, I think the lack of buyers may be due to the lack of centralised transparency and lack of pricing of spreads against the benchmark yield curve (which is flat). Only when there is a large pension fund market and the risk spreads are attractive, will the corporate bond market grow strongly from demand (V.7.4.1). Current corporate risk spreads may not totally reflect risks and therefore will not attract demand.

Stance of the Panel: Accepted. This is incorporated. Section 4.7.4.(d) -

Recommendations for Development of the Corporate Bond Market.

Indeed, if there is opening up of the capital account, the growth of the corporate bond market could become quite large as there may be demand created from foreigners who may want exposure to Indian rupee and high quality corporate sector. I agree with recommendations of the High Level Committee on Corporate Debt (Box V.4).

Stance of the Panel: No comment.

Chapter VI: Financial Infrastructure

This is an important chapter as it discusses the regulatory structure, as well as the infrastructure issues.

On multiple and conflicting roles and objectives of regulator agencies (VI.2.6), I think this is inevitable in a transitional phase and in practice. Reducing the number of regulatory agencies will help somewhat, but do not solve the fundamental problem of policy co-ordination. The real issue lies in the co-ordination of financial policies, which will not be avoided even if you move to a super-regulator environment (of the problems with the Tripartite MOU in UK in actual practice).

Stance of the Panel : Accepted. With regard to Policy co-ordination, the Panel has highlighted the need for heightened regulatory co-operation and suggested strengthening the HLCCFM. - Section 5.2.6 Multiple and Conflicting Roles and Objectives of Regulatory Agencies.

I do agree that generally, ownership should be separated from regulatory functions, since this is a serious conflict of interest. In the interim, probably governance and disclosure arrangements could be made to mitigate these concerns.

Stance of the Panel: Accepted. Incorporated in Section 5.2.6 - Multiple and Conflicting Roles and Objectives of Regulatory Agencies.

On the role of the HLCCFM, there should be a formal MOU drafted and I agree that where conflicts or lack of co-ordination exist, then a formal memo should be presented to the HLCCFM to resolve the issues. The secretariat, if formulated, has the full-time responsibility to identify issues of cross-jurisdiction co-ordination that need resolution.

Stance of the Panel: Accepted. Incorporated in Section 5.2.9 – Regulatory Co-ordination.

I am not convinced that you can differentiate so clearly 'principle-based' from 'rule-based'. You can never avoid both in practice. What you need to do is to ensure that the rules have very clear principles enunciated at the beginning of the draft rules for consultation, which state clearly the regulatory objectives and also the possible benchmarks against which regulatory performance will be assessed. The rules should be drafted as easy to understand and easy to implement or enforce. The basic principle to follow is that even with complex rules, at the preface the basic principles and objectives of the rules should be clearly enunciated. This would remind interpreters to refer back to the principles when in doubt.

Stance of the Panel : Accepted. Incorporated in Section 5.2.6 - Multiple and Conflicting Roles and Objectives of Regulatory Agencies.

Box VI.1: Should Enforcement be separated from Regulation? The real issue is not whether Enforcement should be under the RBI, but whether there is duplication of regulation and enforcement with conduct regulation (under SEBI) when banks begin to get more and more into universal banking. Annex VI.2 seems to have missed the "Prudential Regulator vs Conduct Regulator" debate, where the US has tended towards the Australian/Netherlands Model.

Stance of the Panel : Accepted. Box 5.2 on Objectives-Based Regulation has been

introduced. It is felt that this has just been propounded and will take time to evolve.

Payment Systems and Business Continuity Plans

These sections are comprehensive and well researched. I seem to have missed the Report clarifying whether these systems meet all the G30 and the Committee on Global Payment and Settlement System (CPSS) Guidelines. If they do, this should be spelt out in the Report and if they don't, the gaps should be identified.

Stance of the Panel : Accepted. This has been separately assessed by another Panel. Mention has been made in Sec 5.3.1- Policy Developments.

Legal Infrastructure (Box VI.2) - I agree that telecommunication technology is such that the use of mobile phones as payment media and also storage of values (as well as mobile banking) will be the way forward. There is no discussion on what regulatory issues need to be considered. At the very minimum, there should be rules on security, fraud prevention and the relationship between the telephone service provider and the banking system.

Stance of the Panel: Accepted. This has been appropriately incorporated.5.3.13.(c) - Telecommunication as a Payment System Facilitator.

