

Rakesh Mohan: Development of financial markets in India

Address by Dr Rakesh Mohan, Deputy Governor of the Reserve Bank of India, at the First Indian-French Financial Forum, Mumbai, 16 May 2007.

The assistance of Janak Raj, Jai Chander and Partha Ray in preparing this address is gratefully acknowledged.

* * *

I am delighted to have the opportunity of speaking on the issue of development of financial markets along with Mr. Christian Noyer, Governor of the Banque de France. He has displayed a deep commitment to the development of financial markets over the years and we heard a very thoughtful speech from him on this subject at the Reserve Bank just two days ago. His approach to financial markets is marked by a great degree of pragmatism: as we develop financial markets we need to make sure that they serve our needs, and we have to be equally conscious of the risks that they can generate if not managed well.

I welcome this opportunity to document the development of financial markets in India over the past decade and a half. With acceleration in economic growth in the country, the step up in savings and investments, and expanded horizons of market participants, along with renewed thinking on fuller capital account convertibility, discussion on financial market development has assumed a new urgency.

What are the key objectives of financial market development? From our point of view, the basic aim of financial market development must be to aid economic growth and development. The primary role of financial markets, broadly interpreted, is to intermediate resources from savers to investors, and allocate them in an efficient manner among competing uses in the economy, thereby contributing to growth both through increased investment and through enhanced efficiency in resource use.

The Reserve Bank has taken a proactive role in the development of financial markets, particularly over the past decade and a half of overall economic policy reforms. There has been a complete transformation of the money market, the government securities market, and the foreign exchange market over this period. Development of these markets has been done in a calibrated, sequenced and careful manner in step with those in other markets in the real economy. The sequencing has also been informed by the need to develop market infrastructure, technology and capabilities of market participants and financial institutions in a consistent manner. In a low income economy like ours, the cost of downside risk is very high, so the objective of maintaining financial stability has to be constantly kept in view as we develop financial markets. What I would like to do today is to briefly recount the measures taken to develop various financial markets in India, document the outcomes and broadly sketch out the direction of the way forward.

From the point of view of the central bank, developed financial markets are critical for effective transmission of monetary policy impulses to the rest of the economy. Monetary transmission cannot take place without efficient price discovery, particularly with respect to interest rates and exchange rates. Deep and liquid financial markets contribute to efficient price discovery in various segments of the financial market. Well-integrated markets improve efficacy of policy impulses by enabling quick transmission of changes in the central bank's short-term policy rate to the entire spectrum of market rates, both short and long-term, in the money, the credit and the bond markets. However, various benefits emanating from the functioning of the financial markets depend critically upon the resilience of various segments of the market to withstand shocks and the strength of the risk management systems in place. In view of the critical role played by the financial markets in financing the growing needs of various sectors of the economy, it is important that financial markets are developed further and well-integrated.

In recognition of the critical role of the financial markets, the initiation of the structural reforms in the early 1990s in India also encompassed a process of phased and coordinated deregulation and liberalisation of financial markets. Financial markets in India in the period before the early 1990s were marked by administered interest rates, quantitative ceilings, statutory pre-emptions, captive market for government securities, excessive reliance on central bank financing, pegged exchange rate, and current and capital account restrictions. As a result of various reforms, the financial markets have transited to a regime characterised by market-determined interest and exchange rates, price-based instruments of monetary policy, current account convertibility, phased capital account liberalisation and an auction-based system in the government securities market.

Excessive fluctuations and volatility in financial markets can mask the underlying value and give rise to confusing signals, thereby hindering efficient price discovery. Accordingly, policy efforts have also aimed at ensuring orderly conditions in financial markets. Furthermore, deregulation, liberalisation, and globalisation of financial markets pose several risks to financial stability. Financial markets are often governed by herd behaviour and contagion and excessive competition among financial institutions can also lead to a race to the bottom. The East Asian crisis of the 1990s suggested that global financial markets can exacerbate domestic vulnerabilities. Notwithstanding the conventional wisdom that financial markets punish deviations from prudent policies, financial markets, at times, seem to tolerate imprudent behaviour for a remarkable stretch of time, while reacting pre-maturely at other times (Lipschitz, 2007). In recognition of these possible destabilising factors, while liberalising domestic financial markets in India, appropriate prudential safeguards have also been put in place. Enhancing efficiency, while at the same time avoiding instability in the system, has been the challenge for the regulators in India (Reddy, 2004). This approach to development and regulation of financial markets has imparted resilience to the financial markets.

From the point of view of the economy as a whole, while developing financial markets it is essential to keep in view how such development helps overall growth and development. The price discovery of interest rates and exchange rates, and the integration of such prices across markets helps in the efficient allocation of resources in the real sectors of the economy. Financial intermediaries like banks also gain from better determination of interest rates in financial markets so that they can price their own products better. Moreover, their own risk management can also improve through the availability of different varieties of financial instruments. The access of real sector entities to finance is also assisted by the appropriate development of the financial market and the availability of transparent information on benchmark interest rates and prevailing exchange rates. The approach of the Reserve Bank in the development of financial markets has been guided by these considerations, while also keeping in view the availability of appropriate skills and capacities for participation in financial markets both among financial market participants and real sector entities and individuals.

The Reserve Bank's approach has therefore been one of consistent development of markets while exercising caution in favour of maintaining financial stability in the system.

Money market

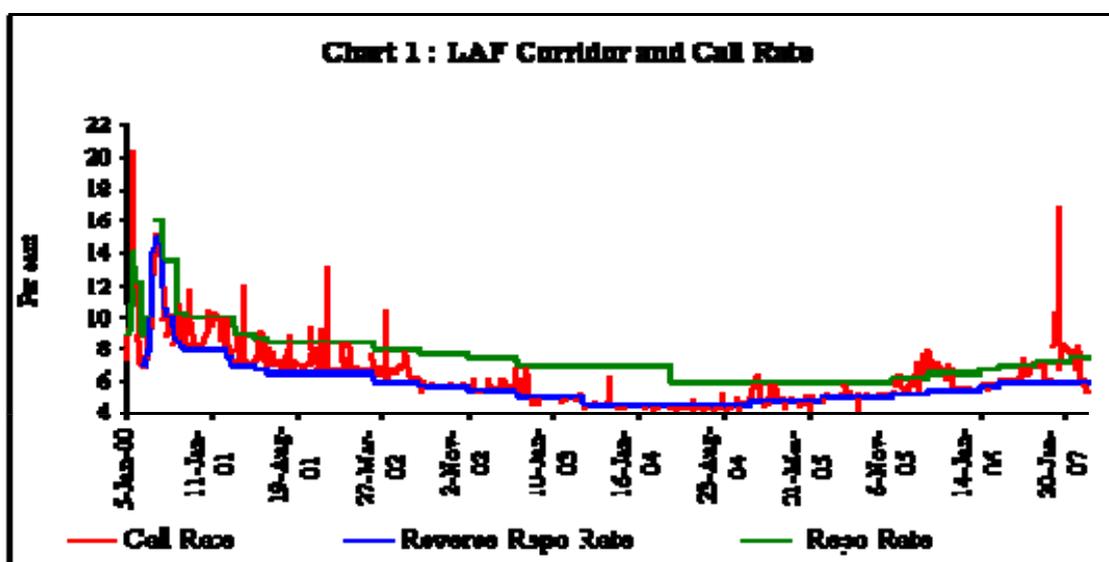
The Reserve Bank has accorded prime attention to the development of the money market as it is the key link in the transmission mechanism of monetary policy to financial markets and finally, to the real economy ([Annex I](#)). In the past, development of the money market was hindered by a system of administered interest rates and lack of proper accounting and risk management systems. With the initiation of reforms and the transition to indirect, market-based instruments of monetary policy in the 1990s, the Reserve Bank made conscious efforts to develop an efficient, stable and liquid money market by creating a favourable policy environment through appropriate institutional changes, instruments, technologies and market practices. Accordingly, the call money market was developed into primarily an inter-bank market, while encouraging other market participants to migrate towards collateralised segments of the market, thereby increasing overall market integrity.

In line with the objective of widening and deepening of 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. Furthermore, issuance norms and maturity profiles of other money market instruments such as commercial paper (CP) and certificate of deposits (CDs) have been modified over time to encourage wider participation while strengthening the transmission of policy signals across the various market segments. 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. This has been complemented by the institutionalisation of the Clearing Corporation of India Limited (CCIL) as a central counterparty. The upgradation of payment system technologies has also enabled market 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.

These policy initiatives over time have led to the development of a relatively deep, liquid and vibrant money market in the country. Activity in all the segments has increased significantly, especially during the last three years. With the development of market repo and CBLO segments, the call money market has been transformed into a pure inter-bank market from August 2005. A recent noteworthy development is the substantial migration of money market activity from the uncollateralised call money segment to the collateralised market repo and CBLO markets. Thus, uncollateralised overnight transactions are now limited to banks and primary dealers in the interest of financial stability (Table 1).

Volatility in call rates has declined over the years, especially after the introduction of the Liquidity Adjustment Facility (LAF). 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. The weighted average overnight rate has largely moved within the corridor set by LAF rates, barring some occasions, especially in recent months (Chart 1).

