CHAPTER III
THEORY AND MANAGEMENT OF FOREIGN EXCHANGES
RESERVE

PROFILE OF FOREIGN EXCHANGE RESERVES

The subject of foreign exchange reserves has received renewed interest in recent times in the context of increasing Globalization, acceleration of capital flows and integration of financial markets. The debt banking financial crises in several countries have also necessitated the need for an International financial architecture in which the management of foreign exchange reserves has emerged as one of the critical issues.

SUBJECT OF FOREIGN EXCHANGE RESERVES

Contextually, the subject of foreign exchange reserves may be broadly classified into two inter-linked areas viz., The theory of Reserves and the Management of Reserves.

MANAGEMENT OF RESERVES

The portfolio considerations takes into account inter alia, safety, liquidity, yield on reserves as the principle objectives of reserve management. The institutional and legal arrangements are largely country specific and these differences should be recognized in approaching the critical issues relating to both reserve management practices and policy making (Reddy 2002).

MOTIVES FOR HOLDING RESERVES

The motives for holding reserves may be broadly classified under three categories, viz., Transaction, Speculative and Precautionary, International trade gives rise to currency flows, which are assumed to be handled by banks driven by the transaction motive. Similarly, speculative motive is left to individuals or corporates. Central bank reserves, however are characterized primarily as a last
resort stock of foreign currency for unpredictable flows, which is consistent with precautionary motive for holding foreign assets.

**PRECAUTIONARY MOTIVE**

Precautionary motive for holding foreign currency like the demand for money can be positively related to wealth and the cost of covering unplanned deficit, and negatively related to the return from alternative assets. Foreign exchange reserves are instruments to maintain or manage the exchange rate, while enabling orderly absorption of International capital inflows. Official reserves are mainly held for precautionary and transaction motives keeping in view the aggregate of national interests, to achieve balance between demand for and supply of foreign currencies for intervention and to preserve confidence in the country’s ability to carry out external transactions.

**The objectives for maintaining reserves are:**

i. Maintaining confidence in Monetary and Exchange rate policies

ii. Limiting external vulnerability by maintaining foreign currency liquidity to absorb shocks during times of crisis including national disasters.

iii. Enhancing capacity to intervene in foreign exchange markets.

iv. Providing confidence to the markets, including credit rating agencies, that external obligations can always be met (thus reducing the overall costs at which foreign exchange resources are available to all the market participants.

v. And adding comfort of the market participants, by demonstrating the lacking of domestic currency by external assets.

**PHASES IN INDIA’S FOREIGN EXCHANGE RESERVE**

The movement in India's foreign exchange reserves 1993-94 can be divided into three phases (i) the period March 1993 to March 1995, when reserves increased sharply from US $ 9.8 billion to US $ 25.2 billion; (ii) the
period March 1995 to March 1999, when reserves increased moderately to US $ 32.5 billion and (iii) finally since 1999-2000, when there was a phenomenal increase in reserves, as much as US $ 41.3 billion cumulatively (by US $ 5.5 billion in 1999-2000, US $4.2 billion in 2000-01, US $ 11.8 billion in 2001-02, and US $ 19.8 billion during 2002-03 (up to March 2003), subsequently the reserves rose to US $ 113.0 billion by end March 2004, US $ 141.5 billion by end March 2005, US$ 151.6 billion by end March 2006, US$ 199.2 billion by end March 2007 and further to US$ 309.7 billion by end March 2008.