On the major legal reforms, it would be useful to specify how the legal infrastructure stands up to the FSAP requirements.

Stance of the Panel: Accepted. An assessment of insolvency & creditor rights based on World Bank Standards has been attempted by a separate Panel. Findings incorporated in Sec 5.5.2.(c)- Disposal of Legal Suits.

Liquidity Infrastructure – I agree that the real issue is the management of government accounts (fiscal fund management) and also that of the private sector. In the private sector, activities in the key markets, such as IPOs, would have also large cash transfers other than tax payments. I would have thought that the Government should not mind issuing more paper to the market to meet the shortage of stocks of Government securities held by the RBI and commercial banks. This is contrary to the normal fiscal rules, but the Ministry of Finance should consider a mechanism whereby the issue of Treasury paper is to facilitate development of the market and the proceeds are used to manage Treasury liquidity, rather than rely on the Central Bank to fund short-term requirements. I also agree that the types of instruments which can be eligible as collateral against LAF would be useful. The development of mortgage-backed paper would be encouraged if such paper (that are properly rated) could be included.

Stance of the Panel: The issuing of more paper to the market to meet the shortage of stocks might violate the spirit of FRBM.

Box VI.4 - I personally do not think that the provision of term liquidity should be the role of the central bank. The creation of several large mortgage corporations, which are equivalent of Fannie Mae or Ginnie Mae, would play an important liquidity role. Firstly, there would be more paper available for collateral against RBI LAF. Secondly, since the

Mortgage Corporation will be assisting in bridging the maturity mismatch within the banking system, the banks will have a mechanism to get their asset liability mismatches managed by issuing the right term liabilities against their term assets. The Mortgage Corporation can then have the backup facilities through their LAF with the central bank. In other words, the mortgage corporation acts as a buffer for term facilities with the commercial banks. If the central bank acts as term finance provider, then it truly becomes the Lender of First Resort, not Last Resort.

Stance of the Panel: The Panel was of the view that the provision of term liquidity may be seen more as a stabilising force and not as a lender of last resort facility. It may be a seasonal phenomenon and if such liquidity is not provided it could lead to sudden spikes in call money market rates. The Panel does not favour setting up of Government sponsored / guaranteed mortgage corporations.

Foreign exchange rate and control policies – I agree that there should be rules for the corporations in handling their unhedged positions. The corporations should be required to maintain certain FX balances to offset their FX liabilities, and the positions should be monitored. This discipline at the private sector level should be enforced, even if external FX sustainability has improved with higher FX reserves recently.

Stance of the Panel: No comments.

Deposit-Insurance Scheme – increasing a risk-based premium makes a lot of sense.

Stance of the Panel: The Panel's proposal is that keeping in view the existing issues in implementing risk based premium structure, legislative amendments to the DICGC Act to raise the flat rate premium should be examined.

I would also support the idea that the DIS is also involved in failure resolution/ liquidation function.

Stance of the Panel: Accepted (Sec 5.7.7 – Failure Resolution).

Credit Information – I agree that timely information on loan repayment status could be shared with the industry.

Stance of the Panel: No comments.

Chapter VII Developmental Issues

This chapter deals with the issues of social stability (fairness and equity), rather than financial stability. There is strictly no contradiction between social stability policies and financial stability, since the former reinforces the latter. The only risk is that the implementation of social stability policies could be at the expense of financial stability in terms of erosion of capital adequacy or proper risk management. The issues raised of greater transparency, fairness codes, financial inclusion, access through better technology, sustainability and credit gap for SSIs are all issues faced by emerging markets and are sound objectives. My only comment is that access to finance and information would require investment in social infrastructure that should be tackled fiscally rather than relying totally on private sector initiative. Reducing the social cost of evaluating SSI credit could be a way of levelling the playing field with evaluating cost of loans to large credits.

Stance of the Panel : The Panel feels that the social challenge of growth & development goes beyond aspects of human deprivation such as illiteracy, malnutrition, etc., to include aspects related to economic deprivation within the present context like customer service financial inclusion, etc. Social stability has an important role to play in financial stability. Private initiative in conjunction with fiscal measures would be useful (Section 6.6 – Concluding Remarks).