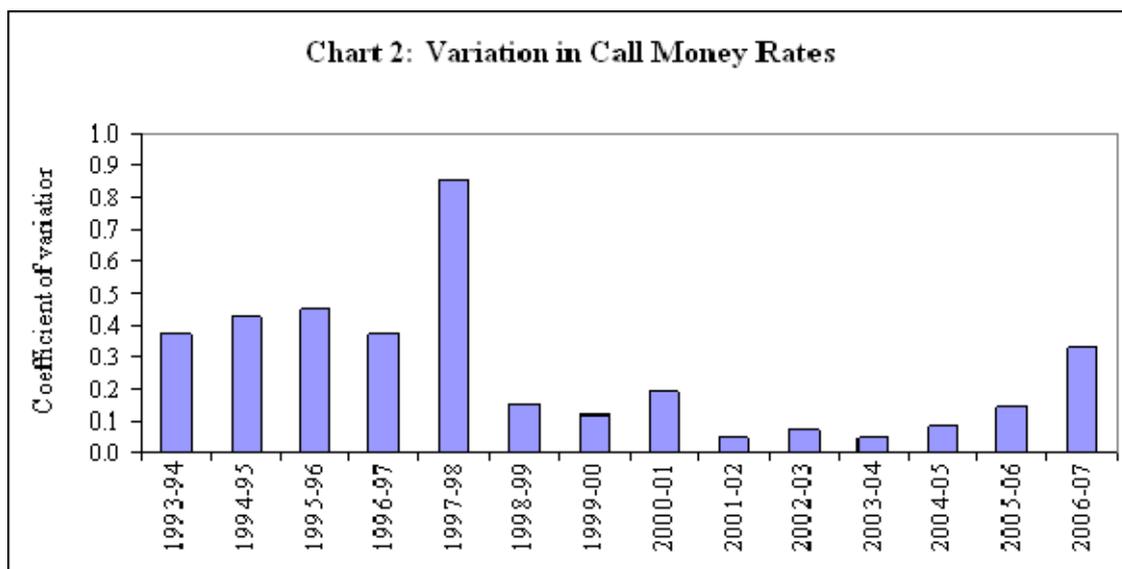


The operating framework of monetary policy has been the maintenance of overnight market rates within an interest rate corridor defined by the floor of the reverse repo (absorption) rate and ceiling of the repo (injection) rate. During periods of system wide excess liquidity, overnight rates tend to hug the bottom of the corridor, while touching the ceiling during other periods of liquidity shortage, as might be expected. Increased volatility in capital flows, tending to inject excess liquidity into the system, and in government cash balances resulting from bunching of tax payments that suck liquidity out of the system, have made the task of liquidity management somewhat more difficult over the past year. Consequently, volatility in overnight rates has increased in recent months relative to previous years, with overnight rates breaching both ends of the corridor.

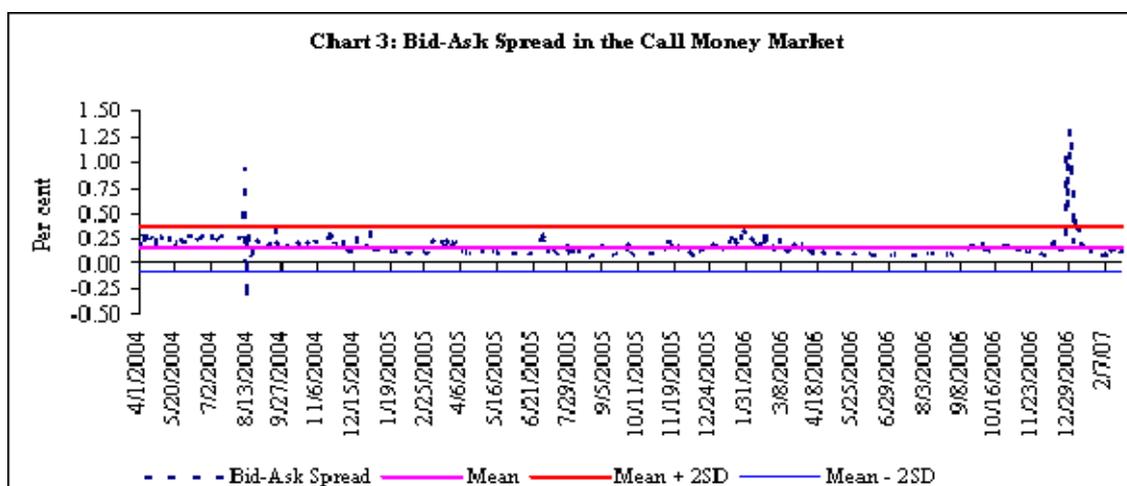
| Table 1 : Activity in Money Market Segments | | | | | | | |
|---|--------------------------|--------------------------------|--|-------------------|----------------------------------|--------------------|-------------------------|
| (Rupees crore) | | | | | | | |
| Year | Average Daily Turnover # | | | | Money Market - Total (2 to 5) | Outstanding Amount | |
| | Call Money Market | Market Repo (Outside the LAF)* | Collateralised Borrowing and Lending Obligation (CBLO) | Term Money Market | | Commercial Paper | Certificates of Deposit |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1997-98 | 22709 | - | - | - | 22709 | 1500 | 14296 |
| 1998-99 | 26500 | - | - | - | 26500 | 4770 | 3717 |
| 1999-00 | 23161 | 6895 | - | - | 30056 | 7014 | 1908 |
| 2000-01 | 32157 | 10500 | - | - | 42657 | 6751 | 1199 |
| 2001-02 | 35144 | 30161 | - | 195 | 65500 | 7927 | 949 |
| 2002-03 | 29421 | 46960 | 30 | 341 | 76752 | 8268 | 1224 |
| 2003-04 | 17191 | 10435 | 515 | 519 | 28660 | 7835 | 3212 |
| 2004-05 | 14170 | 17135 | 6697 | 526 | 38528 | 11723 | 6052 |
| 2005-06 | 17979 | 21183 | 20039 | 833 | 60034 | 17285 | 27298 |
| 2006-07 | 21725 | 33676 | 32390 | 1012 | 88803 | 21478 | 64954 |

: Turnover is twice the single leg volumes in the case of call money and CBLO to capture borrowing and lending both, and four times in case of market repo (outside LAF) to capture the borrowing and lending in the two legs for a repo.
* : Liquidity Adjustment Facility.

After the adoption of the full-fledged LAF in June 2000, call rates, in general, witnessed a declining trend up to 2004-05. The institution of LAF has also enabled the Reserve Bank to manage liquidity more efficiently and reduce volatility in call rates. Volatility, measured by the coefficient of variation (CV) of call rates, has declined significantly in the current decade as compared with that in the 1990s ([Chart 2](#)), with some increase in 2006-07, as already noted.



The reduction in bid-ask spread in the overnight rates indicates that the Indian money market has become reasonably deep, vibrant and liquid. During April 2004–February 2007, the bid-ask spread has varied within a range of -0.37 to +1.32 basis points with an average of 16 basis points and standard deviation (SD) of 11 basis points (coefficient of variation being 68.8). Despite a higher degree of variation, however, the bid-ask spread remained within the 2-SD band around the average during most of the period ([Chart 3](#)).



As a result of various reform measures, the money market in India has undergone significant transformation in terms of volume, number of instruments and participants and development of risk management practices. In line with the shifts in policy emphasis, various segments of the money market have acquired greater depth and liquidity. The price discovery process has also improved. The call money market has been transformed into a pure inter-bank market, while other money market instruments such as market repo and CBLO have developed to provide avenues to non-banks for managing their short-term liquidity mismatches. The money market has also become more efficient as is reflected in the narrowing of the bid-ask spread in overnight rates. The abolition of *ad hoc* Treasury Bills and introduction of Treasury Bills auction have led to the emergence of a risk free rate, which acts as a benchmark for the pricing of other money market instruments.

Government securities market

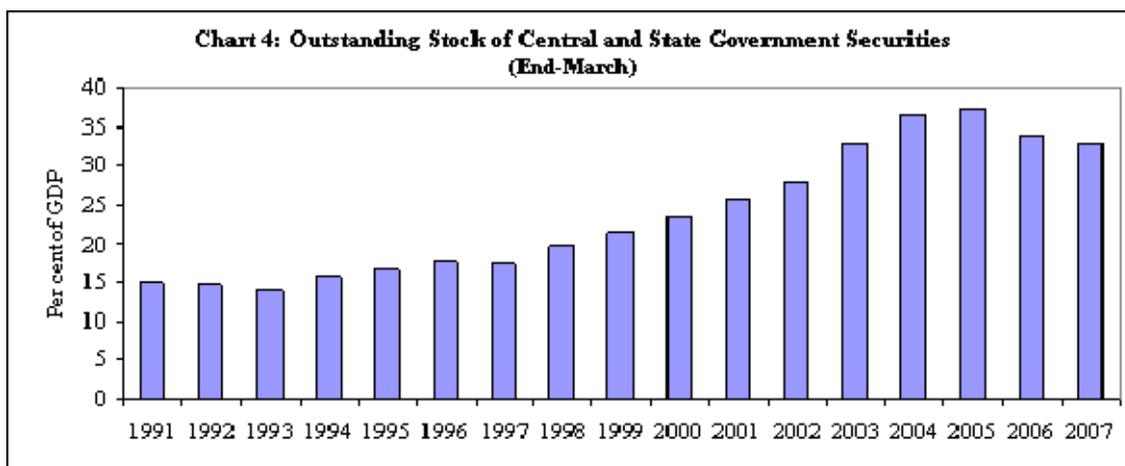
The Reserve Bank has actively pursued the development of the government securities market since the early 1990s for a variety of reasons ([Annex II](#)). First, with the Reserve Bank acting as the debt manager to the Government, a well-developed and liquid government securities market is essential to ensure the smooth passage of Government's market borrowings to finance its deficit. Second, the development of the government securities market is also necessary to facilitate the emergence of a risk free rupee yield curve to serve as a benchmark for pricing other debt instruments. Finally, the government securities market plays a key role in the effective transmission of monetary policy impulses in a deregulated environment.

In order to foster the development of the government securities market, it was imperative to migrate from a regime of administered interest rates to a market-oriented system. Accordingly, in the early 1990s, the Reserve Bank initiated several measures. First, it introduced the auction system for issuance of government securities. While initially only yield-based multiple price auctions were conducted, uniform price-based auctions were also employed during uncertain market conditions and while issuing new instruments. Second, as the captive investor base was viewed as constraining the development of the market, the statutory prescription for banks' investments in government and other approved securities was scaled down from the peak level in February 1992 to the statutory minimum level of 25 per cent by April 1997. As a result, the focus shifted towards the widening of the investor base. A network of intermediaries in the form of primary dealers was developed for this purpose. Retail participation has been promoted in the primary market (through a system of non-competitive bidding in the auctions) as well as in the secondary market (by allowing retail trading in stock exchanges). Simultaneously, the Reserve Bank also introduced new instruments with innovative features to cater to diverse market preferences, although the experience in this regard has not been encouraging.

