Chapter VI

Financial Stability

Introduction

6.1 Financial stability has received greater attention the world over in recent years as is evident from the periodic financial stability reports brought out by several central banks and international financial institutions, including the International Monetary Fund (IMF), the Bank of International Settlements (BIS) and the World Bank. The greater emphasis on financial stability is due to several major trends and developments in the financial systems. Greater deregulation and liberalisation in tandem with technological developments have incentivised development of complex instruments and diversity of activities on the one hand, and enhanced mobility of risks, on the other[1]. Financial systems have expanded at a significantly higher pace than the real economy with rapid growth particularly in equity, debt and derivative markets. The process of financial deepening has been accompanied by changes in the composition of the financial system, with a declining share of monetary assets, thereby resulting in greater leverage of the monetary base. Financial institutions now undertake a broader range of activities than the traditional banking activities of taking deposits and extending loans. As a result of technological developments and increasing degree of cross-industry and cross-border integration, financial systems are also more integrated nationally as well as internationally. A large number of financial conglomerates have also emerged.

6.2 The changing contours of financial system have, however, expanded the sources of financial instability. The developments relating to technological innovation, diversity of financial instruments and the emergence of financial conglomerates have all increased potential severity of financial instability. Furthermore, the sources of financial disturbances have become more unpredictable mainly due to integration of financial markets across national boundaries, thereby exacerbating the possibility of contagion. Thus, the sources of financial instability could range from external factors (such as macroeconomic performance) to national/regional/international security related reasons to internal factors (such as macroeconomic performance, market volatility, counterparty risk and operational risk).

6.3 A stable financial system promotes efficient allocation of economic resources, geographically and over time. In a broader perspective, financial stability analysis focuses on a wide range of issues covering macroeconomic performance of the economy, monetary stability, regulation and supervision of banking and financial institutions and any other risk that may influence the financial system. Very often these aspects happen to be inter-related in a complex manner. Macroeconomic performance of the economy influences the ability of the firms/ individuals to abide by the contracts in financial transactions. The soundness of the financial system on the other hand is crucial for providing support to the strong macroeconomic dynamics.

6.4 For practical purposes, financial stability covers a number of interrelated components, which include infrastructure (payment and settlement system, legal framework and accounting practices), institutions (banks, securities firms and institutional investors) and markets (stock, bond, currency, money and derivatives). Financial stability does not require that all parts of the financial system operate in most efficient manner all the time. A stable financial system rather has the ability to resolve imbalances through self-corrective mechanism before they precipitate a crisis.

6.5 The need for concerted efforts for ensuring financial stability has been reinforced in recent times because of increased degree of globalisation and integration of financial markets coupled with emerging signs of volatility in these markets. Although globalisation has expanded the potential output of several economies, the ability of a developing country to derive benefits from financial globalisation in the presence of volatility in international capital flows can be significantly

[1] Schinasi, G.J. (2006), "Safeguarding Financial Stability: Theory and Practice," International Monetary Fund.

improved by the quality of its macroeconomic framework and institutions.

6.6 Technological developments have also raised concerns for financial stability. In the recent period, there is an increasing trend towards convergence of various financial business segments with significant parts of the convergence chain resting with the banking sector. With the rapid developments in technology and changing customer preferences, delivery channels in the banking sector have concomitantly undergone a metamorphosis in order to remain competitive. Internet-based delivery services and mobile telephony have emerged as potential channels for prompt customer services. Besides several benefits, technological developments have allowed the formation of financial conglomerates and also benefits of economies of scale. Aligning the operations of large financial conglomerates and foreign institutions with local public policy priorities remains a challenge for domestic financial regulators in many Asian emerging economies. Technological developments have also enabled banks and financial institutions to depend on outsourcing to a greater degree. Managing the outsourced entities by banks assumes greater importance. It is important in the context of financial stability to ensure adequate safeguards in the processes of outsourcing and appropriately address confidentiality of the information.

6.7 The episodes of financial instability often have adverse impact on wider sections of the community, including firms and households. The overall cost of such episodes could be enormous for an economic system, which often spills over cross borders. The East Asian crisis during the mid-1990s revealed implications of weaknesses in the financial sector on the economy in terms of severe economic and social consequences. Excessive volatility in financial markets can significantly raise the cost of capital for business investment and adversely affect expansion in output. The weak financial sector may also impede the monetary transmission mechanism when the central bank attempts to stimulate the economy.

6.8 In view of its criticality, policy makers the world over have been seriously concerned about the risks to financial stability. The prime responsibility of soundness of the financial sector in most of the countries lies with the monetary authorities because monetary stability is strongly related to financial stability. At the international level, one of key objectives of the BIS is to promote monetary and financial stability. Within the BIS, the Financial Stability Forum (FSF) was set up in April 1999 to promote international financial stability through information exchange and international co-operation in financial supervision and surveillance (Box VI.1). The Forum brings together on a regular basis the national authorities responsible for financial stability for deliberations.

6.9 In response to the crises of the 1990s, the IMF and the World Bank introduced the Financial Sector Assessment Programme (FSAP) to identify strengths, risks and vulnerabilities of financial systems in member countries and also to highlight the financial sector development needs. A key component of FSAP is to assess compliance with the international standards and codes in the financial sector, including the Basel Core Principles of Banking Supervision (BCP); the Insurance Core Principles framed by International Association of Insurance Supervisors; the International Organisation of Security Commissions (IOSCO) Objectives and Principles for Securities Regulation; the IMF's Code of Good Practices in Monetary and Financial Policies; and Financial Action Task Force (FATF) recommendations on Anti-Money Laundering and Combating the Financing of Terrorism.

6.10 In the Indian context, the RBI Act, 1934 does not explicitly mandate the Reserve Bank to ensure financial stability. However, the twin objectives of monetary policy in India have evolved over the years as those of maintaining price stability and ensuring adequate flow of credit to facilitate the growth process (Reddy, 2007). The relative emphasis between the twin objectives is modulated depending upon the prevailing circumstances and is articulated in the policy statements by the Reserve Bank from time to time. Consideration of macroeconomic and financial stability is also subsumed in the mandate. In recent years, financial stability has assumed priority in the conduct of monetary policy. The institutional environment has been changing rapidly including, in particular, due to the implementation of the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 and the increased integration of domestic financial markets with the global markets. In this context, it has become important to recognise and exploit the strong complementarity between macroeconomic performance and financial stability.

Box VI.1: FSF Report on Highly Leveraged Institutions: Latest Updates

The Financial Stability Forum (FSF) brings together senior representatives of national financial authorities (central banks, supervisory authorities and treasury departments), international financial institutions, international regulatory and supervisory groupings, committees of central bank experts and the European Central Bank. The FSF is serviced by a small secretariat housed at the Bank for International Settlements in Basel, Switzerland. The FSF seeks to co-ordinate the efforts of these various bodies so as to promote international financial stability, improve the functioning of markets, and reduce systemic risk.

The FSF constituted a Working Group in 1999 to assess the challenges posed by highly leveraged institutions (HLIs). The Group was also required to achieve consensus on supervisory/regulatory measures to minimise their destabilising potential. The creation of the Group followed two main episodes. First, the near-collapse of Long Term Capital Management (LTCM), which raised concerns about the potential systemic risks posed by a HLI. Second, the spillover effects from the 1997-98 crises in Asia and Russia, when the authorities in some small and medium-sized open economies were concerned that HLIs had exerted a destabilising impact on their markets. The Group made 10 recommendations in the first report submitted in 2000 which, *inter alia*, included stronger counterparty risk, enhanced regulatory oversight of HLI credit providers, greater risk sensitivity in bank capital adequacy regulation and enhanced national surveillance of financial markets. The FSF had subsequently published a report assessing progress against its recommendations in 2001 and 2002.

In its latest update of the Report on Highly Leveraged Institutions (2000) released on May 19, 2007, produced in response to a request by G7 Finance Ministers and Central Bank Governors, the FSF reassessed the financial stability issues and systemic risks posed by hedge funds. The report recognises the contribution hedge funds have made to financial innovation and market liquidity. At the same time, it noted heightened risk measurement, valuation and operational challenges for market participants and made the following recommendations:

- Supervisors should act in such a manner that core intermediaries continue to strengthen their counterparty risk management practices.
- Supervisors should work with core intermediaries to further improve their robustness to the potential erosion of market liquidity.
- Supervisors should explore and evaluate the extent to which developing more systematic and consistent data on core intermediaries' consolidated counterparty exposures to hedge funds would be an effective complement to existing supervisory efforts.
- Counterparties and investors should act to strengthen the effectiveness of market discipline, including by obtaining accurate and timely portfolio valuations and risk information.
- The global hedge fund industry should review and enhance existing sound practice benchmarks for hedge fund managers in the light of expectations for improved practices set out by the official and private sectors.

Reference:

Financial Stability Forum (2007), Update of the FSF Report on Highly Leveraged Institutions, May; www.fsf.org.

6.11 In order to develop a safe, sound and efficient financial system in India, best standards prevailing internationally are suitably adapted to the domestic conditions. Besides voluntarily participating as one of the earliest member countries in the FSAP of the World Bank and the IMF in 2001, India also undertook a self-assessment of all the areas of international financial standards and codes by a committee (Chairman: Dr. Y.V. Reddy). Drawing upon the experience gained during the 2001 FSAP and recognising the relevance and usefulness of the analytical details contained in the Handbook on Financial Sector Assessment jointly brought out by the World Bank and the IMF, in September 2005, the Government of India, in consultation with the Reserve Bank of India, decided to undertake a comprehensive self-assessment of the financial sector. Accordingly, in September 2006, a Committee on Financial Sector Assessment (CFSA) was constituted (Chairman: Dr. Rakesh Mohan; Co-Chairman: Dr. D. Subbarao).

6.12 Though the importance of financial stability is well recognised by the national authorities as well as by international organisations, difficulties in striking a right balance in financial regulation are also acknowledged. While effective regulatory oversight is required to avoid any systemic risk, there is also a need to provide an environment which is conducive to competition and innovation. Rapid changes in the international financial landscapes and processes of innovation have made it difficult for regulators to strike a balance between regulatory safeguards and providing competitive environment. Keeping in view this dilemma, the Reserve Bank has undertaken several policy initiatives to strengthen the financial institutions in India as also to infuse competition in the financial sector. Section 2 of this Chapter discusses these measures in respect of commercial and co-operative banks, financial institutions, and non-banking financial companies. Section 3 draws a comparative picture of Indian scheduled commercial banks (SCBs)

vis-a-vis select countries in terms of operational efficiency and financial soundness indicators. Developments in financial markets from the perspective of financial stability are discussed in Section 4. Section 5 discusses the progress made in the payment and settlement systems and Section 6 identifies some risks to financial stability. Section 7 presents an overall assessment of the financial stability conditions in India.

2. Strengthening of Financial Institutions

6.13 The resilience of financial institutions is one of the pre-requisites for financial stability. In practical terms, it implies that banks and other financial institutions should be able to absorb shocks in a way that the financial intermediation process is not interrupted. This does not rule out the possibility of individual bankruptcies. Rather for the economy as a whole, financial institutions in aggregate should be able to perform the function of intermediation in an efficient manner even in the wake of shocks to the system. The financial regulators and supervisors, therefore, set out norms, standards and guidelines to be followed by the financial institutions so that competitive forces do not undermine the fundamentals determining the resilience and financial strength of these institutions.

6.14 The financial system in India comprises a large number of financial institutions and financial markets for catering to the financing requirements of the various segments of society. Financial institutions under the regulatory purview of the Reserve Bank encompass commercial banks, urban co-operative banks (UCBs), regional rural banks (RRBs), financial institutions and non-banking financial companies. These financial institutions differ not only in their corporate structure, size, sources of funds, but also in terms of purposes for which loans are extended and the targeted clientele. These institutions also differ in terms of financial and soundness indicators. Besides, the Reserve Bank's regulatory and supervisory powers over various sets of institutions also vary. The responsibility of regulating and supervising banks including urban co-operative banks (UCBs) is vested with the Reserve Bank under the Banking Regulation Act, 1949. However, urban co-operative banks are also regulated by the State Governments (by Registrar of Co-operative Societies in the case of UCBs operating in single State and the Central Registrar of Co-operative Societies in the case of UCBs having presence in more than one State). The Reserve Bank of India Act, 1934 also empowers the Reserve Bank to regulate some of the financial institutions. With the amendments to the RBI Act in 1997, a comprehensive regulatory framework in respect of non-banking financial companies (NBFCs) was put in place. In respect of State and district central co-operative banks, and regional rural banks, while the Reserve Bank is the regulator, the supervision is vested with the National Bank for Agriculture and Rural Development (NABARD).

6.15 As a regulator of the major part of financial system, it is imperative for the Reserve Bank to look at all aspects of financial institutions, including their balance sheets, profitability, non-performing loans and capital adequacy requirements. Therefore, as part of its continuous endeavour to promote financial stability, the Reserve Bank has been taking several initiatives to promote resilience of the financial sector and strengthen financial institutions under its purview. However, the focus of the Reserve Bank's regulatory and supervisory initiatives has been calibrated in a careful manner.

6.16 Furthermore, the Reserve Bank has also to account for the objective conditions that exist in India while introducing new risk management systems, upgrading existing ones and developing new markets for risk management products. It needs to continually keep in view the differential risk-bearing capacities among different economic agents in the country. Even among different financial intermediaries, let alone households and farmers, there is the coexistence of small and widely dispersed entities, such as primary agricultural credit societies (PACSs), rural and urban co-operative banks, public sector banks, new private sector banks, and foreign banks, with each having different degrees of sophistication related to risk management. Hence, the Reserve Bank's approach to the introduction of modern risk management instruments and systems in the country has, per force, to be cognisant of country's requirements and capacity[2].

[2] Mohan, Rakesh (2007), Risk Management in an Open Market Economy, Reserve Bank of India Bulletin, July.

Scheduled Commercial Banks

6.17 As alluded to earlier, a wide variety of financial institutions exist in India. Since scheduled commercial banks constitute systemically the most important segment of the Indian financial system, the focus of reforms in the initial years was on strengthening commercial banks with a view to promoting financial stability. Measures initiated since the early 1990s to strengthen commercial banks included the introduction of prudential norms relating to income recognition, asset classification, provisioning, capital adequacy, exposure norms; putting in place institutional arrangements to manage NPAs; permission to public sector banks to raise capital from the capital market up to 49 per cent; allowing entry of new private sector banks and liberal entry of foreign banks to improve efficiency of financial institutions; and strengthening of corporate governance norms, including 'fit and proper' criteria for the owners, directors and management of the private sector banks. The supervisory mechanism has also been strengthened by introducing risk-based supervision (on a pilot basis), instituting prompt corrective action (PCA) mechanism, compilation of financial soundness indicators, and encouraging merger of weak financial entities with strong financial entities. Appropriate risk management practices have also been put in place. All these measures have had a profound effect on commercial banks and the commercial banking sector has emerged stronger over the years. However, at the same time, some new challenges have emerged. These are smooth transition to Basel II; raising of capital by banks to meet Basel II requirements; and maintain asset quality in the wake of rapid credit expansion. In order to meet these challenges, the Reserve Bank initiated several measures during 2006-07.

Macro Level Measures

6.18 The stipulation of reserve requirement has traditionally been the key instrument of monetary policy. A greater flexibility in use of these instruments provides greater manoeuvrability to the central bank in ensuring monetary stability. Amendments to the Section 24 of the Banking Regulation Act, 1949, effective January 23, 2007, have removed the floor rate of 25 per cent for statutory liquidity ratio (SLR), providing greater flexibility to the Reserve Bank in prescribing the SLR requirement. With the amendment to the Reserve Bank of India Act, 1934, effective April 1, 2007, the floor and ceiling on the cash reserve ratio (CRR) have been removed and the Reserve Bank has been empowered to prescribe the CRR depending upon the prevailing monetary conditions.

Prudential Measures

6.19 Following the revised capital adequacy framework of the Basel Committee on Banking and Supervision (BCBS), the final guidelines for implementing the revised framework in India were issued to banks in April 2007. In view of increased capital requirements and for smooth transition to Basel II framework, banks were allowed in January 2006 to augment their capital funds through issuance of innovative perpetual debt instruments (IPDI) eligible for inclusion as Tier I capital and debt capital instruments eligible for inclusion as Upper Tier II capital. The guidelines were reviewed in July 2006 and the banks were advised that the total amount raised by a bank through IPDIs would not be reckoned as liability for calculation of net demand and time liabilities for the purpose of reserve requirements and, as such, would not attract CRR/SLR requirements. Investment by FIIs in IPDI raised in Indian Rupees shall be outside the ECB limit for rupee denominated corporate debt fixed for investment by FIIs in corporate debt instruments.

6.20 With a view to providing a wider choice of instruments to Indian banks for raising Tier I and Upper Tier II capital, guidelines for issuing preference shares as part of regulatory capital were issued on October 29, 2007. It has been decided to allow the banks to issue the following types of preference shares in Indian rupees: i) perpetual non-cumulative preference shares (PNCPS) under Tier I capital; and ii) perpetual cumulative preference shares (PCPS), redeemable non-cumulative preference shares (RNCPS) and redeemable cumulative preference shares (RCPS) under Upper Tier II capital. The addition of above instruments is expected to significantly enhance the range of eligible instruments available to the banks for capital adequacy purposes.

6.21 Recognising the implications of investment pattern of banks on financial stability and with a view to discouraging banks to undertake risky

exposures, it was advised to banks in September, 2006 that the exposure of banks to entities for setting up special economic zones (SEZs) or for acquisition of units in SEZs, which included real estate, would be treated as exposure to the commercial real estate sector and banks would have to make provisions as also assign appropriate risk weights for such exposures as per the guidelines laid down for this purpose.

6.22 Considering the high risks inherent in Banks exposure to venture capital funds (VCFs), the prudential framework governing banks' exposure to VCFs was revised on August 23, 2006. Accordingly, all exposures to VCFs (both registered and unregistered) are deemed on par with equity and hence are reckoned for compliance with the capital market exposure ceilings (ceiling for direct investment in equity and equity linked instruments as well as ceiling for overall capital market exposure) and the limits prescribed for such exposure also apply to investments in VCFs. The quoted equity shares/ bonds/units of VCFs in the bank's portfolio should be held under 'available for sale' (AFS) category and marked-to-market preferably on a daily basis, but at least on a weekly basis in line with valuation norms for other equity shares as per the laid down instructions. Banks' investments in unquoted shares/bonds/units of VCFs made after issuance of these guidelines are required to be classified under held-to-maturity (HTM) category for initial period of three years and valued at cost during this period. These attract a risk weight of 150 per cent.

6.23 From the point of view of financial stability, controlling the concentration risk on the liability side of banks is as important as the concentration risk on the asset side. More particularly, uncontrolled inter-bank liabilities may have systemic implications, even if the individual counterparty banks are within the allocated exposure. Uncontrolled liability of a larger bank may also have a domino effect. If the level of total inter-bank liabilities is very high, the process of drying up of liquidity can be much faster than one would otherwise expect. In view of this, a comprehensive framework of liability management was put in place in March 2007 so that banks are aware of the risks inherent in following a business model based on large amount of inter-bank liabilities and the systemic risks implied in such model. Banks were advised to fix an appropriate limit, with the approval of their boards of directors, for their inter-bank liabilities, keeping in view their business model, within the prudential limit of 200 per cent of their net worth based of their audited balance sheet as on March 31, of the previous year. Banks with more than 11.25 per cent CRAR based on their audited balance sheet as on March 31 of the previous year, are allowed to have an additional limit of 100 percentage points. *i.e.*, up to the limit of 300 per cent of the net worth.

6.24 Banks' loans and advances portfolio typically follows a pro-cyclical path, *i.e.*, increases at a faster pace during an expansionary phase and at a lower pace during a recessionary phase. During an expansionary phase and accelerated credit growth, banks usually underestimate the level of inherent risk and the converse holds true during the recessionary phase. This phenomenon is not effectively addressed by the prudential specific provisioning requirements as they capture risk *ex post* but not *ex ante*. It is, therefore, imperative to build up provisioning to cushion banks' balance sheets in the event of a downturn in the economy or credit weaknesses surfacing later.

6.25 Rapid expansion of credit during three years in succession (2004-07), particularly high credit growth in the real estate sector, outstanding credit card receivables, loans and advances qualifying as capital market exposure and personal loans were viewed as a matter of concern from the point of view of asset quality of banks. Therefore, the general provisioning requirement for banks (excluding RRBs) on standard advances in respect of specific sectors, *i.e.*, personal loans, loans and advances qualifying as capital market exposures, non-deposit taking systemically important (NBFCs-ND-SI) and commercial real estate loans was increased from 0.40 per cent to 1.0 per cent in May 2006 and further to 2.0 per cent in January 2007.

6.26 Thus, banks are required to make a minimum general provisioning for standard assets at four different rates on a global loan portfolio basis (Table VI.1). As hitherto, these provisions would be eligible for inclusion in Tier II capital for capital adequacy purposes up to the permitted extent. In terms of extant guidelines, provisioning for sub-standard assets is required to be made at 10 per cent for secured exposures and 20 per cent for unsecured exposures. The provisioning requirements for doubtful assets are

Table VI.1: Provisioning Requirement for Standards Assets

(Per cent)

Category	Requirement
1	2
A. Direct advances to the agricultural and SME sectors	0.25
B. Residential housing loans beyond Rs. 20 lakh	1.00
C. Personal loans (including credit card receivables), loans and advances qualifying as capital market exposures, commercial real estate loans, and loans and advances to non-deposit taking systemically important NBFCs	2.00
D. All other advances not included in (A), (B) and (C) above	0.40

graded, depending on the period for which an asset has remained doubtful. The provisioning requirement for doubtful assets, at present, varies in the range of 20 per cent to 100 per cent on the secured portion, while it is 100 per cent on the unsecured portion.

6.27 Higher provisioning for unexpected loan losses improves the overall financial strength of banks and the stability of the financial sector. In order to further strengthen the financial system, banks were urged to voluntarily set apart provisions above the minimum prudential levels as a desirable practice. This may be achieved by banks by either making higher level of specific provisions for NPAs or by making a floating provision for NPAs. In terms of the Reserve Bank's guidelines issued on February 4, 1994, banks were permitted to set-off the floating provisions, wherever available, against provisions required to be made as per the then prevailing prudential guidelines on provisioning. However, the use of floating provisions to set-off against provisions required to be made as per prudential guidelines prescribed appeared to have been used for smoothening of profits in some cases. Hence, the guidelines were reviewed and revised guidelines were issued on June 22, 2006.