Chapter VIII Summary of Recommendations and Observations

Recommendation VII.1.2 - What are the policy reforms to fund the infrastructure in the economy? Based on the demographics of India, I would think that domestic savings would grow and that the financial system can also tap some foreign funding. Hence, development of the bond market is the right approach. However, the development of the secondary mortgage market is inevitability, because the Indian housing market will be one of the largest in the world, as Indian middle-class grows. Hence, creation of the secondary mortgage market with equivalent Fannie Mae's would help reduce the banking maturity mismatch and establish a solid base for the development of the corporate bond market. The key foundation is a strong government bond market to have a benchmark yield curve and the appropriate bond market infrastructure. Hong Kong Mortgage Corporation was critical in helping to avoid a bank crisis during the Asian crisis speculative attacks.

Stance of the Panel: The Panel agrees with the development of the corporate bond market. However, the introduction of government sponsored/guaranteed institutions for secondary mortgage market is not favoured as it has fiscal implications.

VIII.2.2.2 Recommendations. On unhedged foreign currency exposure of corporates, I agree that regular surveys, plus mandated disclosure in company balance sheets would solve the information asymmetry.

On the shortage of capital, I feel that introducing different forms of tier II capital will only give illusion of capital, but are in reality another form of debt. Hence, the emphasis should be the strengthening of the banks' core capital and to raise this through the capital market. The government could relax its 51 per cent limit if given a golden share or including pension fund holdings within the 51 per cent limit.

Stance of the Panel : With regard to strengthening core capital, the cost of raising 'core capital' vis-a vis debt would need to be examined. As mentioned earlier, the Panel felt that if pension funds are counted as 'state', there would be legal issues as the banks would be no longer be treated as Government Companies (Sec 617 – 619 of Companies Act 1956) and therefore lose their 'public' status.

I agree that compensation schemes should be reviewed and dynamic provisioning considered. These should be within the scope of reforms considered globally in the aftermath of the sub-prime crisis.

Stance of the Panel : No comments.

VIII.2.3.2 I agree that RRBs should be consolidated and Basel II should be implemented on a differentiated and focused approach.

Stance of the Panel : No comments.

VIII.2.4.2 I concur with the recommendations.

Stance of the Panel : No comments.

VIII.2.5.2 I concur with the recommendations. The issues are political rather than regulatory.

Stance of the Panel : No comments.

VIII.2.6.2 I concur with the need to push the bond market, plus a review of the regulatory framework

Stance of the Panel : No comments.

VIII.2.8.1 The relationship between HFCs and equivalent secondary mortgage corporations (Fannie Maes) need to be considered.

Stance of the Panel : Commented upon earlier.

VIII.2.10.2 I would be more comfortable with a detailed comparison of FSAP indicators on the insurance sector, so that the recommendations are more precise.

Stance of the Panel : Accepted. The Panel of Financial Regulation and Supervision has separately evaluated the IAIS principles. A summary of the assessment is included in Section 3.3 - Macroeconomic Context.

VIII.3.1.2 I agree that corporate paper needing ratings. However, a uniform disclosure system should be implemented, including exposure to foreign currency debt noted above.

Stance of the Panel : No comments.

VIII.3.2 Foreign Exchange Market I totally agree that the development of the FX market should concentrate on developing the investors (including the corporate FX management), through better suitability and appropriateness standards, as well as higher disclosure. On NDF trading, I feel that dealing with the direct issues that allow the creation of an NDF market is better than allowing banks to trade NDF. NDF market is a market anomaly that should disappear once the key capital account restrictions are removed.

Stance of the Panel : There is a policy of moving towards fuller capital account convertibility subject to concomitant developments.

VIII.3.3.1. Government Bond Market. We should not expect too much retail interest, but having access for retail to buy and subscribe to government securities through internet would be helpful. On the institutional side, encouraging more mutual funds, developing insurance and pension funds would be helpful. Encouraging the larger PSBs through increasing the size of their trading books make sense [need to deal with mark-to-market losses]. Inevitably, if India is to use foreign funding to finance the gap for infrastructure investment, allowing greater foreign investment in Government paper is necessary.

Stance of the Panel : Allowing greater foreign investments has been commented upon in Sec 4.5.6.(d) – Capital Account Convertibility.

VIII.3.4.2 Equity market - Instead of the SRO as the front line regulator of market intermediaries, I would suggest that a prudential regulator be appointed (could be SEBI). The real risk to sharp market corrections in the short term is the failure of market intermediaries, which would shake market confidence.

Stance of the Panel : Accepted. Further measures for development have been incorporated in Sec 4.5.6.(e) – Self Regulatory Organisation.