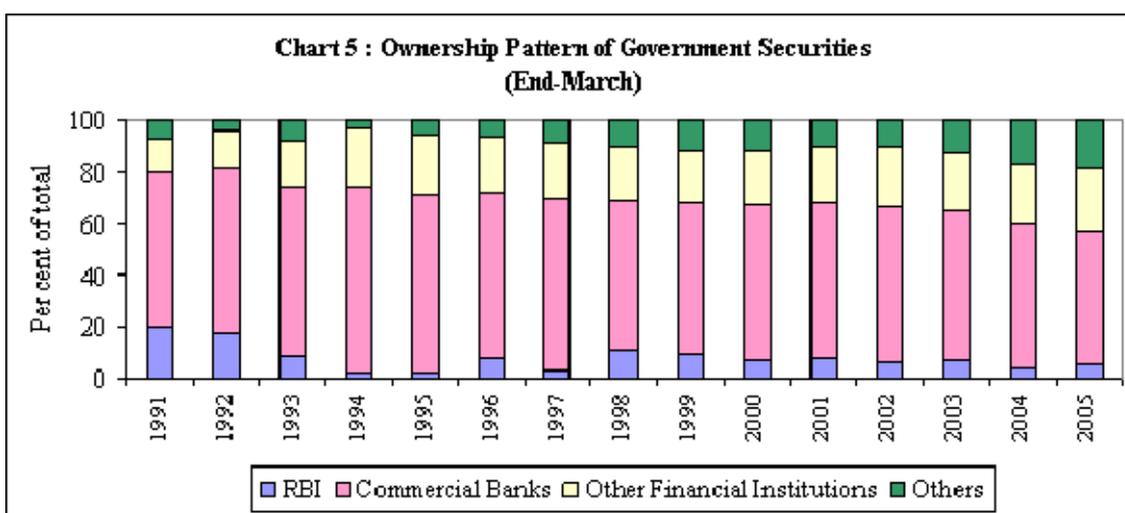
Third, with the discontinuance of the process of unconstrained recourse by the Government to the Reserve Bank through automatic monetisation of deficit and conversion of non-marketable securities to marketable securities, the Reserve Bank gained more operational freedom. Fourth, in an effort to increase liquidity, the Reserve Bank has, since the late 1990s, pursued a strategy of passive consolidation of debt by raising progressively higher share of market borrowings through re-issuances. This has resulted in critical mass in key maturities, and is facilitating the emergence of market benchmarks. Fifth, improvement in overall macroeconomic and monetary management that has resulted in lower inflation, lower inflation expectations, and price stability has enabled the elongation of the yield curve to maturities upto 30 years. Finally, the Reserve Bank has also undertaken measures to strengthen the technological infrastructure for trading and settlement. A screen-based anonymous trading and reporting platform has been introduced in the form of NDS-OM, which enables electronic bidding in primary auctions and disseminates trading information with a minimum time lag. Furthermore, with the setting up of CCIL, an efficient settlement mechanism has also been institutionalised, which has imparted considerable stability to the government securities market.

With the withdrawal from the primary market from April 1, 2006 in accordance with the FRBM (Fiscal Responsibility and Budget Management Act) stipulations, the Reserve Bank introduced various institutional changes in the form of revamping and widening of the coverage of the Primary Dealer (PD) system to meet the emerging challenges. Other measures taken to deepen the market and promote liquidity include introduction of "when issued" trading, "short selling" of government securities and active consolidation of government debt through buy backs. Various policy initiatives taken by the Reserve Bank over the years to widen and deepen the government securities market in terms of instruments as well as participants have enabled successful completion of market borrowing programmes of the Government under varied circumstances. In particular, a smooth transition to the post-FRBM phase has been ensured.

The system of automatic monetisation through *ad hoc* Treasury Bills was replaced with Ways and Means Advances in 1997, because of which the Government resorted to increased market borrowings to finance its deficit. Accordingly, the size of the government securities market has increased significantly over the years ([Chart 4](#)).



The investor base for government securities, which was largely determined by mandated investment requirements before reforms, has expanded with the voluntary holding of government securities. Accordingly, the share of commercial banks has declined from 2004-05 ([Chart 5](#)).



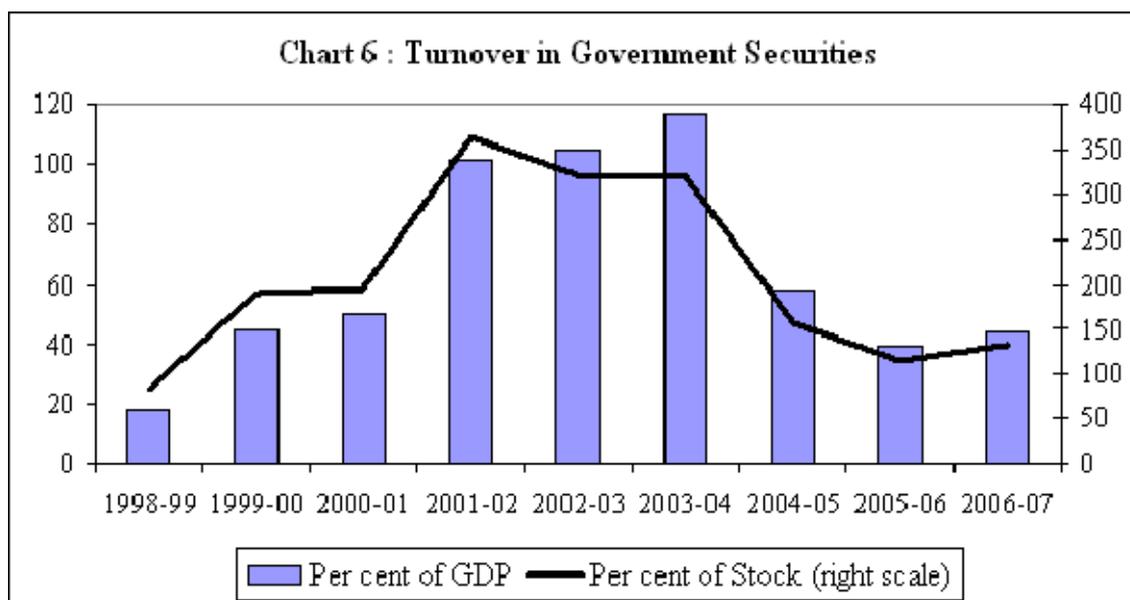
The PD system was essentially conceived for institutions whose basic interest is not to hold securities but to participate in the primary auctions with the intent to act as market makers in the secondary market. PDs are responsible for ensuring the success of primary auctions. The presence of PDs in the government securities market has brought about an element of dynamism, both in the primary and the secondary segments. PDs have been actively participating in the auctions of government securities. By providing continuous two-way quotes, PDs act as market makers in the secondary market. The liquidity in the secondary market, in turn, lends support to the success of primary market operations. The PD system has facilitated better distribution of primary auctioned stock while providing better liquidity in the secondary market ([Table 2](#)). The decline in the share of PDs in the primary issuances in the recent period needs to be seen in the context of increased bidding interest by insurance companies, particularly in the long dated securities.

| Table 2 : Role of Primary Dealers in the Government Securities Market | | | |
|---|-------------------------------|------------------------------|--|
| | | | (Per cent) |
| Year | Share in Primary Subscription | Share in Turnover (Outright) | Share of Government securities in Total Assets of PDs* |
| 1 | 2 | 3 | 4 |
| 2001-02 | 65.0 | 27.7 | 79.8 |
| 2002-03 | 58.5 | 27.0 | 83.9 |
| 2003-04 | 51.5 | 23.9 | 82.2 |
| 2004-05 | 52.9 | 28.2 | 71.5 |
| 2005-06 | 40.4 | 31.1 | 60.9 |
| 2006-07 (P) | 40.0 | 26.4 | 61.0 |

* At end-March.
Note: Data exclude devolvement but include MSS and Non-Competitive Bids.

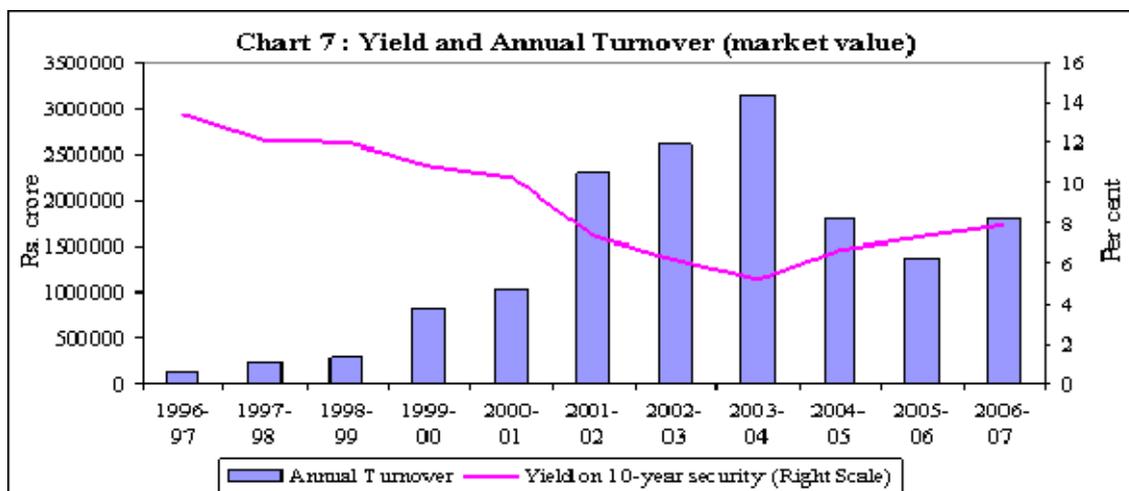
One of the key issues in the development of the market for a better price discovery is liquidity of securities. It was observed that, of the universe of a large number of outstanding securities, only a few securities are actively traded in the secondary market. The Reserve Bank has been following a policy of passive consolidation through re-issuance of existing securities with a view to enhancing liquidity in the secondary segment of the government securities market. The share of re-issuances in the total securities issued was 97.7 per cent during 2005-06. Active consolidation of government securities has also been attempted under the debt buyback scheme introduced in July 2003, which is expected to be more actively pursued now.