6.28 In terms of the guidelines, the floating provisions should not be used for making specific provisions as per the extant prudential guidelines in respect of non-performing assets or for making regulatory provisions for standard assets. The floating provisions can be used only for contingencies under extraordinary circumstances for making specific provisions in impaired accounts after obtaining board's approval and with prior permission of the Reserve Bank. The boards of the banks are required to lay down an approved policy as to what circumstances would be considered extraordinary. To facilitate banks' boards to evolve suitable policies in this regard, it was clarified by the Reserve Bank on March 13, 2007 that the extraordinary circumstances refer to losses which do not arise in the normal course of business and are exceptional and non-recurring in nature. These extraordinary circumstances could broadly fall under three categories, *viz.*, general (unexpected loss to banks due to civil unrest, collapse of currency in a country and natural calamities and pandemics), market (general meltdown in the markets) and credit (exceptional credit losses). Floating provisions cannot be reversed by credit to the profit and loss account. These provisions, however, can be netted off from gross NPAs to arrive at disclosure of net NPAs. Alternatively, they can be treated as part of Tier II capital within the overall ceiling of 1.25 per cent of total risk-weighted assets.

6.29 Monetary stability also contributes to financial stability. Notwithstanding some spikes in inflation rate on some occasions in recent years, overall monetary stability and monetary actions of the Reserve Bank have reinforced financial stability. In recent years, the Reserve Bank raised the risk weights in respect of banks' exposures to certain sectors (such as commercial real estate loans). This measure, apart from moderating the flow of credit, also helped in protecting the banks' balance sheets.

NPA Resolution

6.30 The high level of non-performing loans (NPLs) has been a major reason for banking crisis in many countries. This often accentuated the pressure to restructure the banking system which involved substantial fiscal cost to the Government (Box VI.2). In the Indian context, several mechanisms were followed by the authorities to recover the past dues which have enhanced recoveries of NPAs by SCBs over the years (Table VI.2).

6.31 The draft guidelines on restructuring/ rescheduling were issued in June 2007 so as to align the existing guidelines on restructuring of advances with the provisions under the revised corporate debt restructuring (CDR) mechanism. With a view to providing an additional option and

Box VI.2: NPL Management – Cross Country Experience

Globally, the level of non-performing loans was estimated at about US $1.3 trillion during 2003, of which the Asian region accounted for about US $ 1 trillion, or about 77 per cent of global NPLs (Ernst & Young, 2004). Peak NPLs as per cent of total advances increased to over 20 per cent in several Asian economies during the 1997 crises. In Latin America and developed economies, these figures peaked to uncomfortable levels during the mid 1990s, coinciding primarily with some sort of crises (Table 1). These numbers have since declined sharply to more manageable levels as a result of bank restructuring of which NPLs management was an integral part. By 2004, except for China, Thailand and Malaysia, most countries had low to moderate levels of NPLs. The gross NPL levels in India, which were 7.2 of per cent of total advances at end-March 2004, declined to 2.4 per cent by end-March 2007.

The underlying reasons for problem of non-performing loans vary across countries. The high NPLs level in most of the Asian countries coincided with South East Asian crisis in the latter half of the 1990s. Some of the major factors responsible for NPLs include deterioration in business performance of the state enterprises (China), failure of real estate sector to perform as per the expected trajectory of investors (Thailand and Japan), interest rate controls and selective credit allocations (Korea), slowdown triggered by overvalued exchange rate and lack of financial discipline in bank directors extending loans to companies owned by themselves (Mexico). In Turkey, the problem of NPLs in state banks was mainly the result of politically motivated lending (Steinherr, Tukel, and Ucer, 2004; Reddy K.P. 2002; and Desmet, 2000).

The resolution of the NPLs has two aspects, *viz.*, the 'stock' and the 'flow' problem. The 'stock' problem deals with banks' current balance sheets - raising capital and removing NPLs. The 'flow' problem concerns with improving the quality of banks' earnings to arrest future deterioration in banks' balance sheet. This usually involves operational restructuring to improve efficiency, which encompasses improved credit assessment, specialisation, better information systems and cost cutting. The most common method adopted by different countries to resolve the NPLs problems was the use of asset management companies (AMCs) in the crisis resolution process. Some other options available to deal with NPLs, *inter alia*, include recapitalisation, loan swap and debt for debt exchange. Under loan swap, banks write-down loans to market value, then swap loans among themselves. Debt for debt exchange requires revision of loan contracts after negotiations between parties, often leading to reduction in interest rate and extension of maturity on debt contracts.

Table 1: Gross Non-performing Loans (NPLs) of Banking Systems

(Per cent of total advances)

Country	Peak NPLs	Year of peak NPLs	NPLs, 2004
China	42	..	12.8
Korea	25	1997-99	1.9
Malaysia	25	1997-99	11.7
Thailand	47	1997-99	11.9
Brazil	15	1995-97	3.8
Mexico	13	1995-97	2.8
Turkey	16	2001	6.0
Japan	9	2002	2.9
Sweden	11	1991-93	0.9
India	23*	1993	7.2

* : For public sector banks.

Source : BIS documents; IMF website (country documents and Global Financial Stability Reports).

High level of NPLs often requires restructuring of the banking system, the overall cost of which includes losses in terms of output and employment apart from the fiscal cost. Thus, measuring overall cost of a banking crisis is difficult. The fiscal cost, on the other hand, is easier to specify and measure. The fiscal costs may broadly be defined in terms of gross cost to the public sector (outlays of government and central bank on liquidity support; purchase of impaired assets; deposits payments; and recapitalisation through purchase of equity or subordinated debt) and net cost to the public sector (gross outlays are netted against resources generated from the sale of acquired assets and equity stakes, and repayment of debt by recapitalised entities). These costs have been estimated to be substantially 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. Some crises entailed much larger outlays. For instance, the governments spent as much as 40–55 per cent of GDP in the early 1980s crises in Argentina and Chile. Hoelscher and Quintyn (2003) provide an estimate of comparable fiscal costs across countries of various banking crises during 1981-2003. The costs have varied sharply, which ranged from small amounts (close to zero) in Russia and the United States to more than 50 per cent in Indonesia.

References:

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. (2001), 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.

Reddy, K.P. (2002), A Comparative Study of Non-Performing Assets in India in the Global Context – Similarities and Dissimilarities, Remedial Measures; www.upan.org

Desmet. K. (2000), Accounting for the Mexican Banking Crisis; *Emerging Markets Review*; vol.1.

Alfred Steinherr, A., Tukel, A., and Ucer, M. (2004), The Turkish Banking Sector Challenges and Outlook in Transition to EU Membership; *Centre for European Policy Studies; EU-Turkey Working Papers No. 4/August.*

Ernst & Young (2006), Global Nonperforming Loan Report, 2006; www.ey.com

Ernst & Young (2004), Global Nonperforming Loan Report, 2004; www.ey.com

Table VI.2: Recoveries Effected by SCBs

(Rs. crore)

Year	Recoveries
2000-01	16,409
2001-02	17,638
2002-03	23,183
2003-04	28,004
2004-05	26,940
2005-06	29,087
2006-07	27,176

Note : Data on recoveries effected during the year, which include recoveries due to upgradation, actual recoveries and recoveries due to compromise/write-offs, by scheduled commercial banks (SCBs).

Source : Off-site Returns (domestic).

developing a healthy secondary market for NPAs, guidelines on sale/purchase of NPAs were issued in July 2005 covering the procedure for purchase/ sale of non-performing financial assets (NPFA) by banks, including valuation and pricing aspects; and prudential norms relating to asset classification, provisioning, accounting of recoveries, capital adequacy and exposure norms, and disclosure requirements. The matter was reviewed in response to difficulties expressed by banks and the guidelines were partially modified in May 2007. It was stipulated that at least 10 per cent of the estimated cash flows should be realised in the first year and at least 5 per cent in each half year thereafter, subject to full recovery within three years.

Strengthening of Risk Management Practices

6.32 Banks are now facing increased risk on account of greater fluctuation in prices, exchange rates and interest rates, which underscore the need for developing regular systems for stress testing. Internationally, stress testing has become an integral part of banks' risk management systems and is used to evaluate the potential vulnerability to some unforeseen events or movements in financial variables.

6.33 There are broadly two categories of stress tests used in banks, *viz.*, sensitivity tests and scenario tests. Sensitivity tests are normally used to assess the impact of change in one variable (for example, a high magnitude parallel shift in the yield curve, a significant movement in the foreign exchange rates and a large movement in the equity index) on the bank's financial position (Box VI.3). Scenario tests include simultaneous moves in a number of variables, for instance, equity prices, oil prices, foreign exchange rates, interest rates, and liquidity based on a single event experienced in the past. The need for banks in India to adopt 'stress tests' as a risk management tool was emphasised in the Annual Policy Statement for 2006-07. Accordingly, guidelines on stress testing were issued by the Reserve Bank on June 26, 2007. Banks are required to put in place appropriate stress test policies and the relevant stress test framework for various risk factors by September 30, 2007 and make formal stress testing operational from March 31, 2008.

Consolidation and Amalgamation

6.34 The increased competition has provided impetus to bank mergers and acquisitions globally. Apart from meeting the challenges of increased competition, the mergers and amalgamations may also be triggered by the deterioration in the financial health of the institutions, in particular those which are no more financially viable. The institutions which are on the verge of collapse adversely affect the interests of depositors and may sometimes trigger contagion. Thus, from the financial stability perspective, mergers and amalgamation could be used as a tool for strengthening the financial system. In India, a conscious approach is followed towards consolidation and merger of smaller banks to reap the benefits of synergy and provide strength to the banking system. During 2006-07 and the first half of 2007-08, four banks were merged/amalgamated with other banks as detailed in Chapter 3 (Section 2).

Supervisory Measures

6.35 From the financial stability point of view, crisis prevention is the major objective of financial regulators and supervisors. This involves continuous monitoring of potential risks and vulnerabilities that may threaten the health of the financial system. The success in preventing the occurrence of crisis depends on the process of information gathering, technical analysis, monitoring and assessment. The analytical process involves gathering information about macroeconomic performance and various aspects of the financial system through supervisory, regulatory and surveillance mechanism. The supervisory process based on information on

Box VI.3: Measurement of Interest Rate Risk

Interest rate risk is the risk of adverse impact of changes in market interest rates on the financials of a financial institution, particularly on earnings or net interest income (NII) and equity. Identification, quantification and measurement of interest rate risk have assumed critical importance, especially in the deregulated environment and reinforced by the requirements of Pillar II of Basel II Capital Accord.

There are different techniques for measurement of interest rate risk such as traditional maturity gap analysis, duration, and simulation. There are two separate, but complimenting, perspectives for measuring a bank's interest rate risk exposure, *viz*., earnings perspective and economic value perspective. The earnings perspective involves ascertaining the impact of changes in interest rates on NII. This approach, also known as Earnings at Risk (EaR), analyses the impact from a short term perspective. The economic value perspective involves an assessment of the present value of expected net cash flows discounted to reflect market rates. It focuses on the sensitivity of a bank's net worth to fluctuations in interest rates and identifies risk from the long-term perspective.

The maturity gap analysis involves distribution of interest rate sensitive assets (RSAs), liabilities (RSLs) and off-balance sheet positions into a certain number of pre-defined time bands according to their maturity (fixed rate) or time remaining for their next repricing (floating rate) whichever is earlier. Assets and liabilities lacking definite repricing intervals (e.g. savings bank, cash credit and overdraft) or with actual maturities varying from contractual maturities (embedded option in bonds with put/call options, loans, cash credit/overdraft and time deposits) are assigned time bands according to the judgment, empirical studies and past experiences of banks. In order to evaluate the impact on the earnings, the RSAs in each time band are netted against the RSLs to produce a repricing gap for that time band. A positive gap indicates that bank has more RSAs than RSLs. A positive or asset sensitive gap implies that the bank's NII will increase if interest rate goes up and vice versa. The gap is used as a measure of interest rate sensitivity. The positive or negative gap is multiplied by assumed interest rate changes to derive the EaR.

Duration or Macaulay's duration is computed as a weighted average of the time until cash flows are received. The weights equal the present value of each cash flow as a fraction of the security's current price, and time refers to the length of time in the future until payment or receipt. It is measured in units of time. A slight variation to Macaulay's duration is Modified Duration which is defined as the approximate percentage change in price for a 100 basis point change in yield. Modified duration equals Macaulay's duration divided by (1+YTM). It has the useful feature of indicating how much the price of a security will change in percentage terms for a given change in interest rates.

In the context of immunisation, duration analysis enables a bank to mitigate the impact of interest rate risk by matching duration of assets and liabilities with the preferred holding period. Duration gap models focus on managing net interest income or the market value of shareholders' equity by recognising the timing of all cash flows for every security on a bank's balance sheet. Unlike static gap analysis, which focuses on rate sensitivity or the frequency of repricing, duration gap analysis focuses on price sensitivity. A bank's interest rate risk is indicated by comparing the weighted average duration of assets with the weighted average duration of liabilities. As with the Gap Analysis, the sign and magnitude of duration gap provide information about when a bank potentially wins and loses, and the magnitude of the interest rate bet. Simulation is a more sophisticated interest rate risk measurement system than that based on simple maturity/repricing schedules. *Simulation techniques* typically involve detailed assessment of the potential effects of changes in interest rates on earnings and economic value by simulating the future path of interest rates, shape of yield curve, changes in business activity, pricing and hedging strategies and their impact on cash flows.

In the Indian context, beginning 1993, administrative restrictions upon interest rates have been steadily eased and at present all interest rates, barring a few, have been deregulated. This has exposed banks to the interest rate changes and consequently interest rate risk has become an important source of vulnerability for banks. Besides, deregulation of interest rates, the norms for classification and valuation of investment portfolio have been aligned to international standards. Banks are required to classify their investment portfolio into three categories, *viz*., 'held for trading' (HFT), `available for sale''(AFS) and 'held to maturity' (HTM). Investments classified under HFT and AFS form the trading book and are required to be marked to market at regular intervals and their depreciation is provided for. Prior to 2005, particularly between 1997 and 2005, Indian banks held Government securities way above the statutory requirement due to various reasons such as lack of credit offtake, existing high non-performing assets and capital adequacy requirement for loans. Though this approach of holding excess Government securities insulated Indian banks from credit risk and need for holding higher regulatory capital, it exposed them to high interest rate risk. Incidentally, this brought windfall gain to the banking industry during the financial years 2002-03 and 2003-04 as interest rates declined. However, as a result of steady rise in yields subsequently, banks were required to book substantial depreciation on their investment portfolio. Regulatory succour had to be provided which allowed banks, as a one time measure, to transfer securities from trading book to banking book to protect their bottomline. In the process, banks' holding of securities in banking book (HTM) increased substantially, and these were effectively insulated from interest rate risk.

The Reserve Bank has been carrying out periodic analysis to assess the interest rate sensitivity of the banking system. Apart from EaR analysis, duration analysis of investment portfolio of banks is carried out at periodic intervals based on methodologies suggested by BCBS in 'Principles for the Management and Supervision of Interest Rate Risk' (September 2003). A periodic sensitivity analysis gauges the likely impact on the investment portfolio of banks for 100, 125 and 150 basis points increase in interest rate and the extent of cushion available to banks to absorb the erosion in their economic value. Yields and coupons are changed to reflect the current scenario. To get an idea of the banking system's capacity to absorb such shocks, the cushion available by way of unrealised gains on investment portfolio and cumulative provision made in depreciation account as calculated. The net erosion in economic value is reduced from banks' regulatory capital to assess the impact on their capital adequacy. Supervisory action is initiated with identified outliers as part of the regular supervisory process.

individual institutions could be gainfully aided by the information on economy's position in the business and credit cycles because macroeconomic and market performance provide the background against which the operational performance of individual institutions should be assessed. Thus, the supervisory framework plays a critical role in maintaining suitable conditions for financial stability and putting in place adequate safeguards so that the impact of shocks on the financial system is minimised[3]. The Reserve Bank has also put in place a robust supervisory framework comprising on-site and off-site supervision. The focus of supervisory measures during 2006-07 was on strengthening the monitoring mechanism of financial conglomerates (FCs).

6.36 The emergence of FCs in India has posed new challenges. The major issue in the regulation of FCs is their exposure to two or more sector-based regulatory regimes. This leads to gaps or overlaps in the overall supervisory process. This, in turn, often makes it difficult to obtain all the relevant information required to effectively supervise and regulate these institutions. The effective supervision of FCs requires a coordinated approach among the supervisors across sectors. Several initiatives, therefore, have been taken in consultation with the peer regulators to strengthen the FC monitoring framework for effective supervision of the FCs. In terms of the definition suggested by the Working Group on Financial Conglomerates (Chairperson: Ms Shyamala Gopinath), 23 financial conglomerates were identified. Many of identified FCs, however, not only had few entities within their fold but also had limited operations beyond one market segment. Intra-group transactions in some of these conglomerates were also few. It was, therefore, felt that it was not effective to subject such groups to focussed FC monitoring. Accordingly, the criteria for identification of FCs were revisited in order to focus on major financial groups which are systemically important and, therefore, require effective supervisory mechanism. In terms of the revised criteria, a FC 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 and NBFC (deposit taking and non-deposit taking) are considered as financial market segments.

6.37 In order to appropriately focus on the supervisory issues, the format of the quarterly FC return was amended to include information on gross/net NPAs and provisions held for the impaired assets, bad debt, fraud in any group entity, 'holding out' operations undertaken by the group, other assets, and change in accounting policies. While the FC monitoring framework looks at the specified financial intermediaries (SFIs), *i.e.*, entities which are regulated by the Reserve Bank, SEBI, IRDA or NHB, the format of the returns has been suitably modified to capture intra-group transactions and exposures involving regulated and un-regulated entities of the group in order to have a better appreciation of the systemic risk emanating from the group as a whole.

6.38 With a view to minimising the adverse impact of fraud activities on the financial system, a Fraud Monitoring Cell (FrMC) was created in June 2004 for centralised monitoring of frauds detected in entities regulated by the Reserve Bank, *viz.*, commercial banks, urban co-operative banks, financial institutions and non-banking financial companies. The Reserve Bank, in May 2006, had circulated to banks some of the best practices which could be adopted in order to reduce the incidence of frauds in the areas of housing loans. In November 2006, the Reserve Bank alerted banks to be cautious while remitting funds from the accounts of non-residents based on requests received through e-mail/fax messages. They were asked to put in place appropriate systems to verify the authenticity of the messages thoroughly before effecting remittance. Initiatives were also taken to prevent the cross-border movement of money for disruptive activities (Box VI.4).

6.39 To make an assessment of financial stability conditions in India, a Committee on Financial Sector Assessment (CFSA) was constituted by the Government of India in September 2006 (Chairman: Dr. Rakesh Mohan; Co-Chairman: Dr. D. Subbarao). The central plank of the assessment is based on three mutually reinforcing pillars, *viz.*, (i) financial stability assessment and stress testing; (ii) legal, infrastructural and market development issues; and (iii) assessment of the status and progress in implementation of international financial

[3] Schinasi, G.J (2006), Safeguarding Financial Stability – Theory and Practice, IMF.

Box VI.4: Combating Money Laundering, Terrorist Financing and Other Market Abuses

In financial transactions, the probity of customer and purity of funds have always been the regulatory concerns for the Reserve Bank. Various guidelines in this regard were issued to banks in respect of production of permanent account number (PAN), photograph of the customer, not allowing cash transaction in excess of a threshold limit in cases of remittance funds, monitoring transactions *vis-à-vis* the negative list issued by the UN Security Council from time to time with a view to nurturing a proper 'know your customer' (KYC) culture in the industry. The KYC guidelines were revisited in November, 2004 in the context of the recommendations made by the Financial Action Task Force (FATF) on anti-money laundering (AML) standards and combating financing of terrorism (CFT) and the paper issued on Customer Due Diligence (CDD) for banks by the Basel Committee on Banking Supervision. Banks have reported full compliance to the revised KYC/AML/CFT guidelines in regard to formulation of policy in this respect duly approved by their boards of directors and dissemination of procedural guidelines to rank and file down the line for smooth implementation. The major thrust after November 2004 is to prevent banks from being used, intentionally or unintentionally, by criminal elements for money laundering or terrorist financing activities and to enable banks to know/understand their customers and their financial dealings better which, in turn, would help them manage their risks prudently. While the major objective of the policy is to ensure that no account is opened in anonymous or fictitious/*benami* name(s) for misuse by criminals and terrorists, adequate care has been taken in the formulation of policy to avoid disproportionate cost to banks and a burdensome regime for the customers.

The Government of India has also put in place a legislative framework through enactment of Prevention of Money Laundering Act (PMLA), 2002. Consequent to notification of Rules under PMLA 2002, a reporting regime has been prescribed to banks for making available cash and suspicious transaction reports to Financial Intelligence Unit-India (FIU-IND). While banks enjoy impunity from civil proceeding for their reporting to FIU-IND under the PMLA, they have been cautioned by the Reserve Bank against tipping off to customers in cases relating to suspicious transaction reports to FIU-IND.

In the wake of 9/11 developments, FATF prescribed 9 special recommendations (SRs) to enable prevention of misuse of the financial systems for the purpose of financing terrorist activities. SR VII deals with wire transfers and the precautionary measures related thereto to be ensured by banks/FIs while effecting such transactions. In pursuit of combating financing of terrorism through the conduit of banking channels, the Reserve Bank has advised banks to ensure that all wire transfer transactions are accompanied by full originator information such as name, account number and address of the customer originating the transaction so that appropriate investigating agencies have instant access to such information, if need be. These instructions are applicable to both domestic and cross border wire transfer transactions. Banks have been advised to consider restricting or even terminating their business relationship with the correspondent banks, if they fail to furnish information on the remitter despite instructions to that effect.

standards and codes. To assist in the process of assessment, the CFSA has constituted four Advisory Panels for the assessment of (i) Financial Stability and Stress Testing; (ii) Financial Regulation and Supervision; (ii) Institutions and Market Structure; and (iv) Transparency Standards. The Advisory Panels will prepare separate reports covering each of the above aspects. To provide the Panels with technical notes and background material, the CFSA had set up Technical Groups consisting of officials representing mainly regulatory agencies and the Government in all the above subject areas which have progressed with technical work in respective areas. The CFSA would publish Advisory Panel reports and also its own report. The CFSA is expected to complete the assessment by March 2008.

Other Financial Institutions

6.40 Apart from scheduled commercial banks, other financial institutions such as regional rural banks, co-operative banks, financial institutions (FIs) and non-banking financial companies (NBFCs) play a crucial role in the development process of the economy. The smooth functioning of these institutions is also important from the point of view of overall financial stability. Besides, in view of the wider outreach of these institutions, particularly RRBs and co-operative institutions, and an important role these institutions can play in furthering the cause of financial inclusion, the Reserve Bank has taken several initiatives to improve the operational efficiency and financial soundness of these institutions.