VIII.3.5.2 Corporate Bond Market - I agree with all the recommendations. As mentioned above, standardisation of rating requirement and disclosure on centralised basis would be important.

Stance of the Panel : No comments.

VIII.3.6.2 Credit market. I agree with the recommendation to develop the CDS market

Stance of the Panel : No comments.

VIII.4.1.2. Financial Infrastructure The suggestion to rationalise the regulatory framework and formalise the MOU's between the regulators to ensure better co-ordination is sensible and should be pursued.

Stance of the Panel : No comments.

VIII.4.4.2 Systemic Liquidity - As mentioned earlier, as banks extend more term loans and rely on short term deposits, the systemic liquidity mismatch is inevitable. Getting better liquidity forecasts will help but not solve the structural issue. Getting central bank to be lender of first resort is not helpful structurally. Hence, getting the secondary mortgage market developed is very critical. See how the Hong Kong Mortgage Corporation solved the liquidity stresses during the Asian crisis.

Stance of the Panel : As commented earlier.

VIII.5.1.2 Financial Inclusion - Agree with the approach, but improvement of social infrastructure would be another way of solving the cost and access issues.

Stance of the Panel : As commented earlier.

Note : Chapter VII on Summary of Recommendations has been appropriately redrafted after consideration of Peer Reviewers' comments.

Recommended Action Plan of Financial Stability Forum to Enhance Market and Institutional Resilience[94]

The Financial Stability Forum (FSF) has presented to the G7 Finance Ministers and central bank Governors a report making recommendations for enhancing the resilience of markets and financial institutions in April 2008. The recommended actions are in five areas:

- Strengthened prudential oversight of capital, liquidity and risk management.
- Enhancing transparency and valuation.
- Changes in the role and uses of credit ratings.
- Strengthening the authorities' responsiveness to risks.
- Robust arrangements for dealing with stress in the financial system.

A summary of recommendations on each of the five identified areas is given below:

I. Strengthened Prudential Oversight of Capital, Liquidity and Risk Management

Though Basel II provides the appropriate framework for supervisors to incentivise and monitor the process by banks and securities firms to address the weaknesses that the turmoil has revealed, it requires to be strengthened to improve resilience. A fundamental review of supervisory liquidity guidelines is also taking place.

It is especially important to strengthen the prudential framework for securitisation and off-balance sheet activities. Initiatives are also required to make the operational infrastructure for over-the-counter (OTC) derivatives more robust.

1. Capital Requirements

Supervisors, working through the Basel Committee, will enhance the Basel II capital treatment of structured credit and off-balance sheet activities.

- The Basel Committee will issue proposals in 2008 to:
  - raise capital requirements for certain complex structured credit products such as collateralised debt obligations of asset-backed securities;
  - introduce, together with IOSCO, additional capital requirements for credit exposures in the banks' and securities firms' trading books; and
  - strengthen the capital treatment for banks' liquidity facilities to off-balance sheet asset-backed commercial paper (ABCP) conduits.
- Supervisors will assess the impact of Basel II implementation on banks' capital levels and will decide whether additional capital buffers are needed.
- Supervisors will continue to update the risk parameters and other provisions of Basel II and will rigorously assess banks' compliance with the framework. They will assess the cyclicality of the Basel II framework.
- Insurance supervisors should strengthen the regulatory and capital framework for monoline insurers in relation to structured credit.

2. Liquidity Management

The turmoil demonstrated the central importance that effective liquidity risk management practices and high liquidity

[94] Source: Financial Stability Forum, Press Release dated April 12, 2008.

buffers play in maintaining institutional and systemic resilience in the face of shocks.

- The Basel Committee will issue for consultation sound practice guidance on the management and supervision of liquidity by July 2008. It will cover the following areas:
  - the identification and measurement of the full range of liquidity risks, including contingent liquidity risk associated with off-balance sheet vehicles;
  - stress tests, including greater emphasis on market-wide stresses and the linkage of stress tests to contingency funding plans;
  - the role of supervisors, including communication and co-operation between supervisors, in strengthening liquidity risk management practices;
  - the management of intra-day liquidity risks arising from payment and settlement obligations both domestically and across borders;
  - cross-border flows and the management of foreign currency liquidity risk; and
  - the role of disclosure and market discipline in promoting improved liquidity risk management practices.
- National supervisors should closely check banks' implementation of the updated guidance as part of their regular supervision. If banks' implementation of the guidance is inadequate, supervisors will take more prescriptive action to improve practices.
- Supervisors and central banks will examine the scope for additional steps to promote more robust and internationally consistent liquidity approaches for cross-border banks. This will include the scope for more convergence around liquidity supervision as well as central bank liquidity operations.