MANAGEMENT OF FOREIGN EXCHANGE RESERVES

Costs and Benefits of Holding Reserves

Indian Scenario

India's Approach to Reserve Management

Benchmarking Reserve Management Practices in India

External Asset Managers

Audit and Management Information System

Of late, the debate over holding large reserves has gained renewed interest with the spectacular growth in accumulation of reserves by the central banks of the EMEs. Under the Bretton Woods system, foreign exchange reserves were used by monetary authorities mainly to maintain the external value of their respective currencies at a fixed level. With the breakdown of the Bretton Woods system in the early 1970s, countries started adopting relatively flexible exchange rate regimes. Under a perfectly flexible exchange rate regime, foreign exchange reserves play only a marginal role. In practice, however, the common exchange rate regime adopted by countries is not a 'free float' but an 'intermediate regime'. Under the intermediate regime, central banks intervene in foreign exchange markets, which necessitates maintenance of adequate stock of foreign exchange reserves. Over time, this need for
maintaining foreign exchange reserves has increased with the acceleration in the pace of globalization and enlargement of cross border capital flows. Foreign exchange reserves are often also seen as a means of crisis prevention to address unforeseen contingencies.

COST AND BENEFITS TO HOLDING RESERVES

An assessment of the costs of holding reserves vis-à-vis their benefits has, for long, been engaging attention of policy makers. The direct financial cost of holding reserves is the difference between interest paid on external debt and returns on external assets in reserves. In any cost-benefit analysis of holding reserves, it is essential to keep in view the objectives of holding reserves, which, interalia, include: (i) maintaining confidence in monetary and exchange rate policies; (ii) enhancing the capacity to intervene in foreign exchange markets; (iii) limiting external vulnerability so as to absorb shocks during times of crisis; (iv) providing confidence to the markets that external obligations can always be met; and (v) reducing volatility in foreign exchange markets (Jalan, 2003a). Sharp exchange rate movements can be highly disequilibrating and costly for the economy during periods of uncertainty or adverse expectations, whether real or imaginary. If the level of reserves is considered to be in the high comfort zone, it may be possible to attach larger weight to return on foreign exchange assets than on liquidity, thereby reducing net costs of holding reserves. Thus, an inter-temporal view of the adequacy as well as costs and benefits of foreign exchange reserves is needed. It is also necessary to assess the costs of not adding to reserves through open market operations at a time when the capital flows are strong. In other words, the costs and benefits arise as much out of open market operations of the central bank as out of management of levels of reserves.

The size of reserves holding could be explained by five key factors-sizes of the economy, current account vulnerability, capital account vulnerability, exchange rate flexibility and opportunity cost (IMF, 2003a). As the population and real per capita GDP increase, reserves are expected to rise. Furthermore,
greater current and capital account openness is often associated with higher vulnerability to crisis, which, in turn, is linked to higher level of reserves holding. Again, greater flexibility in the exchange rate reduces the demand for reserves. The size of reserves also depends on the reserves. The size of reserves also depends on the opportunity cost of holding reserves.

Recent strengthening of the external position of many developing countries through building up of substantial foreign exchange reserves can be viewed from several perspectives (Reddy, 2003). First, it is a reflection of the lack of confidence in the international financial architecture. International liquidity support through official channels is beset with problems relating to adequacy of volumes, timely availability, and reasonableness of costs and above all, limited extent of assurances. Second, it is also a reflection of efforts to contain risks from external shocks. Private capital flows which dominate capital movements tend to be pro-cyclical even when fundamentals are strong. It is, therefore, necessary for developing countries to build cushions when times are favourable. High reserves provide some self-insurance which is effective in building confidence including among the rating agencies and possibly in dealing with threat of crises. Third, the reserve accumulation could also be seen in the context of the availability of abundant international liquidity following the easing of monetary policy in industrial countries which enabled excess liquidity to flow into the emerging markets. In the event of hardening of interest rates in industrialized countries, his liquidity may dry up quickly; in that situation, emerging markets should have sufficient cushion to withstand such reverse flow of capital. Fourth, and most important, the reserve build up could be the result of countries aiming at containing volatility in foreign exchange markets. It should be recognized that the self-corrective mechanism in foreign exchange markets seen in developed countries is conspicuously absent among many emerging markets.