Regional Rural Banks and Rural Co-operative Banks

6.41 Regional rural banks have played an important role in purveying rural credit. Financially sound network of RRBs could strengthen financial stability conditions while providing a crucial mechanism of mobilising resources required for sustained economic growth. RRB, however, faced several problems which prevented the realisation of full potential benefits of these institutions. The area of operations of RRBs was very limited and they carried high risk due to exposure only to the target group. RRBs suffered from inadequate skills in treasury management for profit orientation and

inadequate exposure and skills to innovate products limiting the lending portfolios. The performance of RRBs was affected due to lack of operational autonomy as the RRBs had to look up to sponsor banks, Government, NABARD and the Reserve Bank for most decisions. Financial viability of several RRBs was, thus, undermined by these problems affecting the process of financial intermediation and having implications for financial stability.

6.42 With a view to strengthening RRBs, the Government initiated the State level amalgamation of RRBs sponsor bank-wise in September 2005. This process was carried further during 2006-07 as 37 more banks were amalgamated. In all, 147 RRBs have been amalgamated so far September 2005 to September 2007 to form 46 new RRBs, sponsored by 19 banks in 17 States. As a result, the total number of RRBs declined from 196 to 95 as on September 30, 2007. The structural consolidation of RRBs has resulted in the formation of new RRBs, which are financially stronger and bigger in size in terms of business volume and outreach. This will enable them to take advantages of the economies of scale and reduce their operational costs.

6.43 Following the announcement made in the Union Budget 2007-08 that the RRBs having a negative net worth would be recapitalised in a phased manner, modalities for recapitalisation are being worked out in consultation with select sponsor banks and the National Bank for Agriculture and Rural Development (NABARD).

6.44 With a view to improving the performance of RRBs and giving more powers and flexibility to their boards in decision making, the Reserve Bank had constituted the Task Force on Empowering the RRB Boards for Operational Efficiency (Chairman: Dr. K.G. Karmakar) in September 2006. The Task Force was mandated to suggest areas where more autonomy could be given to the boards, particularly in matters of investments, business development and staffing, *viz.*, determination of staff strength, fresh recruitment, and promotions. In its report submitted on January 31, 2007, the Task Force, *inter alia*, recommended that (i) the number of directors on the boards of RRBs be raised up to 15 on a selective basis in the case of large sized RRBs created after amalgamation; (ii) selection of chairmen of RRBs be made on merit from a panel of qualifying officers; and (iii) Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act (SARFAESI), 2002 may be extended to RRBs. While some of the recommendations of the Task Force have been implemented, others are under examination. The Government of India has already issued a notification on May 17, 2007 specifying 'regional rural bank' as 'bank' for the purpose of the SARFAESI Act, 2002.

Urban Co-operative Banks

6.45 Urban co-operative banks form a heterogeneous group in terms of geographical spread, area of operation, size or even in terms of individual performance. Certain infirmities in the sector, however, surfaced that manifested in the form of weakness of some of the entities resulting in erosion of public confidence and causing concern to the regulators as also to the sector at large. One of major problems faced in the case of UCBs was the dual regulatory mechanism under which UCBs are regulated and supervised by both the State Governments, through the Registrars of Co-operative Societies, and by the Reserve Bank. Furthermore, in the case of banks having presence in more than one State, the Central Registrar of Co-operative Societies, on behalf of the Central Government, exercises such powers. The other issues affecting the UCBs were lack of corporate governance, transparency and accountability. Many UCBs were also of sub-optimal size, which affected their efficiency and profitability. As discussed in Chapter IV of this Report, NPA ratio of UCBs was significantly higher than that of scheduled commercial banks.

6.46 Recognising the need to mitigate the risk to which the system was exposed, the Reserve Bank endeavoured to provide a regulatory and supervisory framework that would appropriately address the problems of the sector as also the shortcomings of dual control. The need was also felt to set up a supervisory system that was based on an in-depth analysis of the heterogeneous character of urban co-operative banks and one that was in tandem with the policy of strengthening the sector. Keeping these considerations in view, a draft vision document for UCBs was prepared by the Reserve Bank and placed it in the public domain in March 2005 which was finalised thereafter. In pursuance of the proposals in the vision document, the State Governments having a large number of UCBs were approached for

signing the Memorandum of Understanding (MoU). The memorandum, provides the basis for the constitution of the Task Force for Urban Co-operative Banks (TAFCUB) in each State to serve as a forum for the consultative decision making process. Apart from the representatives of the Reserve Bank and the State Government, the TAFCUB has the representatives of the UCBs sector. The TAFCUB identifies the weak but viable (non-scheduled) UCBs in the respective State and frames a time bound programme for revival of such entities. It identifies the nature and extent of funds required to be infused, the changes in management where necessary and suggest periodical milestones to be achieved. Further, UCBs which are not found viable by the TAFCUB, could be required to exit from banking business either through merger with strong banks, if such merger makes economic sense to the acquiring bank, or through voluntary conversion into a co-operative society by paying off the non-member deposits and withdrawing from the payment system. And if there is not other viable option, they could even be taken into liquidation by the Registrar at the behest of the Reserve Bank. As of September 2007, MoUs were signed with 13 States, which cover a total of 83 per cent of UCBs accounting for over 92 per cent of total deposits. The consolidation of the UCBs through the process of merger of weak entities with stronger ones has been set in motion by providing transparent and objective guidelines for granting no-objection to merger proposals. The Reserve Bank, while considering proposals for merger/ amalgamation, confines its approval to the financial aspects of the merger taking into consideration the interests of depositors and financial stability. As on October 30, 2007, a total of 33 mergers had been effected upon the issue of statutory orders by the Central Registrar of Co-operative Societies/Registrar of Co-operative Societies (CRCS/RCS) concerned.

6.47 The Reserve Bank continued its efforts to ensure that the urban co-operative banks emerge as a sound and healthy network of banking institutions, so that they can provide need-based quality banking services, essentially to the middle and lower middle classes and marginalised sections of society[4]. In order to enable the smaller UCBs to gain strength as visualised in the 'Vision Document', banks were classified as Tier I UCBs (unit banks, *i.e.*, banks having branch/s within a single district, with deposits up to Rs.100 crore) and Tier II banks (*i.e.*, all other UCBs). As per the revised prudential norms for Tier I and Tier II banks, while Tier II banks are under the 90-day delinquency norm which is applicable for commercial banks, the 180-day delinquency norm for Tier I banks has been extended by one more year, *i.e.*, up to March 31, 2008. This is intended to provide a measure of relief to the small UCBs in terms of lower provisioning required, which, in turn, would translate into higher profits that could be used to shore up the capital base of these banks.

6.48 In order to ensure that asset quality is maintained in an environment of high credit growth, it was decided in respect of Tier II banks and all other UCBs operating in more than one district (irrespective of deposit size) to increase the general provisioning requirement on standard advances in specific sectors, *i.e.*, personal loans, loans and advances qualifying as capital market exposures and commercial real estate loans from 1.0 per cent to 2.0 per cent. Risk weight on exposure to commercial real estate was also increased from 100 per cent to 150 per cent.

Financial Institutions and Non-banking Financial Companies

6.49 Financial institutions, which historically played an important role in meeting the medium to long-term requirements of the economy, have been repositioning themselves in the changed operating environment. Two large FIs have already converted into banks. It has been the endeavour of the Reserve Bank that FIs operating in the system maintain sound financial health. The Reserve Bank, therefore, has been strengthening financial institutions by extending prudential norms applied to banks to financial institutions with suitable modifications.

6.50 In continuation with the policy initiatives undertaken by the Reserve Bank in recent years for progressive upgradation of the regulatory norms for FIs in convergence with the norms across the financial sector, a number of measures were undertaken during 2006-07. Norms for income recognition, asset classification, provisioning and other related matters concerning

[4] These measures have been discussed in detail in Chapter IV of this Report.

Government guaranteed exposures were modified during 2006-07. With effect from March 31, 2007, State Government guaranteed advances and investments in State Government guaranteed securities would attract the asset classification and provisioning norms if the interest and/or principal or any other amount due to the FI remained overdue for more than 90 days.

6.51 Keeping in view the contribution that NBFIs make to the financial sector as financial intermediaries, the Reserve Bank has been continuously emphasising on developing NBFCs into financially strong entities. Streamlining the functioning of non-banking financial companies (NBFCs) and implementing prudential measures in this sector assume priority for ensuring financial stability.

6.52 The focus of supervision by the Reserve Bank in recent years has been to ensure that NBFCs function along sound and healthy lines and avoid excessive risk-taking. The regulatory framework for NBFCs underwent significant changes after the amendments in the RBI Act in 1997, which provided comprehensive powers to the Reserve Bank to regulate NBFCs. The amended Act made it mandatory for NBFCs to obtain certificate of registration (CoR) from the Reserve Bank. The total number of NBFCs registered with the Reserve Bank declined from 13,014 at end-June 2006 to 12,968 at end-June 2007. Besides, the number of public deposit accepting companies also declined due to conversion of some NBFCs into non-public deposit accepting activities. This helped in weeding out the weak and unviable NBFCs from the system.

6.53 The focus of supervision in respect of NBFCs is differentiated depending on the asset size of the NBFC and whether it accepts/holds public deposits. To protect depositors' interests, the regulatory norms are relatively more stringent for those NBFCs that accept public deposits. However, large NBFCs even if they do not accept public deposits are systemically important. In view of this, a reporting system for NBFCs not accepting/holding public deposit and having asset size of Rs.500 crore and above was introduced beginning from the quarter ended September 2004. During 2006-07, a major initiative related to the strengthening of the regulatory framework with regard to systemically important non-banking financial companies was the issuance of prudential guidelines so as to reduce the regulatory gaps. Systemically important non-deposit taking NBFCs were also defined and prudential norms were specified for these entities.

6.54 All non-deposit taking NBFCs (NBFCs–ND) with an asset size of Rs.100 crore and more as per the last audited balance sheet are now considered systemically important NBFCs–ND–SI. These are required to maintain a minimum capital to risk-weighted assets ratio (CRAR) of 10 per cent. Deposit taking NBFCs were further advised that all NBFCs and RNBCs with total assets of Rs.100 crore and above should submit the return on capital market exposure in the prescribed format on a monthly basis within seven days of the close of the month to which it relates. The first such return based on revised criteria was submitted for the month ended April 30, 2007.

Deposit Insurance

6.55 The principal objectives of a deposit insurance system (DIS) are to contribute to the stability of a country's financial system and to protect less financially sophisticated depositors from the loss of their deposits when banks fail. As per the International Association of Deposit Insurers (IADI)'s guidelines on best practices of deposit insurance system, a deposit insurance system needs to be a part of a well-designed financial safety net, supported by strong prudential regulation and supervision, effective laws that are enforced, and sound accounting and disclosure regimes (Box VI.5).

6.56 In India, Deposit Insurance and Credit Guarantee Corporation (DICGC), which came into existence in its present form in 1978, provides insurance protection up to the specified amount of deposits of all commercial banks, including the RRBs and LABs and most of co-operative banks.

6.57 During 2006-07, a Guide on DICGC was published along with a Brochure on DICGC for easy understanding of the deposit insurance system in India. This has facilitated spread of awareness and instilled confidence in the banks' customers. To provide further relief to bank customers, the DICGC, on April 27, 2007, reviewed its policy for settlement of claims of joint account holders in the event of liquidation of a bank. In terms of the revised policy, the deposits held in two separate joint accounts in combination of two or more individuals are treated as two or more separate accounts, and each category of the

Box VI.5: Features of a Successful Deposit Insurance System (DIS) and the Position of DICGC

Explicit and limited deposit insurance is preferable to implicit protection as it clarifies the authorities' obligations to depositors and limits the scope for discretionary decisions that may result in arbitrary actions. Deposit insurers have mandates ranging from narrow, so-called paybox system to those with broader powers and responsibilities such as risk-minimisation, with a variety of combinations in between. Paybox systems largely are confined to paying the claims of depositors after a bank has been closed and normally do not have prudential regulatory or supervisory responsibilities or intervention powers. A risk-minimiser deposit insurer has a relatively broad mandate and accordingly more powers. In recent years, the attention has, however, shifted from the establishment of an explicit deposit insurance scheme to institutional details such as coverage, membership, funding and administration.

In general, membership should be compulsory to avoid adverse selection as in a voluntary system strong banks may opt out if the cost of failures is high and this may affect the financial solvency and the effectiveness of the deposit insurance system. Sound funding arrangements are critical to the effectiveness of a deposit insurance system and the maintenance of public confidence; and this should have available all funding mechanisms necessary to ensure the prompt reimbursement of depositors' claims after a bank's failure. Policymakers have a choice between adopting a flat-rate premium system or a premium system that is differentiated on the basis of individual-bank risk profiles. DISs fall into two categories, *viz*., (i) those funded by banks and (ii) those with no permanently maintained funds lent, where members are required to contribute to the fund after a bank failure occurs.

In this context, a few studies demonstrate that the coverage and funding of deposit insurance schemes have significant impact on the probability with which a country suffers a banking crisis, while others show that the coverage and funding are important determinants of the degree of market discipline exercised by depositors *vis-a-vis* banks.

Garcia (1999) argued that the structure of the DIS is more likely to be incentive-compatible if membership is compulsory, if coverage is low to deter moral hazard, and if insurance premiums are risk-adjusted to avoid adverse selection. The idea behind risk-adjustment is to moderate the subsidy provided by strong to weaker institutions by allowing sound institutions to pay lower premiums than their competitors who pose greater risk of loss on DIS resources. In addition, depositors need to have confidence in the system, which requires that the DIS be administratively efficient in paying out insured deposits promptly, and that it be adequately funded so that it can resolve failed institutions firmly without delay.

For a deposit insurance system to be effective, it is essential that the public is informed about its benefits and limitations. The objectives of an effective failure-resolution process are to meet the deposit insurers obligations; ensure depositors are reimbursed promptly and accurately; minimise resolution costs and disruption of markets; maximise recoveries of assets; settle bonafide claims on a timely and equitable basis; and reinforce discipline through legal actions in cases of negligence or other wrongdoings. Policymakers should be aware of the potential effects of existing depositor priority laws or statutes on failure-resolution costs and if depositors and the deposit insurer are accorded some superior rights to share in recoveries, their claims must be paid in full before other unsecured claimants are compensated.

Several features of the deposit insurance scheme in India are comparable to those existing in other economies such as its explicit nature, compulsory membership and joint funding. The major difference, however, pertains to the absence of risk-adjusted premiums. It may be mentioned that most countries with risk-adjusted premiums are those where the deposit insurance schemes were enacted/revised in the 1990s.

Table 1: Characteristics of Deposit Insurance System

Features of the Scheme	India	European Union	US	World Average
Explicit	Yes	Yes	Yes	All 68 Countries
Coverage Limit	Rs. 1,00,000	Euro 20,000	US $ 1,00,000	Three times per capita GDP
Co-insurance	No	10 per cent	No	17 out of 68 countries have co-insurance
Coverage of Foreign Currency Deposit	Yes	Can be excluded	Yes	Covered in 48 out of 68 countries
Coverage of inter-bank Deposit	No	No	Yes	Covered in 18 out of 68 countries
Source of Funding*	Joint (public plus private)	Not regulated	Joint	Private :15; Joint : 51; Public : 1
Administration	Public	Not regulated	Public	Private :11; Joint : 24; Public : 33
Membership	Compulsory	Compulsory	Compulsory	Compulsory in 55 out of 68 countries
Risk-adjusted Premium	No	Not Regulated	Yes	21 out of 68 countries have risk-adjusted premiums
Pay Box / risk Minimiser	Pay Box	..	Risk Minimiser	..
Target Fund Ratio	No	..	1.15 per cent – 1.50 per cent	..

..: Not available for one country.

References:

Beck, T. (2000), 'Deposit Insurance as Private Club: Is Germany a Model?', www.worldbank.org.

Demirguc-Kunt, A and E.Detragiache (2000), 'Does Deposit Insurance Increase Banking System Stability?' *IMF Working Paper* No.3.

Garcia, G.G.H (2000), Deposit Insurance - Actual and Good Practices, *IMF Occasional Paper* No. 197, Washington DC.

RBI (1999), Report on Reforms in Deposit Insurance in India (Chairman: Shri Jagdish Capoor), Mumbai.

joint account will be eligible for a claim up to Rs.one lakh as against the settlement of only up to Rs. one lakh aggregating the balance in both/ all accounts together earlier. Further, to reduce the time lag between the issue of liquidation order and actual reimbursement to the depositor, the Corporation has framed policy guidelines on expeditious settlement of claims of the depositors of insured banks.

3. Benchmarking of the Indian Banking Sector

6.58 The financial soundness of the banking and financial institutions is a pre-requisite for financial stability. The increasing degree of financial globalisation puts domestic banking and financial institutions on international platform of competition, thereby compelling them to meet international standards in respect of financial soundness. The competition in the Indian banking system has intensified with the entry of private banks and increased presence of foreign banks and the margins have come under pressure. Banks are also required to raise capital both from the domestic and international capital market. India is also gradually moving towards fuller capital account convertibility regime. The Committee on Fuller Capital Account Convertibility in its report submitted on July 31, 2006, observed that under a FCAC regime, the banking system will be exposed to greater market volatility. Hence, it is imperative that the Indian banking system imbibes enhanced risk management capabilities with more effective supervisory and regulatory system. In view of these developments, it is imperative that the Indian banking system meets the international benchmarks of efficiency, profitability and financial soundness.

6.59 In this section, therefore, an attempt is made to benchmark Indian banks against global benchmarks in terms of various financial indicators. Several initiatives undertaken to strengthen the banking system in India over the years have resulted in a significant improvement in the financial performance of the banking sector.

Return on Assets

6.60 The return on total assets (RoA) of banks, defined as the ratio of net profits to total assets, is one of the most widely used indicators of profitability. Higher RoA indicates the commercial soundness of the banking system. From the financial stability point of view, high RoA provides a level of comfort against potential shocks to the system, *i.e.*, banks would be able to operate without jeopardising the process of financial intermediation even in the wake of adverse shocks. RoA of Indian scheduled commercial banks recorded a significant improvement in recent years to reach 0.9 per cent at end-March 2007; globally, the range varied from 0.2 per cent to 4.3 per cent in 2006 (Table VI.3).

6.61 Banks' earnings are affected by several factors, which could be broadly classified as structural and secondary. The earnings are easily sustainable if they are affected more by structural factors than secondary factors (Box VI.6)

Non-performing Loans

6.62 Quality of assets of banks is a crucial indicator of financial health of the banking system

Table VI.3: Return on Assets of Indian Banks *vis-à-vis* Select Countries

(Per cent)

Bank Group/Country	As at end-March	
	2001	2007
1	2	3
India		
Public sector banks	0.4	0.8
Private banks	0.7	0.9
Old private banks	0.6	0.7
New private banks	0.8	0.9
Foreign banks	0.9	1.7
Scheduled Commercial Banks	***0.5***	***0.9***
Emerging Markets		
Argentina	0.0	2.1
Brazil	-0.1	2.1
Mexico	0.8	3.2
Korea	0.7	1.1
South Africa	0.8	1.4
Developed Countries		
US	1.1	1.2
UK	0.5	0.5*
Japan	-0.6	0.4*
Canada	0.7	1.0*
Australia	1.3	1.8#
Global range for 2006 [0.2 (Tunisia) to 4.3 (Saudi Arabia and Ghana]		

* : pertains to 2006. # : pertains to 2005.

Source: 1. Global Financial Stability Report; April and September, 2007; IMF.
2. Balance sheets of banks in India.

Box VI.6: Assessment of Bank Earnings Based on Structural Determinants of Income

The assessment of bank earnings forms an integral part of most models of supervision and supervisory rating systems. Detection of earnings weakness enables the supervisor to take action before the solvency of the bank is seriously threatened, and before it begins to assume increased risks in attempting to achieve profitability. In recent years, amalgamation of a few weak SCBs such as Bharat Overseas Bank, Sangli Bank Ltd., Ganesh Bank of Kurundwad and United Western Bank points to greater relevance of such an analysis in the Indian context.

It is often found that banks may try to conceal their losses for various reasons, such as to maintain depositor confidence, to avoid devaluation of their stock in the market or to avoid supervisory action. Some banks are able to conceal their losses for quite some time. However, they eventually end up being liquidated because of financial weakness without ever reporting a net loss. In the light of above factors, it is important to understand how banks generate their income.

If a bank is able to raise sufficient income from sustainable core business sources so as to meet most of its operating expenses, provisions and taxes, as well as to provide for an adequate return on capital, it reflects on the earning strengths of the bank. Alternatively, if a bank relies more on non-recurring income, it is a sign of earning weaknesses. Furthermore, the relative contribution of the various activities of the bank to its earnings, rather than typical assessment based on volumes alone, may be a better indicator of how risk is distributed across its various activities.

In the analytical framework proposed by Rosa Couto (2002), the income and expense items are classified into two basic categories: structural determinants of profitability and secondary determinants of profitability. The structural determinants of profitability are those items of income and expense that satisfy three conditions: (i) they arise from the operational activities of a bank; (ii) can properly be considered sustainable in the case of income, or recurring in the case of expenses; and (iii) are not particularly subject to misrepresentation. Net interest income, fee income and operating expenses, are the structural determinants of profitability. They are the core income and expense items of a bank, and are determined by essential banking factors such as asset/client base size, profit margins, capitalisation and cost efficiency.

The evaluation of the sensitivity of bank earnings to changes in relevant business conditions have become an important plank of risk assessment. The variables which are identified as structural determinants of earnings are used to anticipate the impact of expected or possible changes in business conditions on bank's profitability. This process is found to be relevant to assess the viability of banks, in order to identify and monitor particularly those in vulnerable positions.

Some very relevant items of operational income and expense, such as provision charges and effects of exposures to interest rate and foreign exchange risk, have been considered as the secondary determinants, either because they are non-recurring or subject to misrepresentation. Secondary items usually have a somewhat unstable behaviour and may have a high impact on the profits of a single period. Non-operating income mainly arises from investments in subsidiaries and property that are unrelated to the banking business. Most countries either prohibit or set very stringent limits for these investments. They constitute an entirely different enterprise sharing the same capital base of a bank and, therefore, their earnings and capital should be detached and analysed independently. Provisions for loan losses and contingent liabilities, deferred expenses, goodwill amortisation, contingent assets and results from trading and market price fluctuation of securities are the main income and expense items that have been found to be particularly subject to misrepresentation.

Table 1: Proposed Structure for the Income Statement

Structural	Net interest income
	Fee income
	Operating expenses
	Gross operating income
Secondary	Provision for loan losses
	Other secondary expenses
	Income after secondary charges
	Treasury results
	Other secondary income
	Profit/(loss) from banking activities
	Results of non-banking subsidiaries
	Profit/(loss) before taxes
	Income taxes
	Net profit/(loss)

Assessing the earnings power of a bank, or of any enterprise, is an extremely difficult task. The conclusions of such an assessment can easily go off target due to a lack of accurate information or analytical skill, and may also lose relevance quickly, because of significant changes in business conditions. No analytical framework produces accurate predictions of results for a certain period in future. Although it is not possible to make accurate predictions of bank results, it is possible, in many relevant situations, to arrive at a well-founded conclusion about the capacity of the bank to generate earnings, and also to produce valuable information for other areas of examination.