3. Supervisory Oversight of Risk Management, Including of Off-balance Sheet Entities

Firms' boards and senior management must strengthen risk management practices according to the lessons they have learned from the turmoil. Supervisors for their part will act to monitor the progress of banks and securities firms in strengthening risk management and capital planning practices.

- National supervisors will use the flexibility within Basel II to ensure that risk management, capital buffers and estimates of potential credit losses are appropriately forward looking and take account of uncertainties associated with models, valuations and concentration risks and expected variations through the cycle.

The Basel Committee will issue further guidance for supervisory review over the course of 2008 and 2009 in a number of areas, as described below.

- To strengthen guidance relating to the management of firm-wide risks, including concentration risks.

- To strengthen stress testing guidance for risk management and capital planning purposes.
- To require banks to manage off-balance sheet exposures appropriately.
- To strengthen risk management relating to the securitisation business.
- To strengthen their existing guidance on the management of exposures to leveraged counterparties.

Individual jurisdictions will also issue strengthened guidance on these issues.

4. Operational Infrastructure for OTC Derivatives

Market participants should act promptly to ensure that the settlement, legal and operational infrastructure underlying OTC derivatives markets is sound.

- Market participants should amend standard credit derivative trade documentation in accordance with the terms of the cash settlement protocol that has been developed, but not yet incorporated into standard documentation.
- Market participants should automate trade novations and set rigorous standards for the accuracy and timeliness of trade data submissions and the timeliness of resolutions of trade matching errors for OTC derivatives.
- The financial industry should develop a longer-term plan for a reliable operational infrastructure supporting OTC derivatives.

II. Enhancing Transparency and Valuation

This period of market turmoil and illiquidity has highlighted the importance to market confidence of reliable valuations and useful disclosures of the risks associated with structured credit products and off-balance sheet entities.

1. Risk Disclosure by Market Participants

Enhanced disclosures by financial firms of more meaningful and consistent quantitative and qualitative information about risk exposures, valuations, off-balance sheet entities and related policies are important to restore market confidence.

- The FSF strongly encourages financial institutions to make robust risk disclosures using the leading disclosure practices summarised in this report, at the time of their upcoming mid-year 2008 reports.
- Going forward, investors, financial industry representatives and auditors should work together to provide risk disclosures that are most relevant to the market conditions at the time of the disclosure.
- The BCBS will issue by 2009 further guidance to strengthen disclosure requirements under Pillar 3 of Basel II for securitisation exposures, sponsorship of off-balance sheet vehicles, liquidity commitments to ABCP conduits, and valuations.

2. Accounting and Disclosure Standards for Off-balance Sheet Vehicles

The build-up and subsequent revelation of significant off-balance sheet exposures has highlighted the need for clarity about the treatment of off-balance sheet entities and about the risks they pose to financial institutions.

- The IASB should improve the accounting and disclosure standards for off-balance sheet vehicles on an accelerated basis and work with other standard setters toward international convergence.

3. Valuation

Potential weaknesses in valuation practices and disclosures, and the difficulties

associated with fair valuation in circumstances in which markets become unavailable, have become apparent from the turmoil. International standard setters should enhance accounting, disclosure and audit guidance for valuations. Firms' valuation processes and related supervisory guidance should be enhanced. To address these issues:

- The IASB will strengthen its standards to achieve better disclosures about valuations, methodologies and the uncertainty associated with valuations.
- The IASB will enhance its guidance on valuing financial instruments when markets are no longer active. To this end, it will set up an expert advisory panel in 2008.
- Financial institutions should establish rigorous valuation processes and make robust valuation disclosures, including disclosure of valuation methodologies and the uncertainty associated with valuations.
- The Basel Committee will issue for consultation guidance to enhance the supervisory assessment of banks' valuation processes and reinforce sound practices in 2008.
- The International Auditing and Assurance Standards Board (IAASB), major national audit standard setters and relevant regulators should consider the lessons learned during the market turmoil and, where necessary, enhance the guidance for audits of valuations of complex or illiquid financial products and related disclosures.