As a result of the developmental measures undertaken, the volume of transactions has increased manifold over the past decade ([Chart 6](#)).



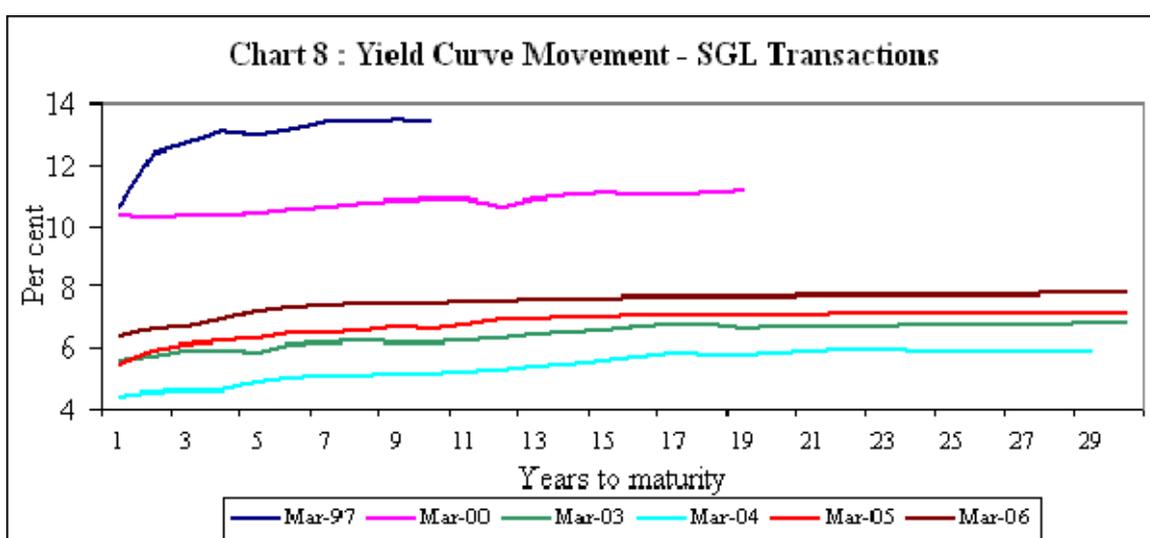
The significant drop in turnover in 2004-05 and 2005-06 could be due to a “buy and hold” tendency of the participants other than commercial banks, particularly insurance companies, which now hold a substantial portion of government securities, particularly those of longer maturities. The decline could

also be attributed to the asymmetric response of investors to the interest rate cycle. In the absence of a facility of short selling in government securities, participants generally refrained from taking positions which resulted in volumes drying up in a falling market ([Chart 7](#)).



To keep the markets liquid and active even during the bearish times, and more importantly, to give the participants a tool to better manage their interest rate risk, intra-day short selling in government securities was permitted among eligible participants, viz., scheduled commercial banks (SCBs) and primary dealers (PDs) in February 2006. Subsequently, the short positions were permitted to be carried beyond intra-day for a period of five trading days, effective January 31, 2007. To further improve the liquidity in the government securities market, guidelines for trading in when issued “WI” market were issued by the Reserve Bank in May, 2006. Trading in “WI” segment, which commenced in August 2006, was initially permitted in reissued securities. It takes place from the date of announcement of auction till one day prior to allotment of auctioned securities. The revised guidelines extending “WI” trading to new issuances of Central Government securities on a selective basis were issued in November 2006.

The Reserve Bank has followed a strategy of elongating the yield curve by issuing a fine blend of long-term securities along with the short-term to suit the preference of both the issuer and the investor. With the issuance of longer term securities, the yield curve on government securities has emerged over a spectrum of 30 years, although the yield curve is not liquid at the longer end of the maturity ([Chart 8](#)).



Thus, various measures undertaken have led to a significant improvement in the functioning of the government securities market. The primary market has attained a greater resilience, benefiting from measures taken for the development of institutions and instruments. The functioning of the

government securities market since the mid-1990s indicates consistent increase in its size in tandem with the growth in market borrowings of both the Central and the State Governments. Introduction of the auction based system has improved the price discovery process. Reflecting the effectiveness of various measures to develop the market, the turnover in the secondary market has increased manifold over the years. The establishment of settlement and trading infrastructure has also led to increased activity in the secondary market. The holding pattern of government debt shows some shift from banks to non-banks, reflecting a progressive diversification of the investor base. The yield curve on government securities has emerged even as it is yet to become liquid at the longer end of the maturity. Thus, the government securities market in India has witnessed a transition to an increasingly broad-based market, characterised by an efficient auction process, an active secondary market and a liquid yield curve. These developments have aided the smooth financing of government debt, of both the central government and state governments, even when their fiscal deficits were high and rising. This experience has enabled the greater recourse of state governments to market borrowing as mandated by the Twelfth Finance Commission.

Foreign exchange market

The Indian foreign exchange market has witnessed far reaching changes since the early 1990s following the phased transition from a pegged exchange rate regime to a market determined exchange rate regime in 1993 and the subsequent adoption of current account convertibility in 1994 and substantial liberalisation of capital account transactions ([Annex III](#)). Market participants have also been provided with greater flexibility to undertake foreign exchange operations and manage their risks. This has been facilitated through simplification of procedures and availability of several new instruments. There has also been significant improvement in market infrastructure in terms of trading platform and settlement mechanisms. As a result of various reform measures, liquidity in the foreign exchange market increased by more than five times between 1997-98 and 2006-07 ([Table 3](#)).

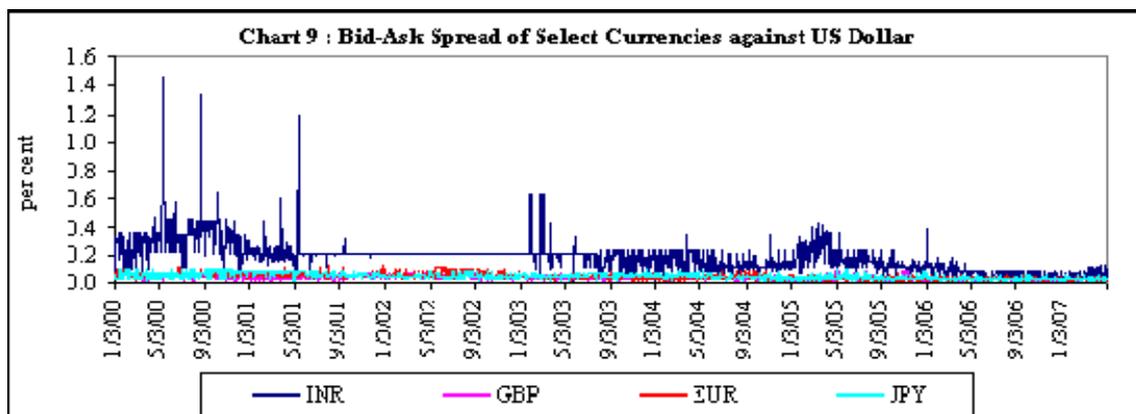
In relative terms, turnover in the foreign exchange market was 6.6 times the size of India's balance of payments during 2005-06 as compared with 5.4 times in 2000-01 ([Table 4](#)). With the deepening of the foreign exchange market and increased turnover, income of commercial banks through such transactions increased significantly. Profit from foreign exchange transactions accounted for more than 20 per cent of total profit of scheduled commercial banks in the last 2 years.

| Year | Turnover in US \$ billion | | | Share of spot turnover in per cent | | |
|-------------|---------------------------|------------|-------|------------------------------------|------------|-------|
| | Merchant | Inter-bank | Total | Merchant | Inter-bank | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1997-98 | 210 | 1096 | 1305 | 57.6 | 50.3 | 51.5 |
| 1998-99 | 246 | 1057 | 1303 | 52.9 | 49.4 | 50.0 |
| 1999-00 | 244 | 898 | 1142 | 62.3 | 50.8 | 53.3 |
| 2000-01 | 269 | 1118 | 1387 | 65.2 | 45.2 | 49.1 |
| 2001-02 | 257 | 1165 | 1422 | 64.0 | 39.8 | 44.1 |
| 2002-03 | 325 | 1236 | 1560 | 57.9 | 42.7 | 45.9 |
| 2003-04 | 491 | 1628 | 2118 | 53.1 | 48.7 | 49.7 |
| 2004-05 | 705 | 2188 | 2892 | 48.2 | 50.5 | 50.0 |
| 2005-06 | 1220 | 3192 | 4413 | 45.0 | 52.7 | 50.6 |
| 2006-07 (P) | 1787 | 4727 | 6514 | 46.2 | 54.2 | 52.0 |

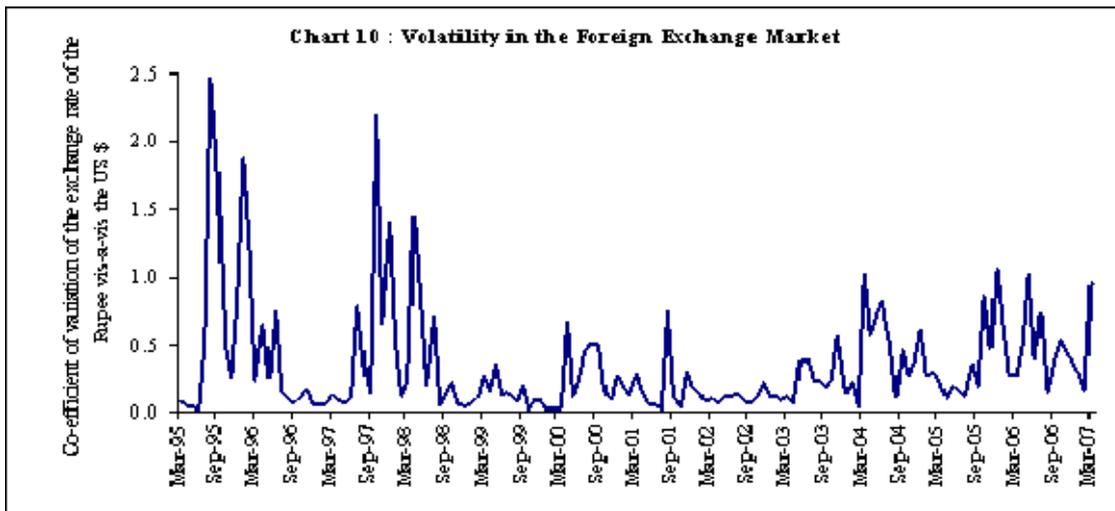
(P): Provisional

| Table 4: Size of the Foreign Exchange Market | | | |
|--|--|-----------------------|--------------------|
| Year | Foreign Exchange Market-Annual Turnover (\$ billion) | BoP size (\$ billion) | Col. 2 over Col. 3 |
| 1 | 2 | 3 | 4 |
| 2000-01 | 1387 | 258 | 5.4 |
| 2001-02 | 1422 | 237 | 6.0 |
| 2002-03 | 1560 | 267 | 5.8 |
| 2003-04 | 2118 | 362 | 5.9 |
| 2004-05 | 2892 | 481 | 6.0 |
| 2005-06 | 4413 | 664 | 6.6 |
| 2006-07 | 6514 | N.A. | N.A. |