References:

Anthony Saunders (1999), Financial Institutions Management, Irwin/McGraw-Hill, 3rd edition.

Rosa Couto, Rodrigo Luís (2002), Framework for the Assessment of Bank Earnings, *FSI Award 2002 Winning Paper,* Financial Stability Institute.

and hence, financial stability. The ratio of non-performing loans (NPLs) to total advances is a common measure to assess the quality of assets of banks. A lower NPL ratio indicates prudent business strategy followed by a bank. The legal framework for recovery of loans also plays an important role in the burden of NPLs on the banking system in a country. In India, several

Table VI.4: Ratio of Gross Non-performing Loans to Gross Advances of Indian Banks *vis-à-vis* Select Countries

(Per cent)

Bank Group/Country	As at end-March	
	2001	2007
1	2	3
India		
Public sector banks	12.4	2.7
Private banks	8.4	2.2
Old private banks	10.9	3.1
New private banks	5.1	1.9
Foreign banks	6.8	1.8
Scheduled Commercial Banks	***11.4***	***2.5***
Emerging Markets		
Argentina	13.1	3.2
Brazil	5.6	4.0
Mexico	5.1	2.2
Korea	3.4	0.8
South Africa	3.1	1.1
Developed Countries		
US	1.3	0.8
UK	2.6	0.9
Japan	8.4	2.5*
Canada	1.5	0.4*
Australia	0.6	0.2
Global range for 2006 [0.2 (Estonia, Luxembourg and Australia) to 24.7 (Egypt)]		

* : pertains to 2006.

Source: 1. Global Financial Stability Report; April and September, 2007; IMF.
2. Balance sheets of banks in India.

Table VI.5: Provisions to Non-performing Loans Ratio- Indian Banks *vis-à-vis* Select Countries

(Per cent)

Bank Group/Country	As at end-March	
	2004	2007
1	2	3
India		
Public sector banks	58.4	56.8
Private banks		
Old private banks	47.0	66.0
New private banks	40.6	49.1
Foreign banks	54.8	51.1
Scheduled Commercial Banks	***55.9***	***56.1***
Emerging Markets		
Argentina	102.9	132.3
Brazil	177.5	153.0
Mexico	201.8	194.7
Korea	104.5	177.7
South Africa	61.3	64.3#
Developed Countries		
US	168.1	129.9
UK	64.5	56.1#
Japan	26.8	30.3 *
Canada	47.7	55.3 *
Australia	182.9	204.5 *
Global range for 2006: [23.1 (Ukraine to 229.1 (Venezuela)]		

* : pertains to 2006. # : pertains to 2005.

Source : 1. Global Financial Stability Report; April and September, 2007; IMF.
2. Balance sheets of banks in India.

measures taken by the Government and the Reserve Bank have enabled SCBs to substantially reduce their level of gross NPLs from 15.7 per cent of total advances at end-March 1997 to about 11 per cent at end-March 2001 and further to 2.5 per cent at end-March 2007. The global range for gross NPLs varied between 0.2 per cent and 24.7 per cent in 2006 (Table VI.4).

Provisions for NPLs

6.63 The ratio of provisioning to NPLs reflects the ability of a bank to withstand losses in asset value. The vulnerability of a bank's balance sheet is mitigated to the extent non-performing loans are covered by loan loss provisions. A low ratio of provisioning to NPLs makes the banking system vulnerable to shocks. Indian SCBs maintained provisioning of 56.1 per cent of gross NPLs at the end-March 2007 which was comparable with global standards (Table VI.5).

Capital Adequacy Ratio

6.64 Bank capital is used as an indicator of bank soundness because of its role as the final buffer against losses that a bank may suffer. The minimum amount of capital that a bank should have to meet future losses was specified differently by national regulators until the successful harmonisation of this by the Basel Accord of 1988. Recognising that capital, at a minimum, must be commensurate with the amount of risk that a bank took, a minimum capital to risk-weighted asset ratio (CRAR) of 8 per cent was specified by the Basel Committee on Banking Supervision (BCBS). However, the original framework was based on providing capital cushion against credit risk. Thus, in 1996, the accord was modified to incorporate capital cover against market risks in key portfolios.

6.65 Capital requirements are now almost universally accepted and most countries use the Basel-like risk-weighted approach. This degree of

Table VI.6: Capital Adequacy Ratio- Indian Banks *vis-à-vis* Select Countries

(Per cent)

Bank Group/Country	As at end March	
	2001	2007
1	2	3
India		
Public sector banks	11.2	12.4
Private banks		
Old private banks	11.9	12.1
New private banks	11.5	12.0
Foreign banks	12.6	12.4
Scheduled Commercial Banks	**11.4**	**12.3**
Emerging Markets		
Argentina	–	–
Brazil	14.8	18.5
Mexico	13.9	16.1
Korea	11.7	13.0
South Africa	11.4	12.7
Developed Countries		
US	12.9	13.0
UK	13.2	12.9*
Japan	10.8	13.1*
Canada	12.3	12.4
Australia	10.4	10.4
Global range for 2006 [7.1 Sweden) to 34.9 (Armenia)]		

* : pertains to 2005.

Source: 1. Global Financial Stability Report; April and September, 2007; IMF.
2. Balance sheets of banks in India.

Table VI.7: Capital to Asset Ratio – Indian Banks *vis-à-vis* Select Countries

(Per cent)

Bank Group/Country	As at end March	
	2001	2007
1	2	3
India		
Public sector banks	4.8	5.8
Private banks	5.4	6.8
Old private banks	5.4	6.7
New private banks	5.5	6.8
Foreign banks	8.8	11.9
Scheduled Commercial Banks	**5.2**	**6.3**
Emerging Markets		
Argentina	11.9*	13.7
Brazil	8.9	9.4
Mexico	9.4	13.2#
Korea[1]	7.2@	9.5
South Africa	9.0	7.8#
Developed Countries		
US	9.0	10.6
UK	9.7	8.9#
Japan	3.9	5.3
Canada	4.6	5.6
Australia[2]	5.3	4.9
Global range for 2006 [4.0 (Bangladesh, Netherlands) to 22.0 (Armenia]		

@ : pertains to 2002. * : pertains to 2002.
# : pertains to 2006.

Notes : 1. core capital ratio; 2. Tier I capital to total assets.

Source : 1. Global Financial Stability Report; April and September, 2007; IMF.
2. Balance sheets of banks in India.

harmonisation has made the CRAR a useful indicator for analysts in making both inter-bank and inter-country comparisons of bank strength. In the Indian context, the overall capital adequacy of the SCBs improved from 11.4 per cent in 2001 to 12.3 per cent in 2007 which was much above the Basel norm of 8 per cent and the stipulated norm of 9 per cent for banks in India. The ratio was comparable with most emerging markets and developed economies. The global range of CRAR in 2006 varied from 7.1 per cent to 34.9 per cent (Table VI.6).

Capital to Asset Ratio

6.66 The simple capital to asset ratio of banks indicates the extent of leveraging enjoyed by banks. A low capital to asset ratio implies higher leverage and greater vulnerability of a bank. Globally, the ratio varied between 3.7 per cent and 22.9 per cent in 2006. Indian banks have lower leverage as compared with many other countries (Table VI.7).

4. Developments in Financial Markets

6.67 Well developed financial markets diversify resource mobilisation channels and also scatter the risks across a large number of stakeholders. In the absence of such markets, the economy tends to show a greater dependence on bank sources of finance. There is, however, a growing body of evidence that shows that countries benefit from well diversified financial systems where well regulated banks and well-functioning securities markets cater to the financing requirements of various segments in the economy. An important factor from the financial stability point of view is that banks and securities markets are subject to different risks. Hence, in financial structure, as in other areas, diversification may help an economy attain a superior position on the frontier of feasible risk-return trade-offs. Thus, the development of financial markets facilitates an

efficient allocation of resources compatible with both sustainable medium-term economic growth and financial stability. Deep and liquid financial markets help in minimising the type of risk which triggered financial crises in several East Asian economies in the mid-1990s.

6.68 Financial markets perform an important function of channelling surplus funds from savers to those who are short of funds. Financial markets, thus, allow funds to move from people who lack productive investment opportunities to people who have such opportunities, thereby contributing to higher production and efficiency in the overall economy. In the wake of increased degree of globalisation, financial markets facilitate across border movements of funds from the countries lacking profitable avenues for investments to countries providing higher returns. By doing so, financial markets allow the countries to reach their potential level of output. Thus, the financial markets through their linkages with the real economy enhance the level of output and employment.

6.69 The role of financial markets assumes greater importance in the modern economy due to large scale of financial intermediation and asymmetric information with suppliers and final users of funds. From this perspective, the important function of financial markets is an efficient allocation of real economic resources amongst different activities and especially across time. The greater the economies of scale and asymmetric information in finance, the larger would be the intermediation benefit. Another crucial role of financial markets, which has become increasingly important in a globally integrated economy and the financial system, is the pricing and management of economic and financial risks.

6.70 The efficiency of the financial markets in performing the core function of intermediation could be undermined due to wide fluctuations in markets which could adversely affect market sentiments and pose a major threat to financial stability. Excessive volatility in the financial markets generally leads to asset price misalignments and may also trigger counterparty risk. Financial markets can also be vulnerable to contagion. This underscores the need for monitoring developments in financial markets on a continuous basis so that potential risks to financial stability could be identified in advance and required initiatives undertaken to prevent crisis. Financial market data also indicate expectations about future developments, which contain information about potential risks to the financial system. Market indicators, therefore, could be used to complement traditional analysis of fundamentals based on balance sheets of financial entities.

6.71 Financial markets also play a crucial role in the transmission of monetary policy impulses. Effective monetary transmission depends on the price discovery mechanism, particularly in respect of interest rates and exchange rates. The success of monetary policy implementation depends of the assessment of how rapidly the effects of policy actions are transmitted through the financial system. Developed and stable financial markets also enable central banks to use market-based instruments of monetary policy to target monetary variables more effectively.

6.72 Lacklustre macroeconomic performance of command economies in the 1970s and in the following decades resulted in a shift in the thinking on risk, leading to the realisation that it is far more efficient to allow individual economic agents to face, transfer and manage risks through a market mechanism. The collapse of the Bretton Woods System in 1971 ushered in an era of 'generalised floating' of the exchange rates of major currencies. The gradual deregulation, relaxation/ abolition of capital controls and globalisation that followed the collapse of the Soviet system provided the backdrop as also the incentive for the risk management concepts and practices to emerge and evolve. The distinguishing feature of the new paradigm is that it does not mean that all risks should be eliminated by way of insurance-like products that have been known to mankind for a long time. The key is pricing of risks in markets for risk products. Development of deep and liquid markets in risk products – both cash as well derivatives - which were boosted by phenomenal progress in quantitative finance made it possible for risk management as a discipline and profession to come of age. However, this way of looking at risk management does not mean at all that there is no role for the sovereign or for regulators in financial markets[5].

[5] Mohan, Rakesh (2007), Risk Management in an Open Market Economy, Reserve Bank of India Bulletin, July.

6.73 The financial system in India has become more market-oriented in recent years. There has been a significant increase in financial institutions' market activities and exposures, as well as participation by non-financial corporations and households in the markets. Hence, market-based risks are becoming more relevant for financial stability.

6.74 The Reserve Bank closely monitors financial market developments considering their critical role, while simultaneously taking measures to further develop the various segments of the financial market under its purview, *viz*., the money market, the Government securities market and the foreign exchange market[6]. The SEBI regulates the capital market. Various reforms initiated in the financial markets since the early 1990s have focussed on (i) removing the restrictions on pricing of assets; (ii) building of institutional and technological infrastructure; (iii) strengthening the risk management practices; (iv) fine-tuning of the market microstructure; (v) changes in the legal framework to remove structural rigidities; and (vi) widening and deepening of the market with new participants and instruments. The Reserve Bank, in July 2005, set up a separate Financial Market Department (FMD) for exclusively monitoring the developments in the financial markets.

6.75 Financial markets during 2006-07, in general, witnessed orderly movements. There were some episodes of volatility in the latter part of the year arising from developments in international financial markets. There were also some shifts in domestic liquidity conditions on account of capital flows and volatility in cash balances of the Government.

Money Market

6.76 The money market, which is the market for short-term funds with maturity ranging from overnight to one year, provides an avenue for the central bank intervention in influencing both quantum and cost of liquidity in the financial system, thereby transmitting monetary policy impulses to the real economy. The central bank strives to align money market rates with the key policy rate. Ensuring stability in the money market is critical as excessive volatility could lead the money market to deliver confusing signals about the stance of monetary policy. The stability in the money market has assumed added importance in view of a policy preference for indirect instruments of monetary policy. In the new operating environment, the Reserve Bank has been increasingly relying on a mix of market-based instruments for the conduct of monetary policy. As central banks have limited control over long-term interest rates, the most commonly adopted strategy has been to exert direct influence only on short-term interest rates and permitting market expectations to influence long-term interest rates through financial market inter-linkages.

6.77 Recognising the importance of the money market, the Reserve Bank has been taking pro-active measures to develop this segment. The abolition of *ad hoc* Treasury Bills and introduction of regular auctions of Treasury Bills paved the way for the emergence of a risk free rate, which has become a benchmark for pricing the other money market instruments. Concomitantly, with the increased market orientation of monetary policy along with greater global integration of domestic markets, the Reserve Bank's emphasis has been on setting prudential limits on borrowing and lending in the call money market, encouraging migration towards the collateralised segments and developing derivative instruments for hedging market risks. In line with the objective of widening and deepening the money market and imparting greater liquidity to the market for facilitating efficient price discovery, new instruments, such as collateralised lending and borrowing obligations (CBLO), have been introduced. Money market instruments such as market repo and CBLO have provided avenues for non-banks to manage their short-term liquidity mismatches and facilitated the transformation of the call money market into a pure inter-bank market. This has been complemented by the institutionalisation of the Clearing Corporation of India Limited (CCIL) as a central counterparty. Furthermore, issuance norms have been modified over time to encourage wider participation while strengthening the transmission of policy signals across the various market segments. The upgradation of payment system technologies has also enabled market

[6] For a detailed discussion on developments in financial markets in India, a reference may be made to the Report on Currency and Finance, 2005-06, by the Reserve Bank in May 2007.

participants to improve their asset liability management. All these measures have widened and deepened the money market in terms of instruments and participants, enhanced transparency and improved the signalling mechanism of monetary policy while ensuring financial stability[7].

6.78 Various policy initiatives taken over time have enabled the development of a relatively deeper and more liquid money market in the country in comparison with pre-reform period. Volatility in call rates has declined over the years, especially after the introduction of LAF in June 2000 (Chart VI.1). Under the LAF, the Reserve Bank sets its policy rates, *i.e.*, repo and reverse repo rates and carries out repo/reverse repo operations, thereby providing a corridor for overnight money market rates.

6.79 However, money market conditions during 2006-07 turned somewhat volatile on account of high volatility in Government cash balances/tax inflows, reduction in SLR securities available to tap repo inflows and high credit growth. The overnight rates in the call money segment moved around the reverse repo rate of LAF up to mid-September 2006. Liquidity conditions became relatively tighter in the second half of September 2006, *inter alia*, on account of liquidity pressures emanating from advance tax outflows and festive season currency demand along with higher credit offtake. The call rate eased below the repo rate by early October 2006 partly on account of reduction in Centre's surplus cash balances with the Reserve Bank and remained mostly within repo-reverse repo corridor between end-October and second week of December 2006. Beginning December 13, 2006, the call rate edged up and crossed the repo rate under the impact of advance tax outflows and the announcement of a hike (on December 8, 2006) of 25 basis points each in the cash reserve ratio (CRR) effective the fortnights beginning December 23, 2006 and January 6, 2007. The call rate continued to remain above the repo rate till the first week of February 2007. The call rate eased further to around 6.5 per cent by the second week of February 2007 following the Reserve Bank's foreign exchange operations. The call rate again firmed up to about 8.0 per cent by mid-February 2007 but quickly eased to around 6.0 per cent by end-February 2007. The call rate after easing below the reverse repo rate between March 5-15, 2007 hardened as liquidity conditions tightened again due to advance tax outflows, year-end considerations and sustained credit demand (Chart VI.2). The call rate reached

Chart VI.1: Behaviour of Call Rates (Monthly Average)

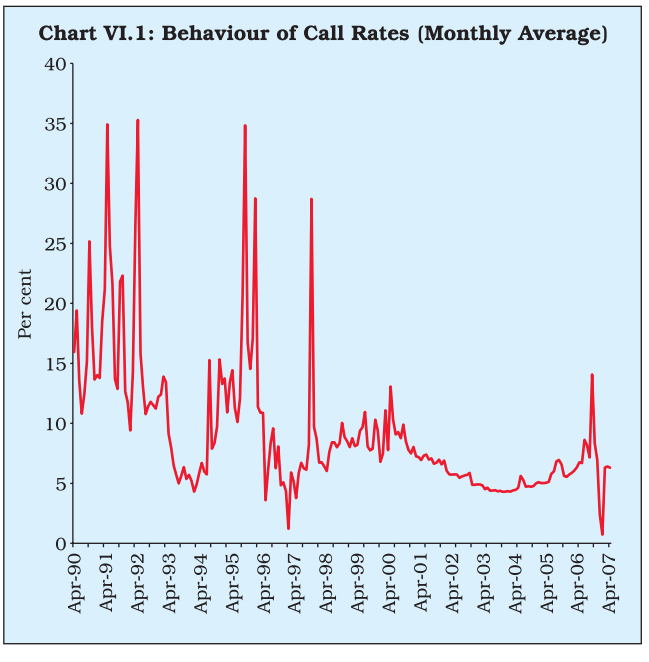
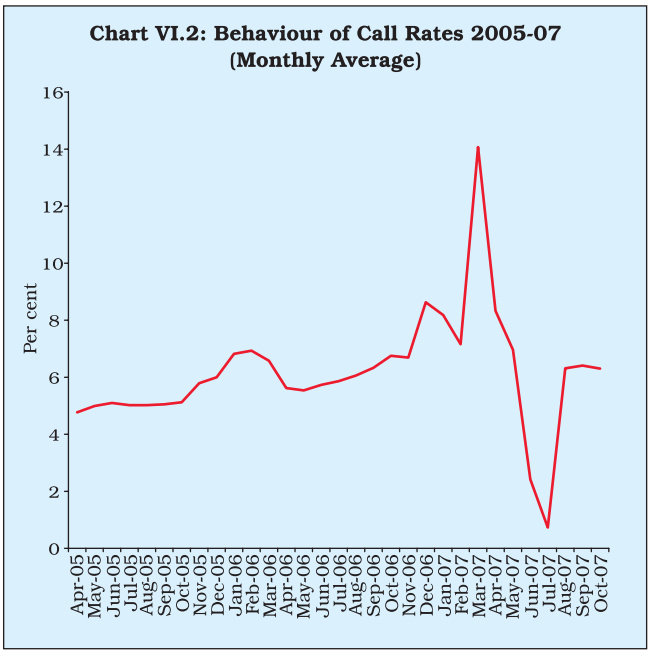


Chart VI.2: Behaviour of Call Rates 2005-07 (Monthly Average)



[7] Mohan, Rakesh. (2007), 'Development of Financial Markets in India', Reserve Bank of India Bulletin, June.

an intra-year high of 54.3 per cent on March 30, 2007; it averaged 19.84 per cent during March 16-30, 2007.

6.80 During 2006-07 liquidity management assumed priority in the policy hierarchy and the Reserve Bank continued with its policy of active management of market liquidity through LAF, MSS and CRR, using all the policy instruments at its disposal flexibly. On a review of the liquidity conditions, the Reserve Bank in March 2007 announced modifications in liquidity management operations. In view of the assessment of volatility and durability of capital flows, an enhanced MSS programme with a mix of Treasury Bills and dated securities was put in place in order to restore LAF as a facility for equilibrating very short-term mismatches and modulating the liquidity it absorbs through the daily reverse repo auctions. Concomitantly, beginning March 5, 2007, daily reverse repo absorptions were restricted to a maximum of Rs.3,000 crore. However, despite the cap on the reverse repo, banks continued to bid heavily in the reverse repo window for a sizeable span of time following the easing of the temporary year-end liquidity pressures in March 2007 and against the backdrop of continued capital inflows.

6.81 During the first quarter of 2007-08, financial markets experienced sizeable fluctuations in liquidity as reflected in the call rate behaviour. The system shifted into a phase of large surplus liquidity from May 28, 2007 necessitating absorption through reverse repo on a daily basis. A ceiling of Rs.3,000 crore on the daily reverse repo under LAF fixed by the Reserve Bank on March 5, 2007 resulted in sharp decline in call rates in the first quarter of 2007-08. In view of the prevailing macroeconomic and overall monetary and liquidity conditions, the First Quarter Review of the Annual Statement on Monetary Policy for 2007-08 announced the withdrawal of the ceiling of Rs.3,000 crore on daily reverse repo under the LAF and the discontinuation of the Second LAF with effect from August 6, 2007. With these modifications, call rates hardened and generally remained within the repo/reverse repo corridor. The average call rate during August-October 2007 was at 6.34 per cent.

6.82 While the primary source of liquidity was the sizeable accretion to the Reserve Bank's net foreign currency assets, liquidity conditions were also influenced by the Central Government recourse to ways and means advances/overdrafts as well as movements in cash balances of the Centre. The Government cash balances with the Reserve Bank have displayed sizeable volatility in recent times. First, owing to operational requirements which are difficult to predict (except for salary payments, coupon/interest payments, redemption of loans and the like), the Government needs to maintain a substantial cash position with the Reserve Bank. Second, there is the need for maintaining or building up cash balances gradually over many weeks ahead of large, known disbursements such as lumpy redemption of bonds contracted for financing high fiscal deficit and, particularly, benchmark bonds, if markets are not to be disrupted. Third, while a major part of outflows from government cash balances is regular, inflows by way of direct tax revenues and other sources are lumpy and irregular in nature. Accumulating Government cash balances with the Reserve Bank act, in effect, as withdrawal of liquidity from the system and have the same effect as that of monetary tightening, *albeit* without any intention to do so by the monetary authority. Similarly, there would be injection of liquidity into the system if Government cash balances maintained with the central bank decline, despite a situation in which, for instance, monetary policy is biased towards tightening liquidity. Thus, volatile Government cash balances could cause unanticipated expansion or contraction of the monetary base, and consequently, money supply and liquidity, which may not necessarily be consistent with the prevailing stance of monetary policy. In the presence of fluctuating Government cash balances, the task of monetary management becomes complicated, often warranting offsetting measures, partly or wholly, so as to retain the intent of monetary policy[8].