4. Transparency in Securitisation Processes and Markets

Market practices regarding initial and ongoing disclosures relating to structured products, both in public and private markets will need to improve in the light of recent events. Securities market regulators will work with market participants to this end. IOSCO will assess the progress made by end-2008.

- Originators, arrangers, distributors, managers and credit rating agencies should strengthen transparency at each stage of the securitisation chain, including by enhancing and standardising information on an initial and ongoing basis about the pools of assets underlying structured credit products.

III. Changes in the Role and Uses of Credit Ratings

Credit rating agencies (CRAs) play an important role in evaluating and disseminating information on structured credit products, and many investors have relied heavily on their ratings opinions. Poor credit assessments by CRAs contributed both to the build-up to and the unfolding of recent events. CRAs have undertaken a series of actions to draw lessons for their internal governance and operational practices. The steps are welcome but more is needed.

1. Quality of the Rating Process

CRAs should improve the quality of the rating process and manage conflicts of interest in rating structured products. To this end:

- IOSCO will revise its Code of Conduct Fundamentals for Credit Rating Agencies by mid-2008.
- CRAs should quickly revise their codes of conduct to implement the revised IOSCO CRA Code of Conduct Fundamentals. Authorities will monitor, individually or collectively, the implementation of the revised IOSCO Code of Conduct by CRAs, in order to ensure that CRAs quickly translate it into action.

2. Differentiated Ratings and Expanded Information on Structured Products

Structured products have different credit risk properties from traditional corporate debt ratings.

- CRAs should clearly differentiate, either with a different rating scale or with additional symbols, the ratings used for structured products from those for corporate bonds, subject to appropriate notification and comment.
- CRAs should expand the initial and ongoing information that they provide on the risk characteristics of structured products.

3. CRA Assessment of Underlying Data Quality

CRAs should enhance their review of the quality of the data input and of the due diligence performed on underlying assets by originators, arrangers and issuers involved in structured products. CRAs should:

- require underwriters to provide representations about the level and scope of due diligence that they have performed on the underlying assets;
- adopt reasonable measures to ensure that the information they use is of sufficient quality to support a credible rating;
- establish an independent function to review the feasibility of providing a credit rating for new products materially different from those currently rated;
- refrain from rating a security where the complexity or structure of a new type of structured product, or the lack of robust data about underlying assets, raises serious questions as to whether CRAs can determine a credit rating;
- disclose what qualitative reviews they perform on originators' underwriting standards; and
- take into account the information on the portion of underlying assets held by originators when rating securitised products.

4. Use of Ratings by Investors and Regulators

Enhanced disclosure by CRAs is useful only if investors make appropriate use of the information for their due diligence and risk management. Investors should address their over-reliance on ratings.

- Investors should reconsider how they use credit ratings in their investment guidelines and mandates and for risk management and valuation. Ratings should not replace appropriate risk analysis and management on the part of investors. Investors should conduct risk analysis commensurate with the complexity of the structured product and the materiality of their holding, or refrain from such investments.

Credit ratings are referred to in various regulatory and supervisory frameworks both at the international and at the national level.

- Authorities should check that the roles that they have assigned to ratings in regulations and supervisory rules are consistent with the objectives of having investors make independent judgment of

risks and perform their own due diligence, and that they do not induce uncritical reliance on credit ratings as a substitute for that independent evaluation.

IV. Strengthening Authorities' Responsiveness to Risk

Some of the weaknesses that have come to light were known or suspected within the community of financial authorities before the turmoil began. Much work was underway at international levels that - if already implemented - might have tempered the scale of the problems experienced. However, international processes for agreeing and implementing regulatory and supervisory responses have in some cases been too slow given the pace of innovation in financial markets.

1. Translating Risk Analysis into Action

Supervisors, regulators and central banks - individually and collectively - will take additional steps to more effectively translate their risk analysis into actions that mitigate those risks.

- Supervisors should see that they have the requisite resources and expertise to oversee the risks associated with financial innovation and to ensure that firms they supervise have the capacity to understand and manage the risks.
- Supervisors and regulators should formally communicate to firms' boards and senior management at an early stage their concerns about risk exposures and the quality of risk management and the need for firms to take responsive action. Those supervisors who do not already do so should adopt this practice.

2. Improving Information Exchange and Cooperation Among Authorities

Authorities' exchange of information and cooperation in the development of good practices will be improved at national and international levels.