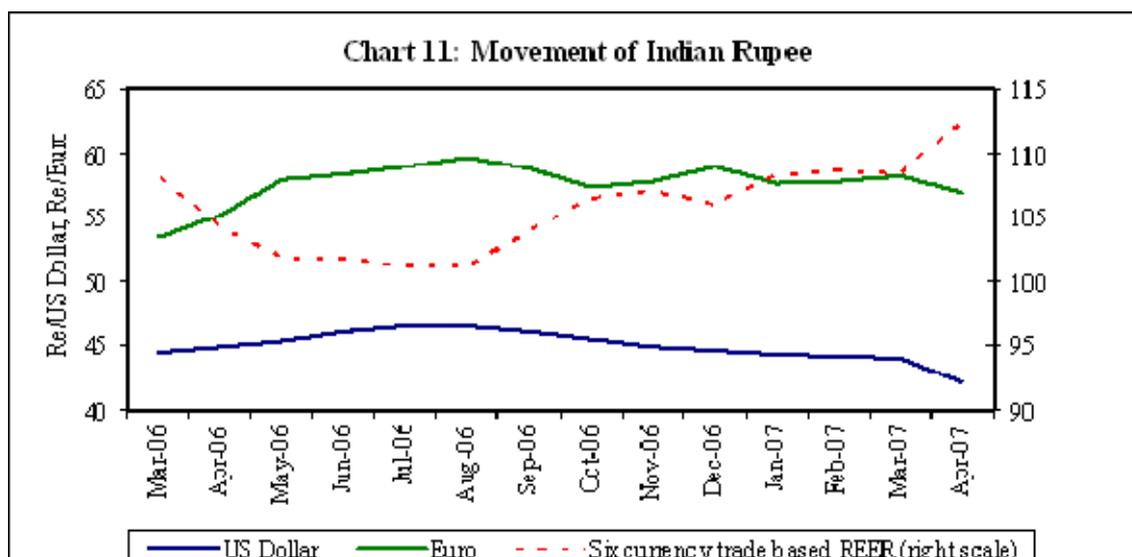
Efficiency in the foreign exchange market has also improved as reflected in the decline in bid-ask spreads. The bid-ask spread of Rupee/US\$ market has almost converged with that of other major currencies in the international market. On some occasions, in fact, the bid-ask spread of Rupee/US\$ market was lower than that of some major currencies ([Chart 9](#)).



The EMEs' experience, in general, in the 1990s has highlighted the growing importance of capital flows in determining the exchange rate movements as against trade flows and economic growth in the 1980s and before. In the case of most developing countries, which specialise in labour-intensive and low and intermediate technology products, profit margins in the highly competitive markets are very thin and vulnerable to pricing power by large retail chains. Consequently, exchange rate volatility has significant employment, output and distributional consequences. Foreign exchange market conditions have remained orderly in the post-1993 period, barring occasional periods of volatility ([Chart 10](#)). The Indian approach to exchange rate management has been to avoid excessive volatility. Intervention by the Reserve Bank in the foreign exchange market, however, has been relatively small compared to total turnover in the market.



The exchange rate policy in recent years has been guided by the broad principles of careful monitoring and management of exchange rates with flexibility, without a fixed target or a pre-announced target or a band, coupled with the ability to intervene, if and when necessary. The overall approach to the management of India's foreign exchange reserves takes into account the changing composition of the balance of payments and endeavours to reflect the "liquidity risks" associated with different types of flows and other requirements. Illustratively, the Indian rupee exhibited two-way movements during 2006-07 moving in a range of Rs.43.14-46.97 per US dollar. The rupee initially depreciated against the US dollar during the year, reaching Rs.46.97 on July 19, 2006, reflecting higher crude oil prices, FII outflows and geo-political risks in the Middle East region. The rupee, however, strengthened thereafter on the back of moderation in crude oil prices, revival of FII inflows and weakness of the US dollar in the international markets. The rupee appreciated further to reach Rs. 40.59 per US dollar on May 7, 2007 due to increased supply of dollars in the market. Thereafter, however, the rupee depreciated to Rs. 40.85 per US dollar on May 16, 2007. At this level, the rupee appreciated by 6.7 per cent over end-March 2007 and 9.2 per cent over end-March 2006. Against the Euro, the rupee appreciated by 4.7 per cent over end-March 2007, but depreciated by 2.4 per cent over end-March 2006. The real effective exchange rate (REER) of the Indian rupee (six-currency trade-based weights) at 112.2 as on April 18, 2007 appreciated by 12.2 per cent over the base 1993-94; over 2000-01 the appreciation is by 9.6 per cent ([Chart 11](#)).



Apart from the spot segment, the foreign exchange market in India trades in derivatives such as forwards, swaps, and options. The typical forward contract is for one month, three months, or six months, with three months being the most common. Forward contracts for longer periods are not as

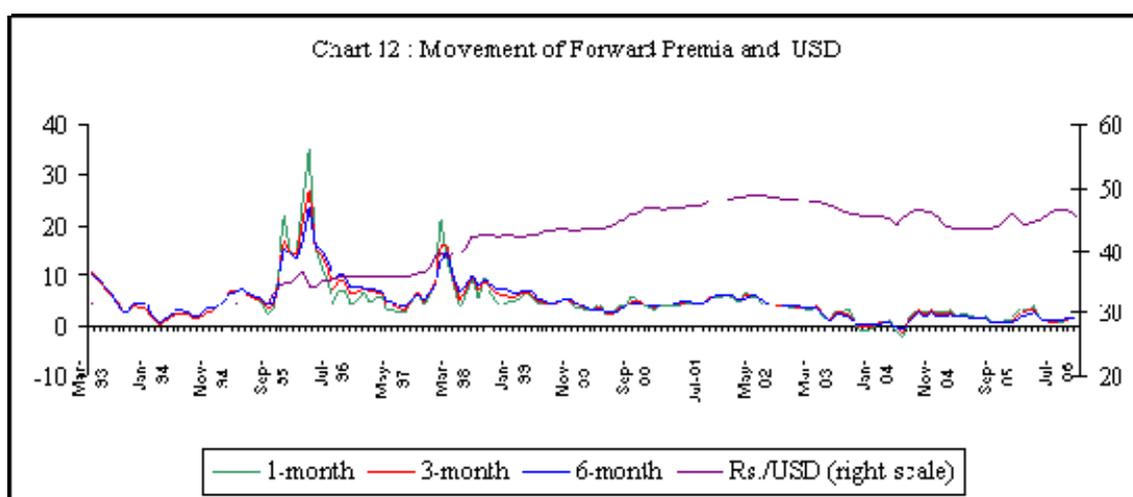
common because of the great uncertainties involved. A swap transaction in the foreign exchange market is a combination of a spot and a forward in the opposite direction. Foreign exchange swaps account for the largest share of the total derivatives turnover in India, followed by forwards and options ([Table 5](#)). Options have remained insignificant despite being in existence for three years. With restrictions on the issue of foreign exchange swaps and options by corporates in India, turnover in these segments (swap and options) essentially reflects inter-bank transactions.

| Table 5: Derivatives Turnover in India in nominal/notional amounts | | | |
|--|---------|---------|-------------------------------|
| (US \$ billion) | | | |
| Product | 2000-01 | 2005-06 | 2006-07 (Up to November 2006) |
| 1 | 2 | 3 | 4 |
| Forward | 163 | 839 | 734 |
| Swap | 565 | 1,344 | 1,187 |
| Options | 0 | 11* | 38 |

* Relates to the year September 2005-August 2006 as reporting for options data started in September 2005.

Note: Options denote foreign currency Indian rupee options. Turnover is calculated by taking the difference between notional outstanding over the previous year.

With greater opening of the capital account, the forward premia is getting gradually aligned with the interest rate differential reflecting growing market efficiency. In the post-liberalisation phase, forward premia of the Indian rupee vis-à-vis dollar has generally remained high indicating that rupee was at a discount to the US dollar. In recent times, however, reflecting the build-up of foreign exchange reserves, the strong capital flows and the confidence in the Indian economy, forward premia have come down sharply from the peak reached in 1995-96 ([Chart 12](#)).



As a result of various measures, the Indian foreign exchange market has evolved into a relatively mature market over a period of time with increase in depth and liquidity. The turnover in the market has increased over the years. With the gradual opening up of the capital account, the forward premia are getting increasingly aligned with the interest rate differential. There is also evidence of enhanced efficiency in the foreign exchange market as is reflected in low bid-ask spreads.

The gradual development of the foreign exchange market has helped in smooth implementation of current account convertibility and the phased and gradual opening of the capital account. The availability of derivatives is also helping domestic entities and foreign investors in their risk

management. This approach has helped India in being able to maintain financial stability right through the period of economic reforms and liberalisation leading to continuing opening of the economy, despite a great degree of volatility in international markets, particularly during the 1990s.