The accumulation of reserves is also a reflection of imbalances in the current account of some countries. The US has accumulated twin deficits –
current account deficit (CAD) of five per cent of GDP, and fiscal deficit of six per cent (a sharp turnaround from a surplus of 1.2 per cent in 2000). With the emergence of such an imbalance in the US, other regions in the world have to exhibit an equal and opposite imbalance in their own account. Ironically, it is the developing countries of Asia who are funding the CAD of the US and exhibiting surpluses. Central banks of Asia are financing roughly 3-3.5 per cent of the CAD of the US and most of its fiscal deficit, as compared to the earlier situation where it was private sector flows that were funding these deficits (Mohan, 2003).

It is important to note that the level of reserves held by any country is really a consequence of the exchange rate policy being pursued. Capital flows have implications for the conduct of domestic monetary policy and exchange rate management. The manner in which such flows impact domestic monetary policy depends largely on the kind of exchange rate regime that the authorities follow. In a fixed exchange rate regime, excess capital inflows would, perforce, need to be taken to foreign exchange reserves so as to maintain the desired exchange rate parity. In a fully floating exchange rate regime, on the other hand, the exchange rate would adjust itself according to the demand and supply conditions in the foreign exchange market, and as such there would be no need to take such inflows into the reserves.

High demand for reserves in developing countries can be explained by sovereign risk, political instability, inelastic fiscal outlay and high cost of tax collection and does not reflect any productive investment (Aizenman and Marion, 2003). It has also been argued that accumulating large volume of reserves creates moral hazard problems and reflects insurance against weak domestic fundamentals and political uncertainty (Kapur and Patel, 2003).

While in practice, all central banks intervene in the foreign exchange markets, a more intensive approach to intervention may be warranted into EMEs in the context of large capital inflows. In emerging markets, capital flows are often relatively more volatile and sentiment driven, not necessarily
being relating to the fundamentals. Such volatility imposes substantial risks on market agents, which they may not be able to cope. Even in countries where the exchange rate is essentially market determined, the authorities often intervene in order to contain volatility and reduce risks to market participants and for the economy as a whole. In such cases, policy makers are confronted with some difficult choices: first, a choice has to be made whether or not to intervene in the foreign exchange market; and second, if the choice is made to intervene, the extent of intervention (RBI, 2003b). Despite the fact that the level of reserves is the consequence of the exchange rate policy and the consequent choices with regard to intervention in the foreign exchange market, reserves can still be evaluated according to the various adequacy indicators.

Traditionally, the adequacy of reserves was determined by a simple rule of thumb, viz., the stock of reserves should be equivalent to a few months of imports. Such a rule-based reserve adequacy measure stems from the fact that official reserves serve as a precautionary balance to absorb shocks in external payments. Triffin (1960) had suggested 35 per cent of import cover. In terms of import cover, India's foreign exchange reserves are the highest among major European Monetary System (EMEs).

The financial crises in the 1990s highlighted the limitations of the traditional approach to reserve adequacy that laid emphasis only on flows of current account. This, coupled with wide ranging changes in financial markets has motivated policy makers to increase their emphasis on the capital account while assessing reserve adequacy. Among various components of capital account transactions, short-term external debt has gained prominence in determining reserve adequacy. From the perspective of crisis prevention, reserves to short-term debt ratio have emerged as a benchmark to determine the adequacy of reserves. It has been suggested that empirical assessment of reserve adequacy should be so defined that the country can meet its external repayment obligations without additional borrowing for one year – the so called Guidotti Rule (Guidotti, 1999). Taking a similar view, Greenspan (1999)
proposed short-term debt by remaining maturity of one year as the yardstick to measure reserve adequacy. The Guidotti rule has subsequently been refined in two aspects: (i) average maturity of the external debt should be three years and above; and (ii) countries must maintain liquidity at risk. There must be a 95 per cent probability of external liquidity being sufficient to avoid new borrowings for one year. The short-term debt viz-a-vis reserves is thus seen as a superior predictor of the depth of crisis over other indicators (Bussiere and Mulder, 1999). This suggests that a country's liquidity position prior to the onset of a crisis plays an important role in determining exchange market pressure and the potential for a crisis to occur.