- The use of international colleges of supervisors should be expanded so that, by end- 2008, a college exists for each of the largest global financial institutions. Supervisors involved in these colleges should conduct an exercise, by 2009, to draw lessons about good practices in operating colleges.
- Supervisory exchange of information and co-ordination in the development of best practice benchmarks should be improved at both national and international levels.
- Supervisors and central banks should improve co-operation and the exchange of information, including in the assessment of financial stability risks. The exchange of information should be rapid during periods of market strain.
- To facilitate central bank mitigation of market liquidity strains, large banks will be required to share their liquidity contingency plans with relevant central banks.

3. Enhancing International Bodies' Policy Work

International bodies will enhance the speed, prioritisation and co-ordination of their policy development work.

- International regulatory, supervisory and central bank committees will strengthen their prioritisation of issues and, for difficult to resolve issues establish mechanisms for escalating them to a senior decision-making level.
- National supervisors will, as part of their regular supervision, take additional steps to check the implementation of guidance issued by international committees.
- The FSF will encourage joint strategic reviews by standard-setting committees to better ensure policy development is coordinated and focused on priorities.
- The FSF and IMF will intensify their cooperation on financial stability, with each complementing the other's role. As part of this, the IMF will report the findings from its monitoring of financial stability risks to FSF meetings, and in turn will seek to incorporate relevant FSF's conclusions into its own bilateral and multilateral surveillance work.

V. Robust Arrangements for Dealing with Stress in the Financial System

1. Central Bank Operations

Central bank operational frameworks should be sufficiently flexible in terms of potential frequency and maturity of operations, available instruments, and the range of counterparties and collateral, to deal with extraordinary situations. Overall, central banks' responses to the liquidity tensions caused by the financial market turmoil have been reasonably effective at relieving pressures in interbank funding markets. They could not, and were not intended to, address the underlying causes of the problems, which lay well beyond the scope of central banks' reserve-providing operations. Nevertheless, the experience offers some lessons that could lead in some cases to a revision of central bank operational objectives and policy instruments.

- To meet an increased but uncertain demand for reserves, monetary policy operational frameworks should be capable of quickly and flexibly injecting substantial quantities of reserves without running the risk of driving overnight rates substantially below policy targets for significant periods of time.
- Policy frameworks should include the capability to conduct frequent operations against a wide range of collateral, over a wide range of maturities and with a wide range of counterparties, which should prove especially useful in dealing with extraordinary situations.
- Central banks should have the capacity to use a variety of instruments when illiquidity of institutions or markets threatens financial stability or the efficacy of monetary policy.
- To deal with stressed situations, central banks should consider establishing mechanisms designed for meeting frictional funding needs that are less subject to stigma.
- To deal with problems of liquidity in foreign currency, central banks should consider establishing standing swap lines among themselves. In addition, central banks should consider allowing in their own liquidity operations the use of collateral across borders and currencies.

2. Arrangements for Dealing with Weak Banks

National arrangements for dealing with weak banks have been tested by recent events and are the subject of review in some countries. The nature of the turmoil, the effects of which have been felt in many countries and in many different types of institutions, has emphasised the need to continue to work on crisis co-operation.

- Domestically, authorities need to review and, where needed, strengthen legal powers and clarify the division of responsibilities of different national authorities for dealing with weak and failing banks.
- Internationally, authorities should accelerate work to share information on national arrangements for dealing with problem banks and catalogue cross-border issues, and then to decide how to address the identified challenges.
- Authorities should agree a set of international principles for deposit insurance systems. National deposit insurance arrangements should be reviewed against these agreed international principles, and authorities should strengthen arrangements where needed.
- For the largest cross-border financial firms, the most directly involved supervisors and central banks should establish a small group to address specific cross-border crisis management planning issues. It should hold its first meeting before end-2008.
- Authorities should share international experiences and lessons about crisis management. These experiences should be used as the basis to extract some good practices of crisis management that are of wide international relevance.

References

Barth, J., G.Caprio and R. Levine (2004). Bank Regulation and Supervision: What Works Best? *Journal of Financial Intermediation* 12, 205-48.

Basu, P. (2006). Improving Access to Financial for India's Rural Poor. Directions in Development Document No. 36448. World Bank: Washington DC.

Bebchuk, L., and J.Fried (2003). Executive compensation as an agency problem. *Journal of Economic Perspectives* 17, 71-92.