Financial market integration

The success of a monetary policy transmission framework, which relies on indirect instruments of monetary management such as interest rates, is contingent upon the extent and speed with which changes in the central bank's policy rate are transmitted to the spectrum of market interest rates and exchange rate in the economy and onwards to the real sector. Changes in the central banks' policy rates can, through variations in domestic money market interest rates, impact the exchange rates, which, in turn, impact the real economy. Similarly, movement in policy interest rates can influence other asset markets such as equity and property prices, further strengthening monetary transmission. If markets are weakly integrated, the central bank's interest rate signals will not have the desired impact on other short and long-term interest rates, the exchange rate and other asset prices. In such a scenario, the central bank would need to act in various segments of the market to achieve the desired objectives. In brief, the greater the degree of integration across market segments, the stronger is the transmission of monetary policy to the spectrum of financial markets and on to the real economy. By enabling dispersion of shocks and risks to a particular segment across all markets, well-integrated markets also contribute to financial stability.

Financial market reforms in India have enabled a greater integration of various segments of the financial market, reducing arbitrage opportunities, achieving higher level of efficiency in market operation of intermediaries and increasing efficacy of monetary policy in the economy. Growing integration of financial markets beginning 2000 could be gauged from cross correlation among various market interest rates. The correlation structure of interest rates reveals several notable features of integration of specific market segments ([Table 6](#)).

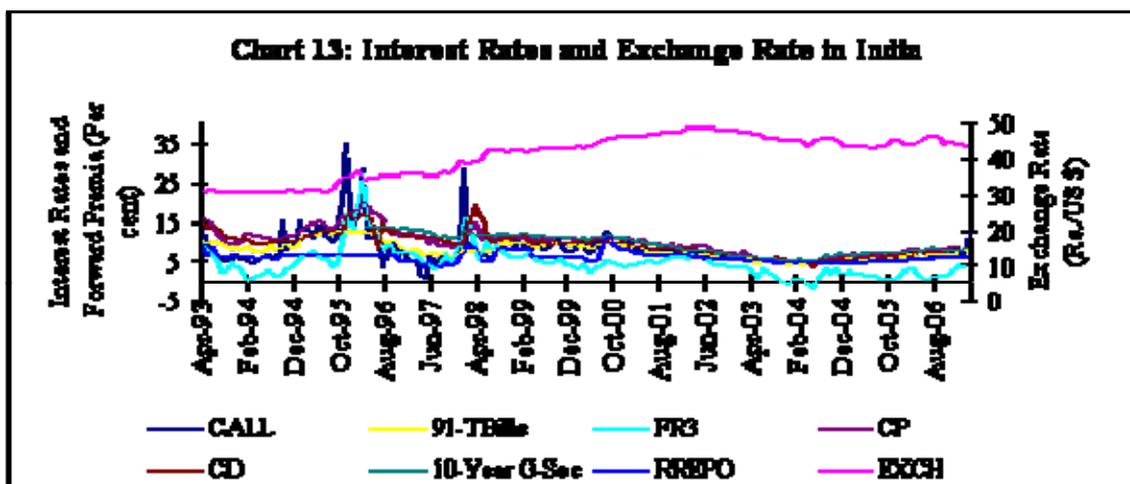
Table 6: Correlation Among Major Financial Markets

| | RREPO | Call | TB91 | TB364 | Yield10 | CDs | CPs | FR1 | FR3 | FR6 | EXCH | LBSES |
|----------------------------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------|------|-------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| (April 1993 to March 2000) | | | | | | | | | | | | |
| RREPO | 1.00 | | | | | | | | | | | |
| Call | 0.35 | 1.00 | | | | | | | | | | |
| TB91 | 0.44 | 0.61 | 1.00 | | | | | | | | | |
| TB364 | 0.32 | 0.40 | 0.90 | 1.00 | | | | | | | | |
| Yield10 | 0.04 | 0.46 | 0.57 | 0.49 | 1.00 | | | | | | | |
| CDs | 0.30 | 0.32 | 0.45 | 0.41 | 0.38 | 1.00 | | | | | | |
| CPs | 0.39 | 0.54 | 0.81 | 0.75 | 0.57 | 0.71 | 1.00 | | | | | |
| FR1 | 0.27 | 0.80 | 0.45 | 0.33 | 0.46 | 0.47 | 0.63 | 1.00 | | | | |
| FR3 | 0.28 | 0.68 | 0.47 | 0.32 | 0.56 | 0.58 | 0.65 | 0.97 | 1.00 | | | |
| FR6 | 0.30 | 0.61 | 0.48 | 0.36 | 0.60 | 0.62 | 0.68 | 0.91 | 0.98 | 1.00 | | |
| EXCH | 0.03 | -0.04 | -0.23 | -0.38 | -0.06 | -0.19 | -0.31 | -0.25 | 0.12 | 0.13 | 1.00 | |
| LBSES | -0.37 | -0.10 | -0.24 | -0.34 | -0.05 | -0.40 | -0.28 | -0.32 | -0.28 | -0.30 | 0.35 | 1.00 |

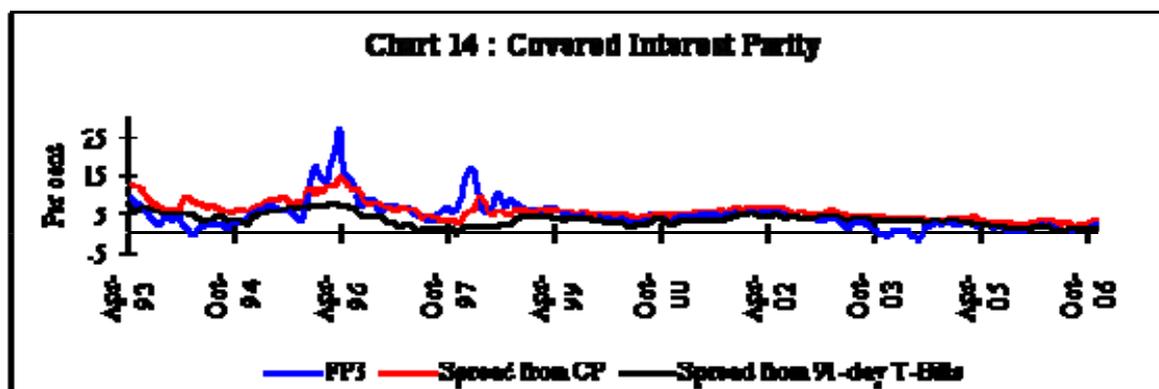
| (April 2000 to December 2006) | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|--|-------|-------|-------|-------|-------|------|
| RREPO | 1.00 | | | | | | | | | | | |
| Call | 0.86 | 1.00 | | | | | | | | | | |
| TB91 | 0.86 | 0.95 | 1.00 | | | | | | | | | |
| TB364 | 0.84 | 0.92 | 0.99 | 1.00 | | | | | | | | |
| Yield10 | 0.78 | 0.88 | 0.96 | 0.98 | 1.00 | | | | | | | |
| CDs | 0.78 | 0.90 | 0.94 | 0.93 | 0.93 | 1.00 | | | | | | |
| CPs | 0.81 | 0.90 | 0.96 | 0.94 | 0.92 | 0.95 | 1.00 | | | | | |
| FR1 | 0.58 | 0.62 | 0.57 | 0.52 | 0.50 | 0.60 | 0.67 | 1.00 | | | | |
| FR3 | 0.60 | 0.61 | 0.60 | 0.54 | 0.52 | 0.63 | 0.71 | 0.98 | 1.00 | | | |
| FR6 | 0.61 | 0.62 | 0.61 | 0.55 | 0.54 | 0.66 | 0.74 | 0.95 | 0.99 | 1.00 | | |
| EXCH | 0.29 | 0.20 | 0.14 | 0.08 | 0.04 | 0.24 | 0.28 | 0.60 | 0.66 | 0.70 | 1.00 | |
| LBSSES | -0.26 | -0.23 | -0.20 | -0.15 | -0.11 | -0.27 | -0.31 | -0.57 | -0.64 | -0.68 | -0.69 | 1.00 |
| TB91 : 91-day Treasury Bills rate. RREPO : Yield10 : 10-year government securities yield. Call: Inter-bank call money rate (weighted average). FR1 : 1-month forward exchange premia. CDs : Certificates of deposit rate. FR6 : 6-month forward exchange premia. FR3 : 3-month forward premia. LBSSES : Natural logarithm of BSE Sensex. EXCH : Exchange rate of Indian rupee per US dollar. Note : Correlations are based on monthly data. | | | | | | Reverse repo rate. CPs : Commercial paper rate. TB364 : 364-day Treasury Bills rate. | | | | | | |

First, in the money market segment, there is evidence of stronger correlation among interest rates in the more recent period 2000-06 than the earlier period 1993-2000, suggesting the impact of policy initiatives undertaken for financial deepening. The enhanced correlation among interest rates also indicates improvement in efficiency in the operations of financial intermediaries trading in different instruments. Second, the high correlation between risk free and liquid instruments such as Treasury Bills, which serve as benchmark instruments, and other market instruments such as certificates of deposit (CDs) and commercial papers (CPs) and forward exchange premia, underlines the efficiency of the price discovery process. Third, the sharp improvement in correlation between the reverse repo rate and money market rates in the recent period implies enhanced effectiveness of monetary policy transmission. Fourth, the high degree of correlation between long-term government bond yield and short-term Treasury Bills rate indicates the significance of term-structure of interest rates in financial markets. Fifth, the correlation between interest rates in money markets and three-month forward premia was significantly high, indicating relatively high horizontal integration. Integration of the foreign exchange market with the money market and the government securities market has facilitated closer co-ordination of monetary and external sector management. The impact of foreign exchange market intervention can be carefully coordinated with monetary management encompassing constant monitoring of the supply of banking system liquidity and an active use of open market operations to adjust liquidity conditions. Sixth, the equity market appears to be segmented with relatively low and negative correlation with money market segments.

A growing integration between the money, the gilt and the foreign exchange market segments was also discernible in the convergence of financial prices, within and among various segments and co-movement in interest rates ([Chart 13](#)).