6.83 The pro-active liquidity management by banks is another crucial factor in shaping the developments in the money market. The large and unexpected demand for cash which creates mismatches in the cash flow of banks often results in excessive volatility in the money market and banks tend to take recourse to LAF of the Reserve Bank. This increases the burden of maintaining liquidity in the market and also rendering stability in the money market on the Reserve Bank. Pro-

[8] Mohan, Rakesh (2007), 'Monetary Policy Transmission in India', Reserve Bank of India Bulletin, April.

active liquidity management by banks would, therefore, contribute to the Reserve Bank's endeavour to manage liquidity in the market and provide stability to the money market.

6.84 Active liquidity management by the Reserve Bank helped in stabilising the money market conditions in the recent past. Financial markets swung from conditions of easy liquidity during the most part of the first half of 2006-07 to a mix of spells of easy and tight liquidity in the second half. Notwithstanding such swings, the liquidity management operations by the Reserve Bank with the LAF and MSS operations and the issuance of MSS smoothening were successful in restricting the call money rates mostly within the repo-reverse repo corridor (Chart VI.3). The occasional breaches of the corridor during this period were due, *inter alia*, to variability of Government cash balances, advance tax outflows and currency demand on account of festive season.

6.85 As recommended by the Committee on Banking Sector Reforms (Chairman: Shri M. Narasimham; 1998), the process of transforming the call/notice money market into a pure inter-bank market was completed in August 2005. Scheduled commercial banks, co-operative banks and primary dealers (PDs) now participate in the uncollateralised call/notice money market in accordance with prudential limits placed on their borrowings and lendings. In the collateralised segment of the overnight market, eligible non-bank entities also participate. With the imposition of prudential limits on the borrowings and lending of banks and PDs in the uncollateralised segment, the risks in the money market have been mitigated to a large extent.

6.86 A noteworthy development in the money market since 2004-05 from the financial stability perspective has been the substantial migration of money market activity from the uncollateralised call money segment to the collateralised market repo and CBLO (Chart VI.4). This migration of activity has been largely the result of the policy of phasing out non-bank participants from the call money market. The increase in volumes in the collateralised segment is important from the point of view of financial stability as it reduces the risk exposure of market participants.

Foreign Exchange Market

6.87 The foreign exchange market in India prior to the 1990s was characterised by strict regulations, restrictions on external transactions, barriers to entry, low liquidity and high transaction costs. Foreign exchange transactions were strictly regulated and controlled under the Foreign Exchange Regulations Act (FERA), 1973. With the rupee becoming fully convertible on all current account transactions in August 1994, the risk-bearing capacity of banks increased and foreign exchange trading volumes started rising. This was supplemented by wide-ranging reforms

Chart VI.3: Call Rate, Repo Rate and Reverse Repo Rates

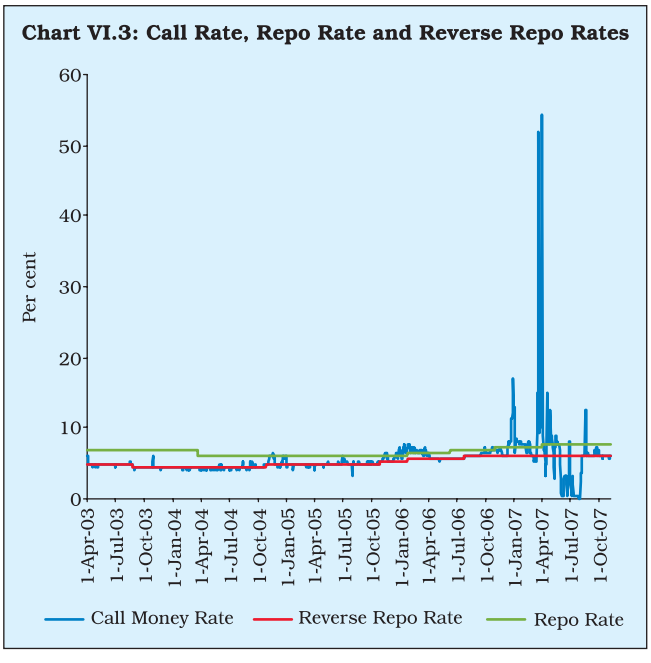
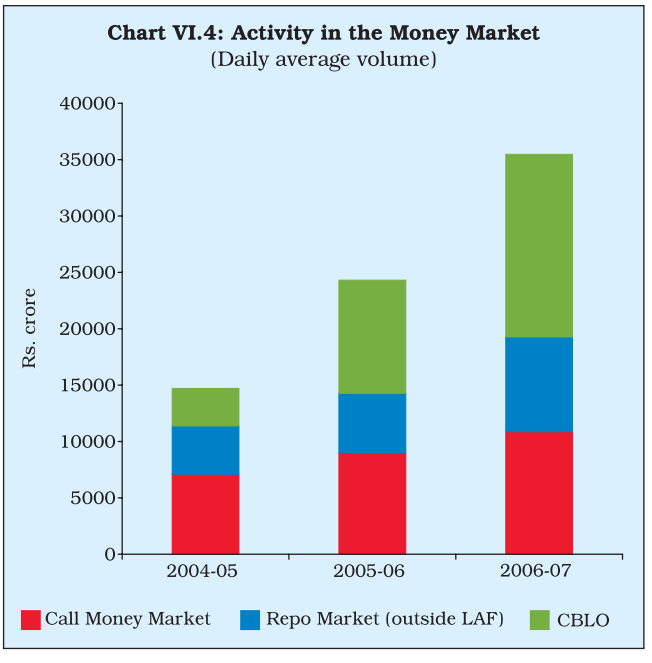


Chart VI.4: Activity in the Money Market
(Daily average volume)



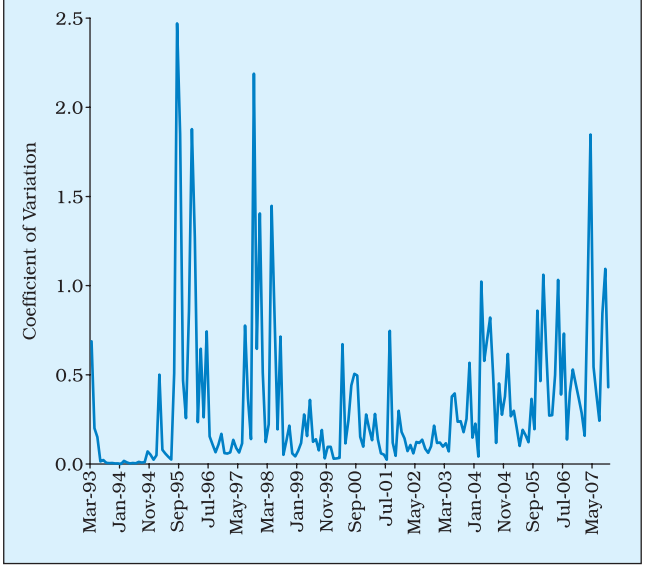
undertaken by the Reserve Bank in conjunction with the reforms by the Government to remove market distortions and deepen the foreign exchange market. The reform phase began with the Sodhani Committee (1994) which, in its report submitted in 1995, made several recommendations to relax the regulations with a view to vitalising the foreign exchange market. With the replacement of the Foreign Exchange Regulation Act (FERA) by the market friendly Foreign Exchange Management Act (FEMA), 1999, the Reserve Bank delegated powers to authorised dealers to release foreign exchange for a variety of purposes. Capital account transactions were also liberalised in a calibrated manner.

6.88 Several initiatives were undertaken during 2006-07 to simplify foreign exchange transactions and also to provide greater flexibility to individuals and corporates in undertaking foreign exchange transactions as detailed in Chapter 2 (Section 7). Over the years, capital flows have assumed increased importance in determining exchange rate dynamics. Capital flows have witnessed intermittent fluctuations over the period with periodic peaks and troughs. However, since 2004-05, net capital inflows have witnessed a substantial increase and have remained well above the current account deficit.

6.89 Given the adverse international experience with unfettered capital account liberalisation, Indian policy on liberalising the capital account has been one of gradual opening. The compositional shifts in the capital account have been consistent with the policy framework, imparting stability to the balance of payments. The sustainability of the current account is increasingly viewed as consistent with the volume of normal capital flows[9]. The large increase in foreign capital inflows, however, has complicated the task of monetary management in recent years requiring the Reserve Bank to undertake offsetting sterilisation transactions in defence of monetary stability.

6.90 The foreign exchange market remained fairly stable during the 1990s, especially late 1998 onwards. There were some episodes of volatility. Effective policy responses, however, were successful in quickly restoring orderly conditions in the market. The coefficient of variation of the Indian Rupee against the US dollar moved in a narrow range, except on a few occasions

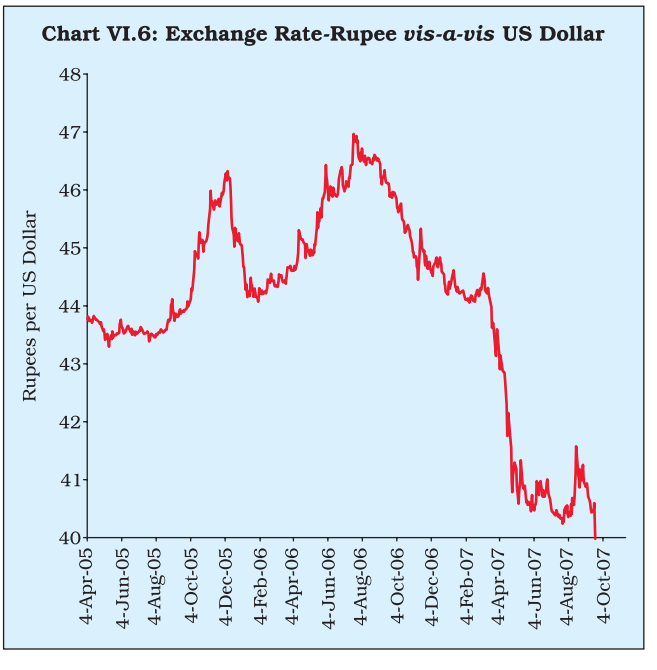
Chart VI.5: Volatility in the Foreign Exchange Market - Exchange Rate of Rupee *vis-à-vis* US Dollar



(Chart VI.5). Reflecting the somewhat increased volatility, the standard deviation of rupee-dollar exchange rate increased marginally from 0.79 during 2005-06 to 0.89 during 2006-07.

6.91 The Indian rupee exhibited a two-way movement *vis-à-vis* the US dollar in a range of Rs.43.14 and Rs.46.97 per US dollar during 2006-07 (Chart VI.6). The rupee, depreciated in

Chart VI.6: Exchange Rate-Rupee *vis-a-vis* US Dollar

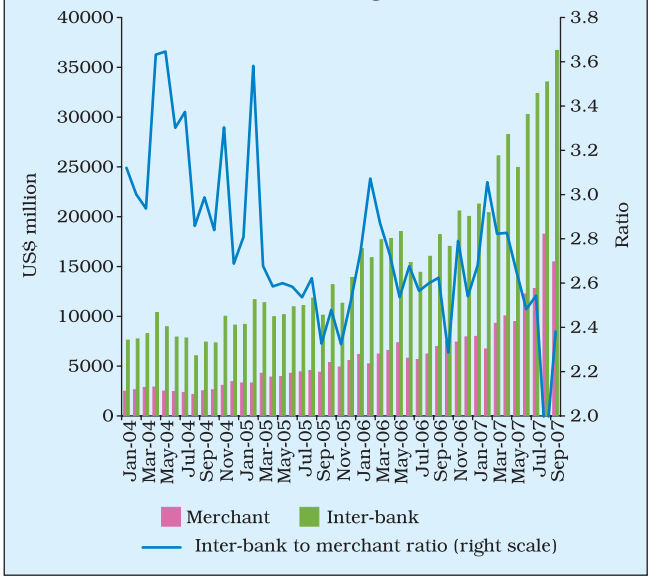


[9] Mohan, Rakesh (2005), Indian Economy in the Global Setting; Reserve Bank of India Bulletin, October.

the first quarter of 2006-07 to reach Rs.46.97 on July 19, 2006, on account of higher crude oil prices, FII outflows following sharp correction in equities and geo-political risks in the Middle East region. The rupee strengthened thereafter gradually on the back of renewed FII inflows, easing of crude oil prices and weakness of US dollar in the international market and reached around Rs.46 per US dollar level in mid-September and around Rs.45 per US dollar level in the first week of November 2006. The up-gradation of India's sovereign rating to investment grade by international rating agency S&P on January 30, 2007 spurred fresh capital inflows and the exchange rate moved to around Rs.44 per US dollar by mid-March 2007 and closed at Rs.43.60 per US dollar on March 30, 2007. Burgeoning investment demands of an expanding economy and an increase in capital inflows by way of external commercial borrowings, FDI and portfolio investments resulted in sharp appreciation of the rupee. On an annual average basis, the rupee appreciated by 2.22 per cent against the US dollar. Reflecting cross-currency movements, the rupee depreciated by 9.1 per cent against the Pound Sterling and by 6.8 per cent against the Euro but appreciated by 2.7 per cent against the Japanese Yen between end-March 2006 and end-March 2007. During the current year, rupee appreciated till end-May 2007 but depreciated thereafter up to the last week of June 2007. It, however, appreciated again to reach Rs.39.31 per US dollar on November 1, 2007. The Reserve Bank's exchange rate policy continues to be guided by the broad principles of careful monitoring and management of exchange rates with flexibility, without a fixed target or a pre-announced target or a band, coupled with the ability to intervene, if and when necessary to contain excessive volatility and speculation.

6.92 The spot turnover in the inter-bank as well as merchant segments of the foreign exchange market increased during 2006-07, reflecting strong growth in underlying transactions relating to current and capital account of balance of payments. While inter-bank turnover increased from daily average of US $ 17.7 billion during April 2006 to US $ 26 billion in March 2007, the daily average merchant turnover increased from US $ 6.5 billion to US $ 9.2 billion. The ratio of inter-bank to merchant turnover (daily average) ranged between 2.28 and 3.05 during 2006-07 (Chart VI.7).

Chart VI.7: Turnover in the Foreign Exchange Market
(daily average)



Government Securities Market

6.93 The government securities market constitutes a key segment of the financial market, offering virtually credit risk-free highly liquid financial instruments, which market participants are more willing to transact and take positions. By offering a risk free benchmark, the government securities market also facilitates the development of other financial markets and serves as a channel of integration of various segments of the financial market. The government securities market, which is often the predominant segment of the overall debt market in many economies, also plays a crucial role in the monetary policy transmission mechanism[10]. Thus, the government securities market facilitates efficiency in the price discovery mechanism across other segments of the financial market, which is an important condition for financial stability.

6.94 For the central bank, a developed government securities market allows greater application of indirect or market-based instruments of monetary policy such as open market (including repo) operations. A greater recourse to the market by the Government for

[10] The Reserve Bank of India (2007), 'Report on Currency and Finance', 2005-06; www.rbi.org.in.

meeting its funding requirements expands the eligible set of collaterals, thereby enabling the central bank to conduct monetary policy through indirect instruments. The expanding quantum of eligible collaterals has provided flexibility to central banks in many developing economies in their conduct of monetary policy, especially in sterilising capital flows.

6.95 Since the government securities market plays a crucial role in the conduct of monetary policy operations, central banks take a keen interest in developing a deep, liquid and vibrant Government securities market. In India, the Reserve Bank has taken several initiatives towards widening the investor base; enhancing transparency in primary issuances; expanding choice of instruments; benchmarking and consolidation of securities across key maturities; and putting in place appropriate safeguards and sound trading and settlement infrastructure.

6.96 The switchover to auction based system of issuance of government securities in the early 1990s was a major step towards the development of the Government securities market. The investor base has become more voluntary and diversified with the participation by non-banking entities such as insurance companies, mutual funds, co-operative banks and other non-banking financial companies. The development of primary dealer system is an important step in the evolution of the government securities market. Taking into account market preferences, new instruments with innovative features have been introduced, which include zero coupon bonds and floating rate bonds. Technological developments have enabled the introduction of screen-based anonymous trading and reporting platform – NDS-OM. Furthermore, the operationalisation of the CCIL has ensured guaranteed settlement of trades and has, therefore, imparted considerable stability to the government securities market. The strategy of consolidation of government securities mainly through re-issuances has resulted in critical mass in key maturities, facilitating the emergence of market benchmarks.

6.97 The Reserve Bank was prohibited from subscribing to primary issuances of Government securities from April 1, 2006. The major issue was, thus, to facilitate debt management in the post-FRBM environment. The Reserve Bank, therefore, initiated some specific measures to develop the Government securities market. The Reserve Bank introduced 'when issued' trading in August 2006 in order to facilitate efficient distribution of auctioned stock by stretching the distribution period for each issue and allowing the market more time to absorb large issues without disruption. The 'short selling' in Government securities was permitted among eligible participants in February 2006 which is expected to elicit symmetric response from participants over the interest rate cycle. Extension of 'short selling' to five working days, effective January 31, 2007, is expected to smoothen out the trading in Government securities. The Reserve Bank also suitably modified the PD system for smoothly conducting the market borrowing programme of the Government in the post–FRBM Act phase.

6.98 The trading platform NDS-OM, which initially accommodated trading only in Central and State Government dated securities, was upgraded in July 2006 to handle trading of Treasury Bills. Access to NDS-OM was extended on May 25, 2007 to qualified entities maintaining gilt accounts with NDS members such as deposit taking NBFCs, provident funds, pension funds, mutual funds, insurance companies, co-operative banks, RRBs and trusts. In the mid-term review of Annual Policy Statement, 2007, it was also proposed to extend the facility of access to NDS-OM to systemically important non-deposit taking NBFCs (NBFC-ND-SI). With a view to consolidating Central Government Securities, a scheme of active consolidation was finalised and approved by the Central Government. The actual exercise of the buying back of securities under the scheme is expected to be conducted during 2007-08.

6.99 During 2006-07, in view of sustained heavy capital inflows, liquidity management required recourse to large issuance of Government securities under the market stabilisation scheme (MSS) whereby balances under MSS increased to Rs.62,974 crore by end-March 2007 from Rs.24,276 at end-April 2006. The introduction of the MSS in 2004 has provided the Reserve Bank greater flexibility in its monetary and liquidity operations. While issuance of securities under the MSS has contributed to increase in the stock of Government securities and liquidity in Government securities market apart from facilitating liquidity management, it has increased the burden on the Government in terms of interest expenditure on MSS securities, but these are

partly offset by earnings in foreign currency assets. This becomes more important in view of the targeted reduction in gross fiscal deficit and revenue deficit under the FRBM Act.

6.100 The turnover in the secondary market for government securities manifested asymmetric response to the interest rate cycle, *i.e.* the market turned liquid and active during downward movement in interest rates but turned lacklustre when interest rates rise. As a result, the turnover as percentage of GDP which had increased sharply between 2001-02 and 2004-05, when interest rates softened, declined sharply thereafter when interest rates hardened (Table VI.8).

6.101 The investor preference for short-term securities and prevailing macroeconomic conditions and consequent issuance of relatively short-term securities prevented the emergence of yield curve over a longer horizon during the 1990s. With the moderation in inflationary conditions, the Government increased the maturity pattern of primary issuances. As a result, the yield curve for government securities has emerged for a horizon of 30 years since 2002-03. The response of short-term rates to changes in the policy rates has been quicker and more pronounced than long-term rates, reflecting the ripple impact of policy changes (Chart VI.8).

Table VI.8 :Secondary Market Transactions in Central Government Securities

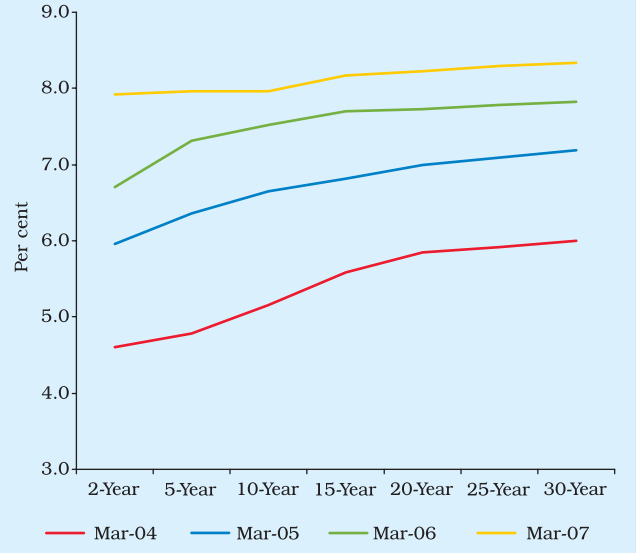
(Amount in Rs.crore)

Year	Outright	Repo	Total	Col. 4 as per cent of GDP	Yield * (in per cent)
1	2	3	4	5	6
1999-2000	4,56,493	82,739	5,39,232	27.6	11.70
2000-01	5,72,145	1,25,976	6,98,121	33.2	10.95
2001-02	12,11,941	3,61,932	15,73,873	69.0	9.44
2002-03	13,78,160	5,63,515	19,41,675	79.0	7.34
2003-04	16,83,711	9,55,533	26,39,244	95.4	5.71
2004-05	11,60,632	15,62,990	27,23,622	87.3	6.11
2005-06	8,81,632	16,98,770	25,80,401	72.3	7.34
2006-07	3,34,901	11,31,461	14,66,362	35.5	7.89
2007-08 (Apr-Oct)	7,23,717	19,38,492	26,62,209	57.5	8.19

* : Weighted average yield on central government primary securities.

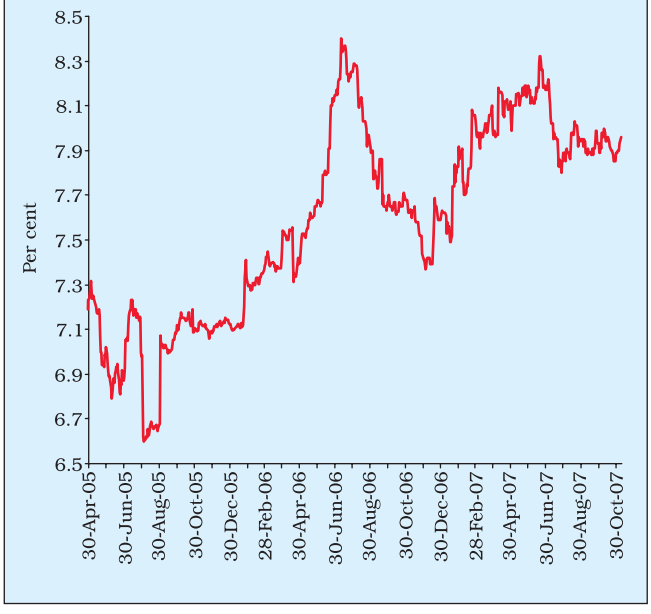
Note : The figures relate to Central Government securities, excluding T-Bills.