Beck, T, A. Demirguc-Kunt and R. Levine (2007). Reaching Out: Access to and Use of Banking Services across Countries. *Journal of Financial Economics* 85, 234-66.

Beck, T., A. Demirguc Kunt, and M .S. Martinez Peria (2006b). Banking Services for Everyone? Barriers to Bank Access and Use around the World. World Bank Policy Research Working Paper 4079. World Bank: Washington DC.

Beck, T., A. Demirguc Kunt, L .Laeven and V. Maksimovic (2006a). The determinants of financing obstacles. *Journal of International Money and Finance* 25, 932-52.

Borio, C., C. Furfine and P. Lowe (2001). Procyclicality of the Financial System and Financial Stability: Issues and Policy Options. BIS Paper No. 1.. BIS: Basel.

Caprio, G. and R. Levine (2002). Corporate Governance in Banks: Concepts and International Observations. Paper presented in the Global Corporate Governance Forum Research Network Meeting. April 5.

Cihak, M. (2006). How Do Central Banks Write on Financial Stability. IMF Working Paper No.163. IMF: Washington DC.

Cihak, M. (2007). Introduction to Applied Stress Testing. IMF Working Paper No.59. IMF: Washington DC.

European Central Bank (2004). Report on EU Banking Structure (November 2004). ECB: Frankfurt.

Government of India (2008b). Report of the Committee on Financial Inclusion (Chairman: Dr. C. Rangarajan). Government of India: New Delhi.

Government of India. *Economic Survey.* New Delhi (various years).

Hawkins, J., and P. Turner (1999). Bank Restructuring in Practice: An Overview. BIS Policy Paper No. 6. BIS: Basel.

Honohan, P. and Klingebiel, D. (2000), Controlling Fiscal Costs of Banking Crises; World Bank Policy Research Working Paper No. 2441.

Honohan, P. and Klingebiel, D. (2003), The Fiscal Cost Implication of an Accommodating Approach to Banking Crises; Journal of Banking and Finance.

Hoelscher, D.S. and Quintyn, M. (2003), Managing Systemic Banking Crises; Occasional Paper; IMF.

International Monetary Fund. Financial Sector Stability Assessment (various country reports). IMF: Washington DC.

References

International Monetary Fund. *Global Financial Stability Report* (various issues). IMF: Washington DC.

IRDA. Annual Report (various years). IRDA: Hyderabad.

Kay, I.T. and S. Van Putten (2007). *Myths and realities of executive pay.* Cambridge University Press: UK.

Laeven, L., and R.Levine (2007). Is there a Diversification Discount in Financial Conglomerates? *Journal of Financial Economics* 85, 331-67.

Morris, J. (2001). Risk Diversification in the Credit Portfolio: An Overview of Country Practices. IMF Working Paper No. 200. IMF: Washington DC.

National Bank for Agriculture and Rural Development. Annual Report (various years). NABARD: Mumbai.

National Housing Bank. Annual Report (various years). NHB: New Delhi.

National Housing Bank. Report on Trend and Progress of Housing in India. NHB: New Delhi.

Poveda, R. (2000). Reform of the System of Insolvency Provisions. Bank of Spain. Available at www.bde.es

Reserve Bank of India. Annual Report (various years). RBI: Mumbai.

Reserve Bank of India. Bulletin (various years). RBI: Mumbai.

Reserve Bank of India. Currency and Finance (various years). RBI: Mumbai.

Reserve Bank of India. Handbook of Statistics on the Indian Economy (various years). RBI: Mumbai.

Reserve Bank of India. Report on Trend and Progress of Banking in India (various years). RBI: Mumbai.

Reserve Bank of India. Statistical Tables Relating to Banks in India (various years). RBI: Mumbai.

SEBI - Annual Report (various years)

SEBI - Bulletin (various years)

Subramaniam, S., and D. Jayaraj (2006). The Distribution of Household Wealth in India. WIDER Working Paper No. 116. WIDER: Helsinki.

Sinkey, Joseph.F. Commercial Bank Financial Management.

World Bank. *Financial Structure Database.* The World Bank; Washington DC.

ERRATA

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11	24	Financial Stability Institute	Financial Soundness Indicators
12	13	LLR	LoLR
174	17	them	than
267	22 (Table 5.2)	Grand Total (I +II)	Grand Total (I +II +III)
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