The degree of integration of the foreign exchange market with other markets is largely determined by the degree of openness. One of the indicators of foreign market integration is the differential in covered interest rates. In the Indian context, the forward price of the rupee is not essentially determined by the interest rate differentials, but it is also significantly influenced by: (a) supply and demand of forward US dollars; (b) interest differentials and expectations of future interest rates; and (c) expectations of future US dollar-rupee exchange rate. Empirical evidence supports this view, as the three month forward premia (FP3) has less than perfect co-movement with interest rate differential (between 91-day treasury bill rate and three-month LIBOR), indicative of the time varying nature of the risk premium. The inter-linkage becomes stronger when the interest rate differential is based on the monthly average call money rate and one-month LIBOR (Chart 14). The relationship improves still further, when the difference between the commercial paper (CP) rate in India and the 3-month US dollar LIBOR rate is considered for interest parity assessments. The deviation of the forward premia from the interest parity condition appears to increase during volatile conditions in the spot segment of the foreign exchange market.



From the monetary policy perspective, there has been convergence among market segments, with a significant decline in the spread of market interest rates over the reverse repo rate (Table 7). The spread was the lowest for the inter-bank call money rate followed by rates on Treasury Bills, certificates of deposit, commercial paper and 10-year government bond yield. The benefit of financial market development percolating to the real sector is also evident from the moderation in spread of commercial paper over the policy rate. The narrowing of the spread between the policy rate and other market rates suggests the increasing efficiency of the transmission mechanism of monetary policy.

Table 7: Interest Rate Spread over the Reverse Repo Rate

| Item | April 1993 - Sept 2006 | April 1993 - March 2000 | April 2000 - Sept 2006 |
|------------------------------|------------------------|-------------------------|------------------------|
| 1 | 2 | 3 | 4 |
| Call money Rate | 1.75 | 2.98 | 0.43 |
| Certificate of Deposits Rate | 3.33 | 5.43 | 1.07 |
| Commercial Paper Rate | 4.01 | 6.09 | 1.78 |
| 91-day Treasury Bill Rate | 1.71 | 2.90 | 0.42 |
| 364-day Treasury Bill Rate | 2.13 | 4.18 | 0.75 |
| 10-year Yield on G-SEC | 3.50 | 6.21 | 1.84 |

Thus, integration among various market segments has grown, especially in the recent period. This is reflected in an increase in the depth of the markets and higher correlation among interest rates in various market segments. Growing integration among various financial market segments was accompanied by lower volatility of interest rates. The narrowing of the interest rate spread over the reverse repo rate reflects an improvement in the monetary policy transmission channel and greater financial market integration. We can also note the gradual increase in depth of all financial markets in India over the years, including in the equity market, though the average daily transaction volumes are the highest in the forex and money markets ([Table 8](#)).

Table 8: Depth of Financial Markets in India – Average Daily Turnover

(Rs.crore)

| Year | Money Market* | Government Securities Market | Foreign Exchange Market # | Equity Market** (cash segment) | Equity Derivatives at NSE |
|----------|---------------|------------------------------|---------------------------|--------------------------------|---------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1991-92@ | 6,579 | 391 | - | 469 | - |
| 2000-01 | 42,657 | 2,802 | 21,198 | 9,308 | 11 |
| 2001-02 | 65,500 | 6,252 | 23,173 | 3,310 | 410 |
| 2002-03 | 76,752 | 7,067 | 24,207 | 3,711 | 1,752 |
| 2003-04 | 28,660 | 8,445 | 30,714 | 6,309 | 8,388 |
| 2004-05 | 38,528 | 4,826 | 39,952 | 6,556 | 10,107 |
| 2005-06 | 60,034 | 3,643 | 56,391 | 9,504 | 19,220 |
| 2006-07 | 88,803 | 4,863 | 83,984 | 11,760 | 29,803 |

*: Includes the call money, the notice money, the term money, the CBLO and the repo markets.

** : Includes both BSE and NSE turnover. # : Inter-bank turnover only.

@: Data for G-Sec and equity market relate to 1995-96.

:- not available

Source: Reserve Bank of India; The Bombay Stock Exchange, Mumbai; and National Stock Exchange of India Limited.

Summing up

The Reserve Bank has taken a keen interest in the development of the money, the government securities and the foreign exchange markets in view of their critical role in overall growth and development of the economy and particularly in the transmission mechanism of monetary policy. The approach has been one of simultaneous movement on several fronts, graduated and calibrated, with an emphasis on institutional and infrastructural development and improvements in market microstructure. The pace of reforms was contingent upon putting in place appropriate systems and procedures, technologies and market practices. Initiatives taken by the Reserve Bank have brought about a significant transformation of various segments of the financial market. These developments, by improving the depth and liquidity in domestic financial markets, have contributed to better price discovery of interest rates and exchange rates, which, in turn, have led to greater efficiency in resource allocation in the economy. The increase in size and depth of financial markets has paved the way for flexible use of indirect instruments. Greater depth and liquidity and freedom to market participants have also strengthened the integration of various segments of the financial market. Increased integration not only leads to more efficient dispersal of risks across the spectrum but also increases the efficacy of monetary policy impulses. Evidence suggests that growing integration of various financial market segments in India has been accompanied by lower volatility of interest rates.

While financial markets have certainly become more developed over the years, we are quite conscious of the fact that development of financial markets is an ongoing process and there is still some way to go before the markets are fully developed and integrated. Initiatives to further deepen and widen the various segments of the financial market will, therefore, need to be pursued in the months and years ahead. Financial markets will have to play an even more important role in future to sustain the current growth momentum being experienced by the Indian economy but their development will need to continue to be in step with corresponding real sector developments. Further development and integration of various segments is also important in the context of envisaged move towards fuller capital account convertibility. Accordingly, in the Annual Policy Statement for the year 2007-08 released on April 24, 2007, several measures are being initiated to further develop the financial markets.

A number of initiatives have been announced for further development of the government securities market. With a view to helping investors to plan their investments in advance and, in turn, to avoid undue liquidity pressure in the system, the operational modalities for introduction of an indicative calendar for state government borrowing are being finalised. A "Non-Competitive Bidding Scheme" in the auctions of State Development loans (SDLs) would be introduced in the financial year 2007-08. The modalities for operationalisation of the scheme are being finalised. Reissuance of SDLs has been favoured with a view to building up a critical mass and thereby improving the secondary market liquidity of such securities. The Reserve Bank is in consultation with the State Governments to introduce a system of reissuances.

With a view to simplifying the methodology for pricing of floating rate bonds (FRBs) in the secondary market, it is proposed to use the average cut-off yield on 182-day Treasury Bills, instead of the yield on 364-day Treasury Bills as a benchmark rate for the FRBs to be issued in future. The modalities for undertaking active consolidation of Central Government securities have already been finalised in consultation with the Government of India.

As the economy develops and financial markets become more sophisticated, market participants need better access to risk management mechanisms. Thus, interest rate derivatives need to be developed further. Accordingly, the Reserve Bank has recently issued comprehensive guidelines in respect of interest rate derivatives, incorporating the broad regulatory framework for undertaking derivative transactions. In respect of OTC derivative transactions, it has become necessary to have a mechanism for transparent capture and dissemination of trade information as well as an efficient post-trade processing infrastructure to address some of the attendant risks. To begin with, the CCIL is being advised to start a trade reporting platform for Rupee Interest Rate Swaps (IRS). This reporting module would be functional by August 31, 2007 and will thereafter be available to all market participants.

An anonymous order driven system for trading in Interest Rate Derivatives (IRDs) was introduced on exchanges in 2003. Banks were allowed to hedge the risk in their underlying investment portfolio while Primary Dealers (PDs) were also permitted as market-makers. Since then, the Government securities market has undergone numerous developmental changes, including the introduction of short selling and when-issued markets. Recognising the need for a robust interest rate futures market as an

effective instrument for management of interest rate risk, a Working Group is being set up to go into all the relevant issues and to suggest measures to facilitate the development of the interest rate futures market.

As the capital account is gradually opened further the Reserve Bank has taken several initiatives to provide a more conducive environment for the conduct of foreign exchange business. The prime concern has been to provide prompt and efficient customer service by progressively liberalising foreign exchange related transactions, removing restrictions and simplifying procedures. Concomitantly, powers have been delegated to authorised dealers with a view to improving ease of transactions for the common person. Keeping in view the recommendations of the Committee on Fuller Capital Account Convertibility (CFCAC), several measures have been proposed in the Annual Policy Statement towards liberalisation of foreign exchange facilities.

In order to provide greater flexibility to Indian companies for investments abroad and to rationalise the existing facilities, it is proposed (a) to enhance the overseas investment limit (total financial commitments) for Indian companies from the existing limit of 200 per cent of their net worth to 300 per cent of their net worth, as per the last audited balance sheet; and (b) to reckon the amount of guarantee at 100 per cent of the amount instead of the current conversion factor of 50 per cent for determining the total financial commitments.

At present, listed Indian companies have a separate limit of 25 per cent of net worth for portfolio investment abroad in listed overseas companies. It has been decided to enhance this limit to 35 per cent of net worth. At present, the aggregate ceiling on overseas investment by mutual funds is US \$ 3 billion. With a view to providing greater opportunity to mutual funds for investment overseas, it is proposed to increase the ceiling to US \$ 4 billion.

In order to further liberalise the remittance scheme for individuals, the present limit of US\$ 50,000 is being enhanced to US\$ 100,000 per financial year for any permitted current or capital account transaction or a combination of both.

The basic principle for accessing domestic foreign exchange markets is hedging of underlying foreign exchange exposures. In keeping with the evolution of the foreign exchange market and the increase in depth and volumes, a range of hedging instruments have been permitted to market participants including foreign exchange forwards, swaps and options, but mainly against crystallised foreign currency exposures. However, it has now been decided to expand the range of hedging tools available to the market participants as also to facilitate dynamic hedging by the residents in respect of other economic exposures. This will include hedging of price risk faced by domestic producers of non-ferrous metals, users of aviation turbine fuel, and others facing similar systemic international price risk. In order to facilitate dynamic hedging of foreign exchange exposures of exporters and importers of goods and services, it is proposed to enhance this limit to 75 per cent from 50 per cent earlier.

Similarly, small and medium enterprises (SMEs) are being permitted to hedge their foreign exchange exposures. They will be allowed to book forward contracts without underlying exposures or past records of exports and imports. Furthermore, resident individuals are being enabled to manage/hedge their foreign exchange exposures, including anticipated exposures up to an annual limit of US \$ 100,000, which can be freely cancelled and rebooked.