Chart VI.8: Yield Curves for Government Securities



6.102 Movements in yields in the government securities market during 2006-07 reflected domestic developments as well as global events. Yields in the secondary market edged up during 2006-07 on the back of sustained domestic credit demand and also inflationary pressure emanating from rising crude oil prices in the international market. Tightening of monetary policy globally also contributed to the rise in yields reflecting the integration of the Indian financial market with global markets. The hardening of yields on 10-year Government securities after December 2006 reflected tightness in domestic liquidity on account of advance tax payments, higher inflation and CRR hikes. The yields further hardened sharply by 17 basis points to 8.08 per cent on February 14, 2007 on account of CRR hikes, and peaked to 8.10 per cent on March 21, 2007. The 10-year yield was 7.97 per cent as on March 31, 2007, 45 basis points higher than the level as on March 31, 2006. During 2007-08, yields remained range-bound between 7.97 per cent and 8.19 per cent till end-May 2007 and peaked to 8.30 per cent in mid-June 2007 due to announcements of unscheduled auctions and hardening of interest rates globally. Yields softened thereafter and moved between 7.85 per cent and 8.01 per cent till the first week of November 2007, reflecting the continued prevalence of easy liquidity conditions. The 10-year yield closed at 7.96 per cent on November 8, 2007 which was 37 basis points higher than the level as on November 8, 2006 (Chart VI.9).

Chart VI.9: 10-year Government Security Yield



Capital Market

6.103 Capital markets play a vital role in providing liquidity and investment instruments. A liquid corporate bond market can play a critical role in supporting economic development as it supplements the banking system to meet the requirements of the corporate sector for long-term capital investment and asset creation.The domestic capital market can help financial stability by reducing currency mismatches and lengthening the duration of debt[11]. The private corporate debt market, which is an important segment of the capital market, plays a crucial role in promoting financial stability by providing an alternative means of long-term resources. Such markets also improve economic efficiency by generating market-determined interest rates that reflect the opportunity costs of funds at different maturities. In economies lacking well-developed capital debt markets, long-term interest rates may not be competitively determined and thus may not reflect the true cost of funds. This, in turn, will make it difficult for banks to price long-term lending, and borrowers will lack a market reference with which to judge borrowing costs. In cases where the market for long-term debt contracts in the local currency is not developed, borrowers are likely to take risky financing decisions that create balance sheet vulnerabilities, increasing the risk of default.

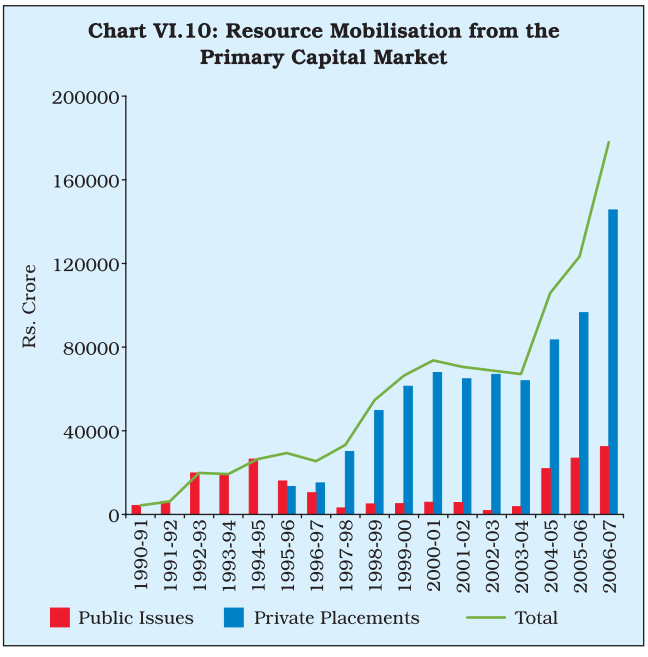
6.104 A private corporate bond market is important for nurturing a credit culture and market discipline. The existence of a well-functioning bond market can lead to the efficient pricing of credit risk as expectations of all bond market participants are incorporated into bond prices. The absence of a developed domestic capital market may necessitate issuance of foreign currency debt to fund investments that yield local currency earnings which result into currency mismatches. The balance sheet and the debt payments of the borrower become vulnerable to exchange rate changes.

6.105 Though the capital markets in India have evolved over a long period, they gathered considerable momentum only after various initiatives undertaken by the Government/SEBI beginning the early 1990s. The activity in the market, which remained subdued between 1997-98 and 2003-04, has picked up significantly reflecting effectiveness of the measures initiated to develop the market and restore investor confidence. The strong macroeconomic fundamentals and higher growth rate trajectory embarked upon by the Indian economy have also contributed to the strong upturn in resource mobilisation from the primary capital market (Chart VI.10).

6.106 Beginning the second half of the 1990s, the pattern of financing of investments by the Indian corporate sector has undergone a significant change. Corporates now rely heavily on internal source of funds, which constituted 60.7 per cent of total funds during 2000-01 to 2004-05 as against 29.9 per cent during 1990-91 to 1994-95. As a result, the debt-equity ratio declined sharply during the same period. Owing to increased investment activity and corporates reliance on external sources, both debt and equity, increased during 2005-06. As a result, the debt-equity ratio increased somewhat (Table VI.9). Despite this, however, the deleveraging of the balance sheets since the mid-1990s has enabled the corporate sector to significantly improve their profitability, which in turn, has improved their resilience.

[11] BIS (2007), 'Financial stability and local currency bond markets', Committee on the Global Financial System (CGFS); Papers No. 28; www.bis.org.

Chart VI.10: Resource Mobilisation from the Primary Capital Market



6.107 Mutual funds have played an important role in the development of the capital market. Growing investor interest in the equity market over the years could also be gauged from the resource mobilisation by mutual funds. Net funds mobilised by mutual funds (net of redemptions) increased sharply to Rs.93,985 crore during 2006-07 as compared with Rs.52,780 crore during 2005-06 mainly due to resources mobilised under debt oriented schemes which almost quadrupled during the year. Such schemes are preferred for parking surplus funds for short periods with minimum risks. The net mobilisation of resources by mutual funds under equity oriented schemes during 2006-07 declined, reflecting the risk aversion tendency among investors particularly in view of the stock market touching record peaks (Table VI.10).

6.108 The yield spread between the 5-year AAA-rated corporate paper and risk-free government paper remained broadly unchanged during 2006-07. The yield spread widened between end-March 2007 and end-June 2007, as the softening of the 5-year yield did not permeate to the corporate bonds. More or less similar trend was observed between the 10-year AAA-rated corporate bonds and government paper (Chart VI.11).

Table VI.9: Pattern of Sources of Funds for Indian Corporates

(Per cent to total)

Item	1985-86 to 1989-90	1990-91 to 1994-95	1995-96 to 1999-2000	2000-01 to 2004-05	2005-06
1	2	3	4	5	6
1. Internal Sources	31.9	29.9	37.1	60.7	43.6
2. External Sources	68.1	70.1	62.9	39.3	56.4
of which:					
a) Equity capital	7.2	18.8	13.0	9.9	17.0
b) Borrowings	37.9	32.7	35.9	11.5	24.4
of which:					
(i) Debentures	11.0	7.1	5.6	-1.3	-2.7
(ii) From Banks	13.6	8.2	12.3	18.4	23.8
(iii) From FIs	8.7	10.3	9.0	-1.8	-2.4
c) Trade dues & other current liabilities	22.8	18.4	13.7	17.3	14.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Memoranda:					
(i) Share of Capital Market Related Instruments (Debentures and Equity Capital)	18.2	26.0	18.6	8.6	14.3
(ii) Share of Financial Intermediaries (Borrowings from Banks and FIs)	22.2	18.3	21.3	16.6	21.4
(iii) Debt-Equity Ratio	88.4	85.5	65.2	61.6	43.0

Note : Data pertain to a sample of non-government non-financial public limited companies.
Source: Article on "Finances of Public Limited Companies", RBI Bulletin (various issues).

Table VI.10: Funds Mobilised by Mutual Funds- Type of Schemes

(Rs. crore)

Scheme	2005-06				2006-07			
	No. of Schemes	Gross Mobilisation	Net Mobilisation	Net Assets*	No. of Schemes	Gross Mobilisation	Net Mobilisation	Net Assets*
1	2	3	4	5	6	7	8	9
A. Income/Debt Oriented Schemes	**325**	**10,08,129**	**16,621**	**1,24,913**	**450**	**18,39,668**	**64,068**	**2,27,618**
(i) Liquid/ Money Market	45	8,36,859	4,205	61,500	55	16,26,790	4,985	1,00,911
(ii) Gilt	29	2,479	-1,560	3,135	28	1,853	-964	1,999
(iii) Debt (other than assured return)	251	1,68,791	13,977	60,278	367	2,11,026	60,046	1,24,708
B. Growth/Equity Oriented Schemes	**231**	**86,014**	**35,231**	**99,456**	**267**	**94,351**	**28,206**	**1,22,379**
(i) ELSS	37	3,935	3,592	6,589	40	4,669	4,453	9,600
(ii) Others	194	82,079	31,639	92,867	227	89,683	23,753	1,12,279
C. Balanced Schemes	**36**	**4,006**	**927**	**7,493**	**38**	**4,473**	**1,710**	**9,004**
D. Fund of Funds Scheme	**13**	**845**	**-241**	**1,012**	**33**	**2,854**	**1,164**	**2,253**
TOTAL	**592**	**10,98,149**	**52,780**	**2,31,862**	**755**	**19,38,493**	**93,985**	**3,26,292**

* : As at the end of March. ELSS: Equity Linked Savings Scheme.
Source : Securities Exchange Board of India.

6.109 The domestic secondary markets witnessed continued buoyancy during 2006-07 interspersed with corrections during the first and fourth quarters (Chart VI.12). The markets began the financial year 2006-07 on a bullish note, but could not sustain the momentum as the markets declined sharply during May 11-June 14, 2006 on global cues due to increased risk aversion over concerns regarding slowdown in global growth, increase in global inflation, higher international interest rates, rise in crude oil prices, meltdown in base metal prices and heavy sales by FIIs. On May 22, 2006, the domestic stock markets witnessed another historic drop when the circuit

Chart VI.11: Government Security and Corporate Bond Yields

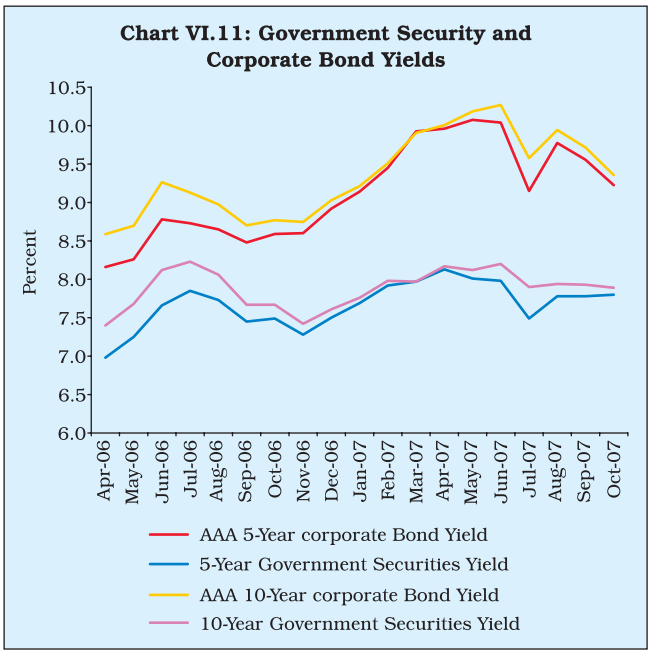
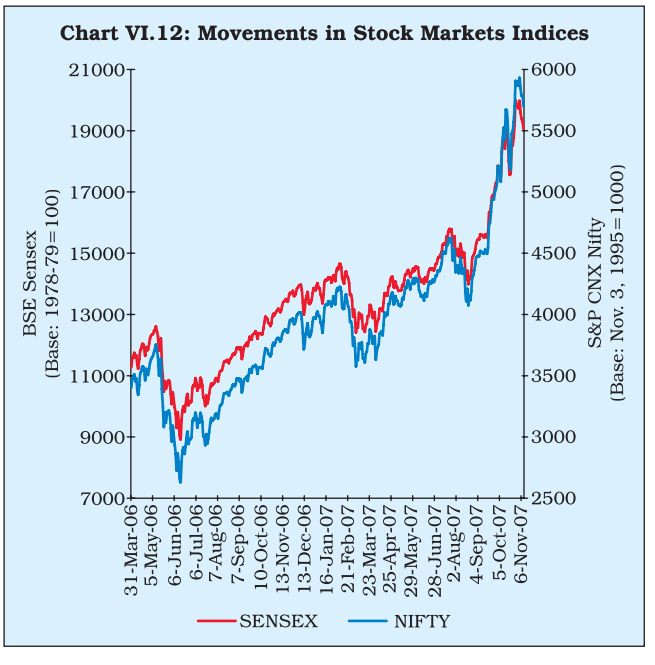


Chart VI.12: Movements in Stock Markets Indices



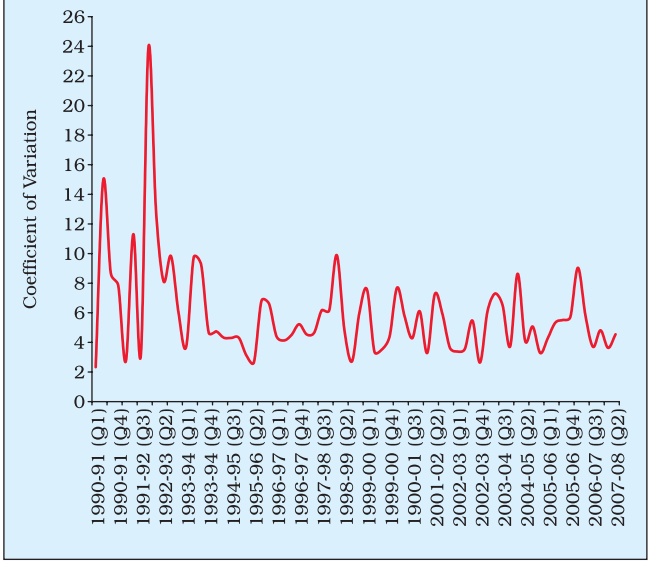
breakers were applied for the second time. The BSE Sensex fell to a low of 8,929 on June 14, 2006, registering a decline of 29.2 per cent over the then all-time high of 12,612 reached on May 10, 2006. However, the stock markets pared these losses in the following months, reflecting fresh buying by FIIs, recovery in base metal prices and easing of international crude oil prices amidst continuing robust macroeconomic fundamentals and corporate earnings. The BSE Sensex reached an all-time high of 14,652 on February 8, 2007. The markets, however, witnessed correction thereafter due to concerns over rising domestic inflation and nervousness across international equity markets following problems in the US sub-prime mortgage industry. As a consequence of these developments, the BSE Sensex closed at 13,072 at end-March 2007. However, it was still 15.9 per cent higher than its end-March 2006 level of 11,280.

6.110 Continuing the upward trend during 2007-08, the BSE Sensex closed at an all-time high level of 19976 on November 2, 2007, an increase of 52.82 per cent over end-March 2007. The S&P CNX Nifty also reached a record high of 5932 on November 2, 2007. Liquidity support from foreign institutional investors (FIIs), strong GDP growth, robust corporate profitability, decline in annual domestic inflation rate, upward trend in major international equity markets and rise in metal prices enthused the market sentiment. However, after November 2, 2007, the domestic stock markets witnessed some corrections mainly due to downward trend in major international equity markets on account of renewed concerns over sub-prime losses and credit crunch in the US and Europe and depreciation of US dollar against major currencies. Increase in global crude oil prices to record high levels, net sales by FIIs in the Indian equity market, appreciation of rupee against the US dollar, decline in global metal prices and other sector and stock specific news also dampened the market sentiment.

6.111 The volatility in the stock markets, remained at moderate level, barring some episodes of erratic movements (Chart VI.13).

6.112 The corporate debt market in India is still in the process of development. In order to develop the domestic corporate bond market, the Committee (Chairman: R.H Patil), which submitted its report in December 2005, made several recommendations. The Government, SEBI and the Reserve Bank are working on the recommendations. As part of this, reporting platforms for corporate bonds have been set up by national level exchanges for improving transparency and information dissemination. For OTC trades, entities are required to report to the Fixed Income Money Markets Derivatives Association (FIMMDA). Subsequently the two national level exchanges (BSE and NSE) have set up electronic trading platforms for corporate bonds which will eventually be converted into order matching systems. The SEBI is also working on liberalising and smoothening primary issuance procedures for corporate bonds. SEBI has made it mandatory for market participants to report all corporate bond deals aggregating Rs.1 lakh or above to BSE/NSE within 30 minutes of closing the deal.

Chart VI.13: Quarterly Co-efficient of Variation of BSE Sensex



5. Payment and Settlement Systems

6.113 The smooth functioning of the payment and settlement systems is critical for the smooth functioning of the financial system in an economy. The high velocity in current payment systems, brought about by technological developments over the years, indicates that any risk associated with their functioning in any one country is capable of being transmitted to the rest of the world, given the interconnection of the systems.

6.114 The central banks the world over assume responsibility of putting in place sound and

efficient payment and settlement systems. In India, the Reserve Bank has been taking several initiatives to ensure safety and soundness of the payment and settlement systems in the country. The Board for regulation and supervision of Payment and Settlement Systems (BPSS), constituted in March 2005, as a Committee of the Central Board of the Reserve Bank, is responsible for smooth functioning and development of the payment and settlement systems in the country. It gives directions, sets standards for operations of the payment systems and reviews the membership criteria for each of the systems.

6.115 The sound legal framework is the basis for the smooth functioning of the payment and settlement systems. At present, there is no explicit legal mandate empowering the Reserve Bank to oversee the payment and settlement systems in the country. Such power is derived from the existing statutes, *viz.*, the Reserve Bank of India Act, 1934 and the Banking Regulation Act, 1949. On the enactment of the Payment and Settlement Systems Bill, 2006 as a law, the Reserve Bank would be empowered to regulate and supervise all the payment and settlement systems.

6.116 The Reserve Bank initiated several measures during 2006-07 for improving efficiency of the payment and settlement systems, both large value and retail payments. The expansion of NEFT and RTGS to cover more number of centres/ branches for retail and large value, respectively, has been a step in this direction. In the retail payment systems, the paper-based mode of payment is still the predominant mode of payment. In view of large volume of cheques, currently handled manually, the need was felt to computerise the settlement operations at the clearing houses where setting up of a Magnetic Ink Character Recognition Cheque Processing Centre (MICR CPC) would not be a viable option. A plan was drawn for computerisation of the clearing operations at centres where there are more than 30 banks (apart from the 59 centres where MICR CPCs have been set up) using Magnetic Media Based Clearing System (MMBCS) in the first phase. On achieving this, centres with more than 15 banks were identified for computerisation. The cheque truncation system (CTS) has also been taken up to improve efficiency of the payment system as detailed in Chapter 2 (Section 9).

6.117 As a result of continuous efforts towards electronification of the banking transactions, the share of electronic transactions in the total transactions increased sharply in recent years. The increase was more pronounced in terms of value than volume, reflecting mainly the impact of shifting of high value transactions on the electronic mode (Table VI.11).

6.118 A major step towards strengthening the financial stability conditions was the establishment of Clearing Corporation of India Limited (CCIL) in 2002 which also acts as a Central Counter Party (CCP) for Government securities and forex clearing. The settlement of all secondary market outright sales and repo transactions in Government securities are carried out through the CCIL. All OTC trades in this segment, which are reported on the Reserve Bank's negotiated dealing system (NDS) platform and trades which are contracted on the online anonymous, trading platform NDS-OM, are accepted by CCIL for settlement, after the necessary validations. These trades are settled on a delivery *versus* settlement (D*v*P) III basis, *i.e.*, the funds leg as well as the securities leg is

Table VI.11: Paper based *versus* Electronic Transactions

(Volume in thousand and Value in Rs. crores)

Year	Volume				Value			
	Paper-based	Electronic	Total	Share of Electronic (%)	Paper-based	Electronic	Total	Share of Electronic (%)
1	2	3	4	5	6	7	8	9
2003-04	10,22,800	1,67,554	11,90,354	14.1	1,15,95,960	49,67,811	1,65,63,771	30.0
2004-05	11,66,848	2,30,045	13,96,893	16.5	1,04,58,895	1,18,86,254	2,23,45,149	53.2
2005-06	12,86,758	2,87,489	15,74,247	18.3	1,13,29,134	2,24,39,287	3,37,68,420	66.5
2006-07	13,67,280	3,83,443	17,50,723	21.9	1,20,42,426	3,50,50,234	4,70,92,660	74.4

Table VI.12: Government Securities and Forex Clearing by CCIL

(No. of trades in 000's; value in Rs. crore)

Year	Government Securities Settlement				Forex Settlement	
	Outright		Repo			
	No. of Trades	Value	No. of Trades	Value	No. of Trades	Value
1	2	3	4	5	6	7
2004-05	161	11,34,222	24	15,57,907	466	40,42,435
2005-06	125	8,64,751	25	16,94,509	490	52,39,674
2006-07	137	10,21,536	30	25,56,502	606	80,23,078

settled on a net basis. The CCIL acts as the CCP for all the transactions and guarantees both the securities and the funds legs of the transaction. The volume and nature of transactions settled through CCIL has increased in recent years (Table VI.12).

6.119 Payment systems provide the first alerts of stress faced by the participants in the financial systems. Hence, it is necessary to ensure a consolidated flow of information from various payment systems to a centralised system. A mechanism has been put in place to receive the information on a monthly basis on the volume and value of cheques cleared, transactions put through ECS (credit and debit), EFT/NEFT, cards (credit and debit), RTGS, Government securities and forex. The information is regularly disseminated through the Monthly Bulletin of the Reserve Bank.

6. Risks to Financial Stability

6.120 The analysis of financial institutions, financial markets and financial infrastructure in the previous chapters/sections suggests that the financial institutions in India, especially commercial banks which are the most important from the systemic point of view, are on a strong footing. The depth and width of financial markets have also improved over the years, thereby imparting resilience to the financial system. Robust payment and settlement infrastructure that has been put in place in recent years has aided in the smooth functioning of the financial system.

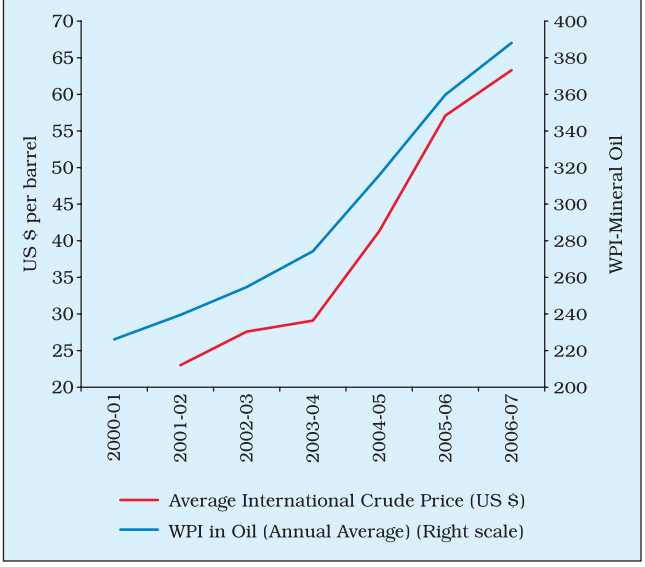
6.121 Strong domestic macroeconomic fundamentals in recent years have provided a favourable environment for financial stability. The real GDP growth in the past four years averaged 8.6 per cent and the current trends indicate that the momentum in economic activity would be sustained. Inflation rate has also moderated after witnessing some spikes during the last quarter of 2006-07. The continued process of fiscal consolidation under a ruled-based framework in recent years has enabled the resources to be utilised in productive sectors. The external sector has been characterised by a number of positive features, including robust growth in merchandise trade, buoyant growth in invisible receipts and strong capital inflows.

6.122 Although the financial system is on a sound footing, there are some risks to financial stability. At the present juncture, risks to financial stability in India emanate mainly from the external sources. The risks outlined in this section are potential threats to financial stability, although the chances of their materialising may be remote.

High and Volatile Oil Prices

6.123 Monetary instability by distorting allocative efficiency of resources can be a major threat to financial stability. High and volatile crude oil prices in the international markets pose a major risk to domestic price stability. As India is a major oil-importing country (imports being about 70 per cent of its crude oil requirements), oil prices are a critical element in the sustainability of the growth process and maintenance of price and financial stability. Spot crude oil prices softened from the July 2006 peak of US $ 78 per barrel to around US $ 53 per barrel in January 2007. However, they have rebounded since then on expectations of strong demand, low US crude stocks, tight supply-demand balance and a potentially harsh hurricane season. In the first week of November 2007, international crude oil prices (WTI) prices crossed a historical level of US $ 95 a barrel (Chart VI.14).

Chart VI.14: International Oil Price and Movement in Domestic Oil Price (WPI-Mineral Oil)



6.124 Since India imports most of its crude oil requirements, a rise in prices of oil in the international market has significant implication for output and inflation conditions in the country (Box VI.7). Price of crude oil (average) in the international market has gone up by about 53 per cent (up to November 2007) from February 2007 when administered prices of domestic petroleum products were reduced. Given that pass-through from international oil prices to domestic petroleum products remains incomplete, it is a source of upside risk to inflation. However, if domestic prices are not raised, the rise in international crude prices would adversely affect the financial performance of domestic oil companies. This also leads to increase in fiscal costs, which assumes significance in view of the rule-based fiscal consolidation process. Rise in oil prices in international market has also implications for the current account deficit and exchange rate. During 2006-07, volume of oil imports increased by 19.3 per cent, whereas, in value terms, the growth rate was 29.8 per cent, widening the merchandise trade account deficit, which was moderated to a large extent by a sharp growth of invisible receipts. Thus, any further increase in oil prices in the international market would have implications for domestic inflation, especially because the pass-through has remained incomplete. However, the present low level of inflation is a comforting factor.

Recent Developments in the Global Financial Markets

6.125 The increased degree of financial market integration across various segments of the market as well as countries has made it is easier for contagion of crisis to travel from one part of the world to the other in a quick manner. This has enhanced the vulnerability of financial systems globally and calls for additional vigilance by financial sector regulators and supervisors in the movement of international finance. A major development engaging attention all over the globe in the recent period has been the turmoil in financial markets in the United States and Europe and the sudden plunge in credit market confidence triggered by the US sub-prime mortgage crisis.

6.126 Global financial markets beginning mid-July 2007 became highly volatile and increasingly risk averse which was reflected in the widening of spreads and option based implied volatilities on a range of assets. The genesis of the crisis was the U.S. sub-prime mortgage market which has experienced significant stress on account of rising delinquencies on principal and interest payments. By mid-2007, the ratings agencies triggered a wave of downgrades in asset-backed securities (ABS) collateralised by sub-prime mortgages, resulting in subsequent downgrades in collateralised debt obligations (CDOs) that use lower-rated ABS tranches as collateral. Increase in credit risk in U.S. mortgage-related instruments resulted from a loosening of credit standards across a range of markets and risks of spillovers to other credit markets. Uncertainty regarding overall losses and exposure has raised market and liquidity risks, with potentially broader implications for financial institutions. Mark-to-market losses and uncertainty about future cash flow losses have started to impact various segments of the mortgage supply chain. Losses extend beyond US borders to European and Asian markets. The Japanese equity market was worst affected as the Japanese currency went through sharp appreciation. The “flight to safety” led to a sharp fall in developed bond market yields. The two-year US Treasury yield dropped almost 30 basis points between end-July and mid-August 2007. Currency markets also experienced increased volatility.

6.127 The key elements of the current crisis have been the complex nature of the derivatives used;

Box VI.7: International Oil Prices – Impact

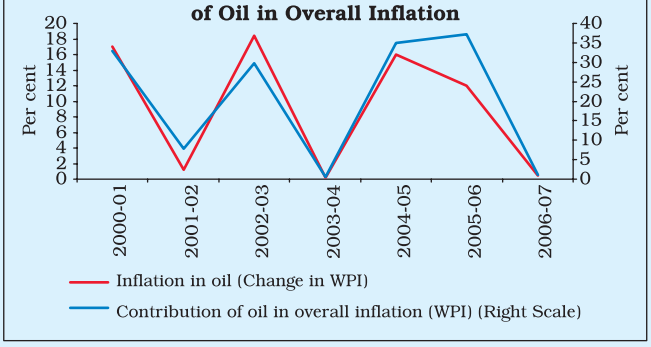
The impact of oil prices can be assessed both in the short and the long run. In the short run, internationally, the literature mentions three sources of oil price inflation. These are (i) gap in supply and demand of oil and speculation induced disturbances as evidenced from strong reaction to news; (ii) large positions by traders and significant increase in inventories. In contrast, the long term factors include (i) increasing demand from rapidly growing economies like India and China; (ii) improvements in energy efficiency; (iii) uncertainty associated with exploration and production of oil; and (iv) geopolitical factors.

The consequences of oil price inflation have largely been adverse particularly to the oil importing countries. In general, output loss, inflationary spirals and adverse balance of payments outcomes have been much more severe on low-income oil importing countries than the oil importing industrial countries. Moreover, the expansionary effect of oil price shocks in oil exporting countries has generally been much less than the contractionary impact in oil importing countries, resulting in a slowdown in global growth. The increasing cost of production resulting in adverse terms of trade consequent to the oil shock in the oil importing countries also erodes international competitiveness of countries with significant degree of openness and dependence on imported oil as a critical input. Oil price shock also tends to deteriorate the fiscal balance if the Government absorbs the rise in international oil prices and pass-through to domestic consumers is staggered and incomplete. The end result in most of the episodes of oil shock has been 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). The inflation effect would be larger if oil importers had difficulty in financing the resulting current account deficit, and also if subsidies that had hitherto limited energy price increases were assumed to be further reduced or eliminated.

Central banks face the dilemma of growth-inflation trade-off more acutely during episodes of oil price increase. It is important to properly assess the sources of inflation and state of inflation expectations in order to find the appropriate policy response (Bernanke, 2004). However, recent economic history suggests 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 wage-price spiral and consequent detrimental impact on growth on account of monetary tightening due to oil prices.

In the Indian context, the oil import bill as a percentage of GDP increased from 3.4 per cent in 2003-04 to 6.3 per cent in 2006-07. A strong correlation seems to exist between international oil price and domestic oil price. Spikes in oil prices accounted for a major source of overall inflation in 2004-05 and 2005-06 (Chart A).

Chart A : Inflation in Oil and Contribution of Oil in Overall Inflation



Several studies have attempted to empirically measure the impact of rise in crude oil prices in the international markets on domestic inflation and output. In the international perspective, a study by the IMF (2000) found that a sustained US $5 per barrel increase in the price of oil leads to 1.3 percentage points increase in inflation after a year and reduces annual GDP growth by 0.1 percentage points. In the Indian context, Bhattacharya and Bhattacharyya (2001) concluded that a 20 percentage points shock in oil price leads to a 1.3 percentage points increase in inflation in other commodities at its peak while growth in output decelerates by about 2.1 percentage points and recovery starts to take place approximately after a year. The Mid-term Review of Annual Policy Statement for the year 2004-05 of the Reserve Bank, released in October 2004, indicated that in the absence of policy intervention, every US dollar increase in crude oil prices could potentially add 15 basis points to WPI inflation as a direct effect and another 15 basis points as indirect effect.

References :

BIS (2007), Annual Report; www.bis.org

Bernanke Ben S. (2004), Remarks by Governor Ben S. Bernanke' at the Distinguished Lecture Series, Darton College, Albany, Georgia, October.

Hamilton, J.D. (1983), Oil and Macroeconomy since World War II, *Journal of Political Economy*, 91, pp 228-48.

Bhattacharya K. and Bhattacharyya I. (2001), Impact of Increase in Oil Prices on Inflation and Output in India, *Economic and Political Weekly*, December 21.

Burbidge, J and A Harrison (1984), Testing for the Effects of Oil-Price Rises Using Vector Autoregressions' *International Economic Review*, 25, pp 459-84.

International Monetary Fund (2000), The impact of Higher Oil Prices on the Global Economy, *Mimeo*.

the high degree of leveraging; the underestimation of risk pervading financial markets; the surprisingly sizeable exposures of large financial institutions to some of the debt instruments and derivatives in question; and the speed of contagion (Box VI.8).

Box VI.8: Sub-prime Mortgage Market in the US: Recent Developments

Sub-prime mortgages are residential loans that do not conform to the criteria for 'prime' mortgages, and so have a lower expected probability of full repayment. Apart from the borrower's credit record, the assessment regarding sub-prime lending also takes into account debt service-to-income (DTI) ratio (more than 55 per cent) of the borrower and the mortgage loan-to-value (LTV) ratio (more than 85 per cent). The recent problem of sub-prime lending in the US is mainly associated with housing market. The first sign of trouble was the high volume of 'early payment defaults' (EPDs) in which the borrower misses one or two of the first three monthly payments, which has been followed by rising delinquency rates. Apart from the slowdown in the residential property, the adjustable rates loans offered by the lenders was also the factor responsible for defaults and delinquencies. As interest rates increased and house prices flattened and then turned negative in a number of regions, many borrowers were left with no option but to default as prepayment and refinancing options were not feasible with little or no housing equity. Under the adjustable interest rates, lenders offer a repayment schedule involving lower amounts in the beginning and higher amounts afterwards. The decline in housing prices made it less profitable for the house owners to repay the entire loan, thereby inducing delinquency and default.

Because of their higher risk of default, sub-prime borrowers are charged higher interest rates than prime borrowers. The sub-prime loans are securitised. They have formed the basis for asset backed securities such as collateralised debt obligations (CDOs). Institutional investors such as hedge funds, pension funds and banks have been investing in such securities. The exact quantum of sub-prime mortgages and the amount of delinquencies in not known. However, according to the Mortgage Bankers' Association, the total size of the mortgage market is estimated to be about US$ 10 trillion, of which prime mortgages make up about 80 per cent of the US mortgage market, while sub-prime mortgages account for about 15 per cent, *i.e.*, US$ 1.5 trillion. The sub-prime market constitutes from 10 to 15 per cent, depending on the exact definition of the mortgage market in the US. The Mortgage Bankers' Association reported recently that the percentage of sub-prime loans that were 30 or more days past due climbed to 15.8 per cent in the first three months of 2007, a record high and up from 14.4 per cent in the final three months of the last year.

The crisis in sub-prime lending sent shock waves through other parts of the financial system. The meltdown of sub-prime borrowings has led to risk aversion and increased volatility in financial markets. Following the steep rise in the rate of sub-prime mortgage foreclosures, more than two dozen prime mortgage lending firms have reported to have failed or filed bankruptcy suits. The failure of these companies resulted in a collapse of the prices in the US$ 6.5 trillion mortgage bundled securities market.

Immediately after the problem in the sub-prime market surfaced, many of the structured credit and mortgage market products could not trade at all. So, investors struggled to price their positions accurately. As a result, many investors facing margin calls from worried counterparties were unable to sell holdings to raise cash because there were no buyers. That forced them to seek cash *via* the money market instead. Hedge funds, who are investors in structured products also reportedly faced withdrawals and margin calls. Several banks were also reported to have been hit by losses from risky property loans. The cost of buying protection against default for risky bonds also increased. It was also reported that some fund managers have cut exposure to carry trade. Structured Investment Vehicles (SIV), which borrow short-term money mostly by way of commercial paper and invest in credit with longer maturities appeared to have played a key role in the liquidity crunch.

The ensuing risk aversion triggered a sell-off in the equity market in the US. To counter the losses, institutional investors should pulled out from the equity markets in EMEs. As a result, the equity markets in major advanced and emerging market economies declined sharply in mid-August 2007.

It was reported that several banks in the US and the Euro area preferred to hold cash rather than lend. This led to the tightening of credit conditions and led to scrambling for cash. As a result, the US and the ECB had to intervene in the market. On August 9, 2007, the ECB injected liquidity of Euro 94.8 billion (US $ 129.8 billion) and Federal Reserve of US $ 24 billion. The ECB described its operations as 'fine-tuning'.

The recent crisis in financial markets reflects the secular lowering of nominal and real interest rates across the world which has enhanced the appetite for risk even as pricing of risk has become increasingly difficult. The accommodative monetary policy followed by the major economies – the US, Euro area and Japan – has resulted in higher growth in monetary aggregates than the rates of growth that would have been expected hitherto in relation to real economic growth. Yet inflation has been contained at low levels. This also resulted in abundant excess liquidity in financial markets, which is also reflected in the macro imbalances between the US and Asia. The combination of sustained low inflation accompanied by accommodative monetary policy worldwide could have generated excessive confidence in the ability of central banks and monetary policy to keep inflation rates and interest rates low indefinitely, leading to under pricing of risk and hence excessive risk taking. Thus, it can be argued that it is the combination of low real and nominal interest rates brought about by the lowering of inflation, accompanied by the abundance of liquidity induced by accommodative monetary policy which lies at the roots of the current crisis. In this sense, the sub-prime is a symptom rather than a cause. Another important factor is supervision of financial system whereby the links between banks and non bank financial intermediaries, and other off-balance sheet exposures were not adequately recognised or recorded by banking supervisors (Mohan, 2007).

References:

Kiff, J and Mills, P.(2007), Money for Nothing and Checks for Free: Recent Developments in U.S. Subprime Mortgage Markets; *IMF Working Paper*, WP/07/188.

Mohan, Rakesh (2007), Valedictory Address at IIF's inaugural Asia Regional Economic Forum; www.rbi.org.in

6.128 The recent turbulence in the international financial markets was accentuated by the leverage enjoyed by banks and some other investment vehicles, especially hedge funds (Box VI.9).

Box VI.9: Hedge Funds

Hedge funds are assorted investment pools which use an array of hedging techniques to reduce portfolio volatility. Stulz (2007) defines hedge funds as 'unregulated pools of money managed by an investment advisor, the hedge fund manager, who has a great deal of flexibility'. Managers of hedge funds follow complex investment strategies to leverage portfolio size through sophisticated derivative contracts. The economic function of a hedge fund is the same as the function of a mutual fund. In both the cases, fund managers are entrusted with money from investors with a hope of receiving back initial investment and a healthy return. The hedge funds, however, often make use of complex investment strategy involving 'long' and 'short' positions for hedging their investment against adverse market movements. These funds are typically organised as private partnerships and often located offshore for tax and regulatory reasons. Hedge funds are largely restricted to large-scale investors. Such a restricted access facilitates these funds to bypass the registration and other regulations. Historically, they have attracted high net worth individuals and institutional investors. An array of institutional investors investing in hedge funds has widened significantly in recent years to include pension funds, charities, universities, endowments, and foundations (Ubide, A., 2006).

The general *modus operandi* of hedge funds is to identify an asset that is mispriced and devise hedges for their position so that they benefit from the correction of the mispricing but are unaffected by anything else. There is, however, a possibility that not all the positions taken by hedge funds are hedged because of high costs or intrinsic difficulties in hedging against some risks. As the hedge funds basically seek inefficiencies in the market and try to correct them, they can play an important role in financial markets in terms of bringing security prices closer to fundamental values. The efficiency of hedge funds is ensured through payment to fund managers, which is often linked to increase in investors' wealth. In addition, managers typically invest significant amounts of their own capital in the fund, which aligns their interests with that of the investors and discourages reckless risk taking.

In 1949, the first hedge fund is considered to have been established by A.W. Jones in the United States by combining two investment tools, *viz.*, short-selling and leveraging. Though the hedge fund industry is smaller compared with mutual funds, it has increased in a significant manner. The assets managed by hedge funds which were less than 4 per cent of the assets managed by mutual funds at the end of 1993, increased to 10 per cent by 2005. It is estimated that in 2006 more than US $ 1 trillion was invested in hedge funds (Stulz, 2007).

Though hedge funds, on an average, have low return volatility as compared to an investment in stock market, they can loose their money/capital very rapidly. Around 10 per cent of hedge funds die every year (Stulz, 2007). Thus, the hedge funds are a source of concerns for regulators in terms of investor protection, risks to financial institutions, liquidity risks, and excess volatility risks. A hedge find may die because of withdrawal of funds by investor due to significant losses or it may disappear where fraud or misreporting becomes apparent. Hedge funds pose a risk to financial institutions through their credit exposures in the form of borrowings, security transactions and counterparty in derivative trades. Because of leverage, a hedge fund might get in trouble if its assets experience a sharp drop and the market for these assets lacks liquidity so that fund cannot exit its positions. The collapse of large hedge funds, in particular, may have serious implications for financial institutions having exposure to these funds. The liquidity risk arises from the ability of hedge funds to move out of trades quickly when prices turn against them. The problem could be serious if too many funds have set up the same trade. Hedge funds may also create excess volatility risks by making trades leading to overreaction of prices to diverge from fundamental values.

The risks discussed above are crucial from the financial stability point of view. According to Eichengreen and Mathieson (1999), from the perspective of international markets, a vital question about hedge funds is whether they destabilise foreign exchange markets through steering herd behaviour and by joining a generalised move against a weakening currency. Empirical evidence is inconclusive regarding the role of hedge funds in creating destabilising conditions. Hedge funds have been charged to have played a pivotal role in the 1997-98 crisis in emerging markets. Eichengreen and Mathieson (1999), however, conclude that the positions taken by hedge funds were too small to create turmoil in the region. Moreover, the *baht* was the only Asian currency for which the hedge funds collectively took significant short positions. The spread of currency instability to other Asian countries appears to have caught the hedge funds off guard. According to market participants, the main short sellers in Indonesia, Malaysia, and the Philippines were money centre, commercial and investment banks and domestic investors, who were better able to short due to their superior access to inter-broker markets and domestic credit. The huge losses of Long Term Capital Management (LTCM), a large hedge fund in the US, were, however, recognised by a consortium of banks as a potential disruption to financial markets which raises legitimate concerns about the activities of hedge funds in general, as well as the proper role that regulators should play with respect to those activities (SEBI, 2004).

References:

Eichengreen, B. and Mathieson, D. (1999), Hedge Funds: What Do We Really Know? *Economic Issues*, No. 19, International Monetary Fund.

Stulz, R.M. (2007), Hedge Funds: Past, Present and Future; *Journal of Economic Perspectives*, vol. 21 no. 2.

Ubide, A. (2006), Demystifying Hedge Funds; Finance and Development; June, Vol. 43, no. 2.

SEBI (2004), Policy options permitting Foreign Hedge Funds to Access Indian Securities Market; www.sebi.gov.in

Government of India (2005), Report of the Expert Group on Encouraging FII Flows and Checking the Vulnerability of Capital Markets to Speculative Flows; www.finmin.nic.in

6.129 The large scale withdrawal by the so-called 'carry trade' in which investors borrowed at low rates in Japan and lent at higher rates in the US and some other countries also resulted in sharp increase in volatility in foreign exchange markets (Box VI.10).

6.130 The recent financial developments could have an adverse impact on the outlook of the US economy. The housing demand could slow down due to decline in house prices, availability of credit and tightening of lending standards. Therefore, slowdown in the housing sector could have direct impact on consumption expenditure and the GDP growth. If the decline in housing prices occurs in the background of rising unemployment, the risk could be significant. Since the tightening of credit conditions has the potential to intensify the housing correction and to restrain economic growth more generally, the FOMC cut its target for the federal funds rate by 50 basis points to 4.75 per cent on September 18, 2007 and further by 25 basis points on October 31, 2007. The discount rate was also cut by 50 basis points each on August 17, 2007 and September 18, 2007 to 5.25 per cent to improve market liquidity. The recent cut in fed fund rate has given a significant impetus to financial markets the world over.

6.131 Insofar as India is concerned, the recent developments in the international financial market have not had any significant impact on the Indian financial markets. Conditions in the money and the Government securities markets in India remained orderly. The credit market also continued to function normally. Although pressure on the rupee in the foreign exchange market was felt in the mid-August 2007, the bid-ask spreads remained narrow suggesting that there was no uncertainty or panic. Some, impact, however, was felt on the equity market. FIIs, which were investing heavily before the onset of crisis in the US sub-prime mortgage market in July 2007, turned net sellers thereafter. Between July 27, 2007 and August 14, 2007, FIIs pulled out US $ 966.8 million (Rs.3920.9 crore). This led to some decline in the equity markets in India. The decline in the equity market in India, however, was lower than several advanced and other emerging market economies. The equity markets in India, however, have since recovered to reach new highs on the back of support by FIIs, which made large investments after mid-August 2007. The rupee has also appreciated to some extent due to large capital inflows.

6.132 Insofar as banks are concerned, a distinction needs to be made between banks having only domestic operations and banks with overseas operations. Banks with domestic operations do not have much foreign exchange exposure as there are prudential limits for banks for investing overseas. Banks are allowed to lend only for overseas joint ventures. However, insofar as the banks with overseas operations are concerned, some Indian banks do have exposure to credit derivatives and there could be losses due to mark to market impact. However, such exposure is very limited and no Indian bank has direct exposure to the US sub-prime market. The Reserve Bank has been sensitising banks and other market participants about uncertainty in the financial markets.