In view of the increasing exposure of Indian entities to foreign currency risk, it has also been decided to set up a Working Group on Currency Futures to study the international experience and suggest a suitable framework to operationalise the proposal, in line with the current legal and regulatory framework.

These initiatives can be seen within the overall context of the financial sector development in the country, particularly, in the money market, government securities market and the foreign exchange market. As we gain experience, with the implementation of these initiatives, we can expect a continuing process of financial market development that aids the overall development process. Similar efforts are being undertaken by the Government and the securities regulator, the Securities and Exchange Board of India along with the Reserve Bank in activating the corporate debt market. As has been experienced elsewhere, among the various financial markets, the corporate debt market is indeed the most difficult to develop for a variety of reasons. Our experience with development of the government securities market suggests that a great deal of detailed work will need to be undertaken over a period of time to put in place an appropriate market micro infrastructure, trading platforms, technology and clearing and settlement systems, along with further development of both issuers and buyers. The expansion of the pension fund and insurance industries will progressively result in the

presence of a larger financial investor base, which will help in the overall expansion of financial markets and in particular the corporate debt market.

Annex I: Money market instruments for liquidity management

The Reserve Bank has been making efforts to develop a repo market outside the LAF for bank and nonbank participants, so as to provide a stable collateralised funding alternative with a view to promoting smooth transformation of the call/notice money market into a pure inter-bank market and for deepening the underlying Government securities market. Thus, the following new instruments have been introduced.

Collateralised Borrowing and Lending Obligation (CBLO)

- Developed by the Clearing Corporation of India Limited (CCIL) and introduced on January 20, 2003, it is a discounted instrument available in electronic book entry form for the maturity period ranging from one day to ninety days (can be made available up to one year as per RBI guidelines).
- In order to enable the market participants to borrow and lend funds, CCIL provides the Dealing System through Indian Financial Network (INFINET), a closed user group to the Members of the Negotiated Dealing System (NDS) who maintain Current account with RBI and through Internet for other entities who do not maintain Current account with RBI.
- Membership (including Associate Membership) of CBLO segment is extended to banks, financial institutions, insurance companies, mutual funds, primary dealers, NBFCs, non-Government Provident Funds, Corporates, etc.
- Eligible securities are Central Government securities including Treasury Bills.
- Borrowing limits for members is fixed by CCIL at the beginning of the day taking into account the securities deposited by borrowers in their CSGL account with CCIL. The securities are subjected to necessary hair-cut after marking them to market.
- Auction market is available only to NDS Members for overnight borrowing and settlement on T+0 basis. At the end of the Auction market session, CCIL initiates auction matching process based on Uniform Yield principle.
- CCIL assumes the role of the central counter party through the process of novation and guarantees settlement of transactions in CBLO.
- Automated value-free transfer of securities between market participants and the CCIL was introduced during 2004-05.
- Members can reckon unencumbered securities for SLR calculations.
- The operations in CBLO are exempted from cash reserve requirement (CRR).

Market repo

- To broaden the repo market, the Reserve Bank enabled non-banking financial companies, mutual funds, housing finance companies and insurance companies not holding SGL accounts to undertake repo transactions with effect from March 3, 2003. These entities were permitted to access the repo market through their "gilt accounts" maintained with the custodians.
- Subsequently, non-scheduled urban co-operative banks and listed companies with gilt accounts with scheduled commercial banks were allowed to participate.
- Necessary precautions were built into the system to ensure "delivery *versus* payment" (DvP) and transparency, while restricting the repos to Government securities only.
- Rollover of repo transactions in Government securities was facilitated with the enabling of DvP III mode of settlement in Government securities which involves settlement of securities

and funds on a net basis, effective April 2, 2004. This provided significant flexibility to market participants in managing their collateral.

Some assessments

- CBLO and market repo helped in aligning short-term money market rates to the LAF corridor.
- Mutual funds and insurance companies are generally the main supplier of funds while banks, primary dealers and corporates are the major borrowers in the repo market outside the LAF.

Source: Mohan (2007)

Annex II: Reforms in the government securities market – institutional measures

- Administered interest rates on government securities were replaced by an auction system for price discovery.
- Automatic monetisation of fiscal deficit through the issue of *ad hoc* Treasury Bills was phased out.
- Primary Dealers (PD) were introduced as market makers in the government securities market.
- For ensuring transparency in the trading of government securities, Delivery *versus* Payment (DvP) settlement system was introduced.
- Repurchase agreement (repo) was introduced as a tool of short-term liquidity adjustment. Subsequently, the Liquidity Adjustment Facility (LAF) was introduced.
- LAF operates through repo and reverse repo auctions and provide a corridor for short-term interest rate. LAF has emerged as the tool for both liquidity management and also signalling device for interest rates in the overnight market. The Second LAF (SLAF) was introduced in November 2005.
- Market Stabilisation Scheme (MSS) has been introduced, which has expanded the instruments available to the Reserve Bank for managing the enduring surplus liquidity in the system.
- Effective April 1, 2006, RBI has withdrawn from participating in primary market auctions of Government paper.
- Banks have been permitted to undertake primary dealer business while primary dealers are being allowed to persify their business.
- Short sales in Government securities is being permitted in a calibrated manner while guidelines for “when issued” market have been issued recently.
- The Banking Regulation Act, 1949 has been amended recently whereby the floor rate of 25 per cent for SLR has been removed.

Increase in instruments in the government securities market

- 91-day Treasury bill was introduced for managing liquidity and benchmarking. Zero Coupon Bonds, Floating Rate Bonds, Capital Indexed Bonds were issued and exchange traded interest rate futures were introduced. OTC interest rate derivatives like IRS/ FRAs were introduced.
- Outright sale of Central Government dated security that are not owned have been permitted, subject to the same being covered by outright purchase from the secondary market within the same trading day subject to certain conditions.

- Repo status has been granted to State Government securities in order to improve secondary market liquidity.

Enabling measures

- Foreign Institutional Investors (FIIs) were allowed to invest in government securities subject to certain limits.
- Introduction of automated screen-based trading in government securities through Negotiated Dealing System (NDS).
- Setting up of risk-free payments and settlement system in government securities through Clearing Corporation of India Limited (CCIL).
- Phased introduction of Real Time Gross Settlement System (RTGS).
- Introduction of trading in government securities on stock exchanges for promoting retailing in such securities, permitting non-banks to participate in repo market.
- Recent measures include introduction of NDS-OM and T+1 settlement norms.

Source: Mohan (2007)

Annex III: Reforms in the foreign exchange market exchange rate regime

- Evolution of exchange rate regime from a single-currency fixed-exchange rate system to fixing the value of rupee against a basket of currencies and further to market-determined floating exchange rate regime.
- Adoption of convertibility of rupee for current account transactions with acceptance of Article VIII of the Articles of Agreement of the IMF. *De facto* full capital account convertibility for non residents and calibrated liberalisation of transactions undertaken for capital account purposes in the case of residents.

Institutional framework

- Replacement of the earlier Foreign Exchange Regulation Act (FERA), 1973 by the market friendly Foreign Exchange Management Act, 1999. Delegation of considerable powers by RBI to Authorised Dealers to release foreign exchange for a variety of purposes.

Increase in instruments in the foreign exchange market

- Development of rupee-foreign currency swap market.
- Introduction of additional hedging instruments, such as, foreign currency-rupee options. Authorised dealers permitted to use innovative products like cross-currency options, interest rate swaps (IRS) and currency swaps, caps/collars and forward rate agreements (FRAs) in the international forex market.

Liberalisation measures

- Authorised dealers permitted to initiate trading positions, borrow and invest in overseas market subject to certain specifications and ratification by respective Banks' Boards. Banks are also permitted to fix interest rates on non-resident deposits, subject to certain specifications, use derivative products for asset-liability management and fix overnight open position limits and gap limits in the foreign exchange market, subject to ratification by RBI.
- Permission to various participants in the foreign exchange market, including exporters, Indians investing abroad, FIIs, to avail forward cover and enter into swap transactions without any limit subject to genuine underlying exposure.

- FIIs and NRIs permitted to trade in exchange-traded derivative contracts subject to certain conditions.
- Foreign exchange earners permitted to retain up to 100 per cent of their foreign exchange earnings in their Exchange Earners' Foreign Currency accounts. Residents are permitted to remit up to US \$ 1,00,000 per financial year.
- Borrowers eligible for accessing ECBs can avail of an additional US \$ 250 million with average maturity of more than 10 years under the approval route. Prepayment of ECB up to US \$ 300 million without prior approval of the Reserve Bank.
- The existing limit of US \$ 2 billion on investments in Government securities by foreign institutional investors (FIIs) enhanced in phases to US \$ 3.2 billion by March 31, 2007.
- The extant ceiling of overseas investment by mutual funds of US \$ 2 billion is enhanced to US \$ 3 billion.
- Importers to be permitted to book forward contracts for their customs duty component of imports.
- FIIs to be allowed to rebook a part of the cancelled forward contracts.
- Forward contracts booked by exporters and importers in excess of 50 per cent of the eligible limit to be on deliverable basis and cannot be cancelled.
- Authorised dealer banks to be permitted to issue guarantees/letters of credit for import of services up to US \$ 100,000 for securing a direct contractual liability arising out of a contract between a resident and a non-resident.
- Lock-in period for sale proceeds of the immovable property credited to the NRO account to be eliminated, provided the amount being remitted in any financial year does not exceed US \$ one million.

Source: Mohan (2007).

References:

- Lipschitz, Leslie. 2007. "Wising Up about Finance." *Finance and Development*, 44(1), March.
- Mohan, Rakesh. 2004. "Financial Sector Reforms in India: Policies and Performance Analysis." *RBI Bulletin*, October.
- . 2005. "Globalisation, Financial Markets and the Operation of Monetary Policy in India." *BIS Papers No 23*.
- . 2006. "Monetary Policy and Exchange Rate Frameworks: The Indian Experience." *RBI Bulletin*, June.
- . 2007. "Monetary Policy Transmission in India." *RBI Bulletin*, April.
- Reddy, Y.V. 2004. "Financial Stability: Indian Experience." *RBI Bulletin*, July.