6.133 At this stage, it is difficult to make any definite observation as to how the present problem would evolve in future. However, should the current sub-prime mortgage crisis in the US aggravate, its impact on the Indian markets may not be significant. In particular, FIIs manifest a

Box VI.10: Carry Trade

A currency carry trade is leveraged cross-currency position designed to take advantage of interest rate differential and low volatility of exchange rates. The trade involves borrowing funds at a low interest rate in one currency and buying a higher-yielding asset in another currency. The use of leverage makes these positions particularly sensitive to changes in exchange rates or interest differential. In recent years, the interest rate differential in Japan and New Zealand has been noticeable providing an opportunity of earning profits by borrowing in yen (low interest rate currency) and buy assets denominated higher interest rates currency (particularly Australia and New Zealand). There are, however, worries that a sharp reversal of carry trades could precipitate liquidity stress and affect near-term prospects of emerging market economies, should there occur a generalised search for safe haven. Some initial signs of discomfort in financial markets in February 2006 were attributed to the unwinding of carry trades. In the February 2007, downturn in markets starting from China was exacerbated by the strengthening of the yen, following the Japanese policy rate increase on February 21, 2007 which led to some unwinding of carry trade on anticipation of decline in profitability. The risks to financial stability from these developments related abrupt unwinding of carry trades which may trigger sharp assets prices and exchange rate movements.

tendency to slow down and withdraw investments creating a situation of systemic sudden stop. In the event of FIIs pulling out money to cover the losses elsewhere, this could put pressure on the equity market in the country and the exchange rate. Besides, the tightening of liquidity conditions in the international capital market may also have implications. It may not have any direct impact on the Government and the households as they do not borrow from the international capital market. It, however, may have some impact on the corporates as some of them raise resources from the international capital market. The tightening of credit conditions, therefore, could raise the cost of such borrowings in the international capital market. In the recent past, Indian corporates have also made large acquisitions overseas through leveraged buyouts. In the short run, it may not have significant impact as such acquisitions have already been tied up. However, the growing risk aversion and the tightening of liquidity condition may have some impact on future acquisitions by Indian corporates. Thus, there will be some impact. However, it may not be significant.

6.134 Withdrawal by FIIs on a large scale may also have implications for the domestic liquidity conditions and interest rates with attendant implications for the cost of borrowing by all the market participants, including Government. However, it would be the endeavour of the Reserve Bank to use all instruments available at its command flexibly to maintain orderly conditions in the financial markets. The Reserve Bank has put in place a mechanism to closely monitor the current volatility in the global financial markets and its impact on the Indian financial markets. The monitoring is being carried out real time of the various segments of the financial market. Its current focus is on appropriate response, if and when necessary, to evolving developments in the various segments of the financial market. It has processes and tools in place to deal with developments and to address any systemic concerns, including payment and settlement issues. Its Financial Markets Committee (FMC) headed by Deputy Governor meets at least once daily (usually in morning) to review the market developments soon after the financial markets open. In the case of large market volatility, special FMC meetings are convened where the FMC in its expanded form acts as a Crisis Management Group (CMG) and maintains contacts with other regulators and exchanges.

Global Financial Imbalances

6.135 Global imbalances also pose risks to financial stability in view of concerns over sustaining the financing flows needed to support such imbalances. The current account deficit of the US widened further between 2004 and 2006 from US $ 640 billion (5.5 per cent of GDP) to US $ 812 billion in 2006 (6.2 per cent of GDP). Although the US current account deficit moderated somewhat in the first quarter of 2007 at US $ 770 billion (at an annual rate), it continues to be a cause of concern.

6.136 The current account deficit of the US, which is more than 6.0 per cent of GDP, is currently financed by fixed-income inflows including US Treasury bonds, agency bonds, and corporate bonds. One of the major factors supporting the financing pattern of US current deficit is the accumulations of official exchange reserves by several countries. The estimates by the IMF indicate that narrowing the ratio of current account deficit to GDP of the US by one per cent would require a real depreciation of US dollar in the range of 10 to 20 per cent[12]. For the sustainability of the growth process in the surplus countries would require rebalancing of aggregate demand with pick up in domestic demand. The large US current account deficit cannot persist indefinitely because its ability to make debt service payments and the willingness of foreigners to hold US assets in their portfolios are both limited[13].

6.137 Should there be disorderly adjustments of global financial imbalances, it would have serious implications for the global economy and financial markets. Such an event could be caused by large portfolio adjustments resulting in sharp adjustment in exchange rates, liquidity shifts, interest rates and adjustment in assets prices. The changes in asset prices will influence capital flows which, in turn, would have impact on liquidity conditions and financial stability.

[12] IMF (2007), 'World Economic Outlook Update', July; www.imf.org.

[13] Bernanke, B.S. (2007), 'Global Imbalances; Recent Developments and Prospects', September, www.federalreserve.gov.

6.138 India, like many other emerging market economies, could be adversely affected by the sudden unwinding of global financial imbalances. However, the impact could be different on different sectors such as the Government, the corporate sector and the banking system.

6.139 First, the Government of India does not raise resources from the international capital market to finance its fiscal deficit. There could, however, be the spill-over impact of external developments on domestic interest rates. To the extent there is a rise in domestic interest rates, there could be an increase in the cost of borrowings raised by the Government. However, most of the outstanding debt is at fixed rates and not on floating rates. Therefore, the rise in the borrowing cost of the Government will be incremental.

6.140 Second, spreads on corporate debt might widen suddenly due to a shift in investor confidence in the global financial markets. Indian corporates raise resources from the international capital market, as alluded to earlier. The cost of borrowings for corporate may also go up due to hardening of interest rates in the domestic market. Thus, corporates may be affected to the extent interest rates firm up in the domestic market, depending on their exposure to debt relative to other liabilities.

6.141 Third, banks in India hold substantial investments in Government and other fixed income securities. However, most of such investments are in 'held to maturity' category. Thus, increase in domestic interest rates, would entail marked-to-market losses only on the small part of investments. Also, the banking sector, on the whole, is comfortably placed with CRAR of around 12 per cent. At individual banks level, 79 out of 82 banks have CRAR above 10 per cent. Thus, banks in India, in general, have the resilience to withstand some rise in interest rates.

6.142 Fourth, banks in India have also been extending credit for investment in the asset market. Like many other economies, asset prices in India have also risen sharply in recent years. Should there be a sharp decline in asset prices, banks' balance sheets would be exposed to credit risk. Increase in interest rates in general could impact housing prices and expose the balance sheet of the households to interest rate risk, leading to some loan losses for banks. Having said that, the banking sector's exposure to housing loans, at present, is not very large in relation to their overall portfolio and banks, in general, have maintained healthy margins while lending to the housing sector. Therefore, the impact on banks' balance sheets might be muted.

6.143 Finally, disorderly readjustment of currencies could also have implications for the real sector. Significant readjustment of currencies and rise in interest rates could adversely impact the spending in advanced economies, which, in turn, could slow down global growth. This would entail a reduction in export opportunities and reduction in investment demand for India. While readjustment of currencies may have some impact, the Indian economy is largely domestic demand driven. Also, India's export basket is fairly well diversified. As such, the overall impact on the Indian economy may not be significant.

Risks of Asset Price Adjustments

6.144 Assets price movements in the global financial markets have assumed greater importance in recent years, particularly from the financial stability point of view. The large institutional investors are acquiring cross-border assets denominated in foreign currencies in increasing volumes. Though the assets denominated in foreign currencies are subject to additional risk of exchange rate variation, international investors buy these assets because of higher returns. The returns could vary across countries due to differential interest rates or faster appreciation of assets in some countries. The differential interest or appreciation rate sometimes outweighs the exchange rate risk or in some cases exchange rates may move favourably for international investors in respect of some currencies. In such cases, the flow of capital in higher return countries could increase in an unsustainable manner and lead to further rise in assets prices in these countries to the levels inconsistent with demand-supply conditions. Assets prices in such situations become vulnerable to shocks creating an unsettled environment in the financial markets. Depending upon the extent of increase in prices beyond demand-supply conditions and nature of shock, the adjustments in asset prices could be detrimental to financial stability. In particular, a

Box VI.11: Systemic Sudden Stop

A large, unexpected and widespread collapse in capital flows that is often unrelated to the economic fundamentals of a country and is usually highly damaging for the economic activity in the affected country is often described as sudden stop. The concept of 'sudden stop' was popularised by Guillermo A. Calvo who argued that the many countries witness large capital inflows mainly because of external factors such as benign global environment and low interest rates. If these external factors were to change, investment in emerging market countries - whether moderate or profligate - could suddenly reverse direction of flow. Subsequently, several crises were dubbed as 'sudden stop' (James, 2007). Sometimes, the phenomenon is abbreviated as '3S', for systemic sudden stop, to emphasise the widespread nature of the problem during crises.

Although decline in capital inflows invariably impacts the real economy, the incidence of crisis and the extent of decline in output vary across countries depending upon economic structure, exposure to shocks, institutions and policies. Historically, the economies characterised by 'original sin', *i.e.*, gold or foreign currency denominated external and internal debt, were found to be more vulnerable to 3S (Bordo, 2007).

Calvo, Izquierdo and Talvi (2007) concluded that problem of sudden stop of capital inflows and financial crisis could be on account of *domestic liability dollarisation (DLD)* and large current account deficit (CAD) as a share of output. DLD is defined as domestic banks' foreign exchange-denominated loans as a share of GDP, and it is a risk factor because 3S are associated with large real devaluations, increasing the chances that foreign exchanges denominated loans will be defaulted. On the other hand, the CAD (as a share of the domestic production of tradables) is also a risk factor because a 3S typically leads to a sharp current account adjustment which is likely to bring about large changes in relative prices when output of tradables is small. This will affect real exchange rate and financial markets. The crises which could be characterised as sudden stop problem include Tequila crisis (Argentina, 1995; Mexico, 1995; and Turkey, 1995), East Asian crisis (Indonesia, 1998; Malaysia, 1998; and Thailand 1998), the Russian crises of the late 1990s and the Latin American debt crises of the 1980s (Argentina, 1982; Brazil, 1983; Chile, 1983; Mexico, 1983; Peru, 1983; Venezuela, 1983; and Uruguay, 1984).

References:

Calvo, G.A., Izquierdo, A. and Talvi, E. (2006), Phoenix Miracles in Emerging Markets : Recovering without Credit from Systemic Financial Crisis*; BIS Working Paper No.221*; www.bis.org.

Bordo, M.D. (2006), Sudden Stops, Financial Crises and Original Sin in Emerging Countries: Déjà vu? Paper presented at the Conference: *Global Imbalances and Risk Management: Has the Centre become the Periphery*? Madrid, Spain, May 16-17 2006.

James L. R. (2007), A Master of Theory and Practice; *Finance and Development*, IMF; March 2007, 44(1).

sharp adjustment in assets prices could lead to reversal of capital flows, liquidity crisis and sharp exchange rate adjustments (Box VI.11). This may also affect balance sheets of banks and financial institutions depending upon their exposure to these assets. In the recent period, in several countries the increased demand has far exceeded the availability of domestic financial assets leading to a sharp increase in asset prices, rapid credit growth and currency appreciation[14].

6.145 The equity market in India has also risen sharply in the last few years. In the current year, the benchmark BSE sensex increased by 48.4 per cent over end-March 2007 and 74.6 per cent over end-March 2006. The rally has been fuelled, among others, by FIIs investments. Net investments by FIIs during 2007-08 so far (up to October 19, 2007) have been of the order of US $ 15.1 billion, about 163 per cent higher than that during the whole of 2005-06. Although the macroeconomic fundamentals are strong as also corporate earnings, large demand by FIIs, given the limited supply of domestic assets, is putting pressure on the equity valuations. The P/E ratio, which was 18.6 in February 2006, rose to 22.6 by end-September 2007.

6.146 Recent developments in the international financial markets have raised several issues. In particular, it has brought to fore the way banks assess and monitor the risks. Banks are inherently exposed to liquidity risk. However, the severity of liquidity risk faced by banks in the recent crisis has underlined the need to manage the liquidity risk more carefully and integrate the liquidity risk with the overall risk assessment. This has also exposed the deficiencies of the Basel II framework, which captures credit risk, market risk and operational risk but ignores liquidity risk. This apart, there are several other issues that would need to be addressed to ensure the smooth functioning of the financial system (Box VI.12).

[14] IMF (2007), 'Global Financial Stability Report', April 2007.

Box VI.12: Recent Global Financial Market Developments: Lessons

Credit and market risks have increased and financial markets have become more volatile in the recent period as a fall out of the sub-prime market episode. Excessive leveraging has enhanced the vulnerability of the global financial system. Large changes in liquidity conditions are obscuring assessment of risks with attendant uncertainty.

In order to strengthen the financial system against future strains, several lessons for both the private sector and the regulators and supervisors could be drawn. Although the full impact of the recent episode is not yet known and it is early to make definitive conclusions, several areas will require increased attention. The major lessons, which can be drawn, are as follows:

(i) The smooth running of banks, financial institutions and financial markets depends crucially on trust and credibility along with the availability of transparent information. The transparency of the distribution of risks across the financial system has tended to decrease, thus, presenting the official agencies with the question of how it might be possible to increase this transparency again. Much of the recent discussion on hedge funds has revolved around this point. Accurate and timely information about underlying risks is a critical component in the market's ability to differentiate and properly price risk. This would include both qualitative and quantitative information about how risks are managed, valued, and accounted for, especially in areas of risk transfer. Greater transparency is also needed on links between systemically important financial institutions and some of their off-balance sheet vehicles. However, given the volume and complexity of the information and the cost of providing it, it will be important to carefully consider the appropriate amount and type of disclosure needed to ward off such episodes in future.

(ii) While securitisation and financial innovations have, through enhanced risk distribution, made markets more efficient, their role in the current situation may have to be better understood. The relationship between checks and balances throughout the supply chain of structured products may require some rethinking. Thus, while evaluating the stability situation in future, it will be even more important than in the past to combine a proper examination and assessment of new instruments, with an analysis of the behaviour of new market participants. This would appear to be the best way to deal with the fact that the financial system is not only expanding but also becoming increasingly complex.

(iii) There is a need also for examinining risk analysis of credit derivatives and structured products and the role of rating agencies. Notwithstanding the important role of ratings and ratings agencies in the functioning of financial markets, there is some concern about the rating methodology of complex products, particularly when securities, with very different structures, assumptions, and liquidity characteristics receive the same ratings.

(iv) The issue of valuation of complex products in the context of a market where liquidity is insufficient to provide reliable market prices also needs to be examined. Investors may have to consider the associated liquidity aspects and include an appropriate liquidity risk "premia" as part of the price, when purchasing complex products. Financial institutions holding such securities as collateral will also have to assign a 'haircut' to factors in liquidity characteristics.

(v) The relevant perimeter of risk consolidation for banks has proved to be larger than the usual accounting or legal perimeters. For instance, (a) reputational risk may force banks to internalise losses of legally independent entities; and (b) new instruments or structures may mask off-balance sheet or contingent liabilities. The result is that risks that appear to have been distributed may yet return in various forms to the banks that distributed them. The relevant perimeter is not only an issue for supervisors, but also for the financial institutions themselves-their risk managements systems, audit processes and internal oversight and governance structures.

(vi) Policymakers also face a delicate balancing act as they must establish frameworks that encourage investors to maintain high credit standards and strengthen risk management systems in better times as well as bad times. There is also a need for maintaining enhanced vigilance to be able to respond appropriately to the prevailing heightened uncertainties in global financial and monetary conditions.

(vii) There is a need to generate more objective information on the market value of collaterals, especially in situations where collaterals are not fully marked to market since such information may not be available on an ongoing basis. The crisis also raised the issue as to whether there are limits to marking to market certain kinds of assets whose values are not available on a high frequency basis.

(viii) Various market segments have become highly integrated as the problem which originated in the credit markets spread quickly to money markets and debt markets. This underlined the need for strengthening the oversight of financial markets in advanced countries. Also, while financial markets are becoming increasingly global, regulation of financial markets continues to be national. This deficiency needs to be addressed.

The Reserve Bank has put in place appropriate safeguards to ensure financial stability taking account of the prevailing governance standards, risk management systems and incentive frameworks in banks. These progressive policies have contributed to both efficiency and stability of the financial system.

References:

IMF, (2007), Global Financial Stability Report, September.

Mohan, Rakesh, (2007), Recent Financial Market Developments and Implications for Monetary Policy; www.rbi.org.in.

Remsperger, Hermann, (2007), Current Financial Stability from a European View Point, Deutsche Bundesbank, June.

Dodge, David, (2007), Turbulence in Credit Markets – Causes, Effects and Lessons to be Learned:, Bank of Canada, September.

Morel, Philippe *et al* (2007), The Subprime Crisis: Do not Ignore the Risk; The Boston Consulting Group.

7. Overall Assessment

6.147 The Reserve Bank has been initiating several measures to strengthen the financial sector in line with the international best practices, adapted appropriately to suit the domestic conditions. These efforts have resulted in a strong, dynamic and resilient banking sector in India. The Indian banking system now compares well with the global standards in terms of operational efficiency and soundness indicators. Various initiatives undertaken have also improved the depth and liquidity of the various segments of the financial market. The institutional measures and the use of state-of-art technology have improved the efficiency of the payment and settlement systems. The introduction of RTGS has reduced a major source of systemic risk.

6.148 The profitability of the banking sector has shown remarkable resilience in the last few years. Banks have remained profitable, despite upturn in interest rate cycle. An analysis of various components of income and expenditure shows that banks in India earn most of their income from sustainable core business sources, which reflect the strength of their earnings.

6.149 Unlike in the last few years, fresh slippages during the year were more than the recovery of NPAs. However, the NPAs ratio (gross NPAs and net NPAs as percentage of gross/net loans and advances) declined and banks are comfortably placed with regard to their asset quality. The capital position of the banking sector continues to be strong as their capital funds are able to keep pace with the increase in risk-weighted assets. Banks continue to maintain significantly higher CRAR than the stipulated norm of 9 per cent. At end-March 2007, 79 banks (of 82 commercial banks) maintained CRAR at 10 per cent and above and two banks had CRAR in the range of 9-10 per cent. Only one bank had CRAR less than the stipulated norm. Thus, banks in India, in general, are well positioned to meet the Basel II capital requirements which will come into force for all banks from the year ending March 2009. This will improve the risk management in the banking sector.

6.150 There are, however, some short to medium term risks to which banks are exposed. Of the two major sources of risks faced by banks, *viz*., credit risk and market risk, banks will continue to face benign credit risk environment in the near future. Banks, however, face some degree of market risk, although they have reduced their exposure to market risk over the years.

6.151 Benign credit risk environment in the near term stems from the robust macroeconomic indicators of the economy. The growth rate of real GDP averaged 8.6 per cent during the last four years and the growth is expected to remain robust during 2007-08; the growth in Q1 of 2007-08 was strong at 9.4 per cent. The industrial sector continues to maintain its growth momentum, notwithstanding some slowdown in July and September 2007. Various leading indicators of the services sector suggest that it would continue to register strong performance. Inflation rate has declined to 3.1 per cent from the peak of 6.7 per cent in January 2007 and 5.9 per cent at end-March 2007. However, the present low rate of inflation may come under pressure due to renewed rise in crude oil prices. The consumer price inflation has moderated in September (y-o-y), although it continues to be at elevated level. International crude oil prices have gone up by about 53 per cent since last February 2007 when the administered domestic oil prices were reduced. Should international crude oil prices rise further, domestic oil prices might have to be raised, which could have implications for domestic inflation. Nonetheless, inflation is expected to be within tolerable limits in the near future. The Indian external sector continues to be a source of major strength. Although trade deficit widened considerably in 2006-07 and first quarter of 2007-08, invisibles continued to offset a large part of the trade deficit. Besides, India continues to receive large capital inflows resulting in sharp accretion to foreign exchange reserves. Indian financial markets in the recent times have shown remarkable degree of resilience to several adverse recent international developments. Interest rates in India have hardened and the spread between AAA rated corporate bonds and the risk free Government bonds has widened. However, financial conditions, on the whole, continue to remain comfortable. The domestic capital market is witnessing buoyant conditions and the corporates also have the flexibility to raise resources from the international capital market. The corporate sector has experienced long stretch of high profitability. Given the robust macroeconomic situation, it is expected that the corporates would continue to experience high

profitability in the near future. The credit expansion continues to be robust, although there has been some moderation. Credit growth to the real commercial estate sector has decelerated, but still remains very high. Owing to rapid credit expansion of the last few years, it is possible that banks experience high delinquency rate in the near future. This combined with the slowdown of credit might lead to rise in the NPA ratios of banks in the coming years. However, such rise is not expected to be significant and on the whole, credit risk environment would continue to be benign.

6.152 Banks, however, are exposed to some degree of market risk in the near term. The major source of such risk is the financial markets. Recent developments in the US sub-prime mortgage market have caused volatility and uncertainty in financial markets. Although global financial imbalances have eased, they continue to be a cause of concern. Should there be any disorderly adjustments in the financial markets, it may have implications for the banking sector through changes in interest rates and liquidity shifts. Sharp rise in interest rates may result in marked to market losses on the investment portfolio of banks. It is, however, significant to note that investment portfolio of banks as percentage of total assets declined sharply to 27.5 per cent at end-March 2007 from 31.1 per cent at end-March 2006 and 36.9 per cent at end-March 2005. Sharp rise in interest rates would also have some impact on housing prices and may expose the balance sheet of households to interest rate risk. This may have adverse impact on the balance sheet of banks through increase in loan losses.

6.153 Banks in India have only modest direct and indirect exposure to the equity market. In the event of decline in the equity market, some of the advances extended by banks for investment in the equity market might be impaired. Although decline in the equity market can cause both loan losses and capital losses, banks may not be seriously impacted by any adverse development in the equity market due to their limited exposure. However, sharp adjustments in the real estate prices might have some implications for the balance sheet of the banking sector.

6.154 To sum up, macroeconomic outlook in the near future remains favourable and this would continue to have positive impact on the credit risk environment. However, rapid credit growth of the past three years might lead to higher slippages of NPAs in the loan portfolio of banks. Banks are exposed to market risk, although the extent of exposure to such risks has declined significantly in recent years. In some cases, market risk faced by market participants might also crystallise as credit risk in the books of banks. Banks, however, have resilience to withstand any adverse development in financial markets. Banks' profitability has improved and their capital position continues to remain strong. The banking system, thus, has the wherewithal to cope with the situation arising out of any adverse development. Strong domestic growth would continue to have a positive impact on the balance sheet of the banking sector.