An important aspect of reserve adequacy norms is the identification of various indicators, which can help predict the occurrence as well as depth of crises, and consequently the amount of reserves to be maintained. Apart from reserves to short-term debt ratio, other potential indicators of external vulnerability include: reserves over either monetary base or some measure of money stock, and reserves over GDP. For instance, a reserve to monetary base ratio is deemed to reflect the potential for resident-based capital flight from the domestic currency during a financial crisis. Empirical studies, however, find a weak relationship between money based indicators and occurrence and depth of international crises (Reddy, 2002).

Stability of select components of the domestic financial markets has also received increasing attention in designing reserve adequacy norms. For instance, volatility in the stock market exerts pressure on the exchange rate, leading to overall financial instability. When the domestic money market, capital market and forward market segments of the foreign exchange markets are closely integrated, the shock in either capital market or money market tends to affect the foreign exchange markets, necessitating the availability of adequate amounts of reserves to mitigate the panic or rumour induced variations in the financial markets.
INDIA’S APPROACH TO RESERVE MANAGEMENT

India's approach to reserve management, until the balance of payments crisis of 1991, was based on the traditional approach, i.e., to maintain reserves in relation to imports. With the introduction of a market determined exchange rate, the emphasis on import cover was supplemented with the objective of smoothening out the volatility in the exchange rate (RBI, 1996).

The High Level Committee on Balance of Payments (1993) had recommended that due attention be paid to payment obligations in addition to the traditional measure of import cover of 3 to 4 months. Subsequently, against the backdrop of currency crises in East-Asian countries, and in the light of country experiences of volatile cross-border capital flows, the Reserve Bank identified the need to hold a level of reserves assets, that could be considered as adequate, taking into consideration a host of factors such as the stock of short term and volatile external liabilities, shift in the pattern of leads and lags in payments/receipts during exchange market uncertainties along with the conventional norm of cover for sufficient months of imports (RBI, 1998). The Reserve Bank also took note of suggestions from Guiddotti (1999) and Greenspan (1999) which take into account the foreseeable risks that a country could face under a range of possible outcomes for relevant financial variables like exchange rates, commodity prices and credit spreads.

In the recent period, the overall approach to management of India's foreign exchange reserves has mirrored the changing composition of balance of payments, and has endeavoured to reflect the 'liquidity risks' associated with different types of flows and other requirements. The policy for reserve management is thus judiciously built upon a host of identifiable factors and other contingencies. Such factors, inter alia, include: the size of the current account deficit; the size of short-term liabilities (including current repayment obligations on long term loans); the possible variability in portfolio investments and other types of capital flows; unanticipated pressures on the balance of payments arising out of external shocks (such as the impact of the East Asian
crisis in 1997-98 or increase in oil prices in 1999-2000); and movements in the repatriable foreign currency deposits of non-resident Indians. A sufficiently high level of reserves is necessary to ensure that even if there is prolonged uncertainty, reserves can cover the "liquidity at risk" on all accounts over a fairly long period. Furthermore, the quantum of reserves in the long-run should be in line with the growth in the economy and the size of risk-adjusted capital flows, which provides greater security against unfavourable or unanticipated developments that can occur quite suddenly. Taking these factors into account, India's foreign exchange reserves are presently comfortable. Trends in select indicators show progressive improvements during 1990s.

**BENCHMARKING RESERVE MANAGEMENT PRACTICES IN INDIA**

Reserve management in a central bank is quite different from that of risk management by portfolio managers in other financial institutions. Reserve management encompasses preservation of the long-term value of reserves in terms of purchasing power and the need to minimize risk and volatility in returns given the parameters of safety, liquidity and profitability. India was one of the 20 countries selected for a case study in a recent document published by the International Monetary Fund (IMF, 2003b) as a supplement to the IMF's "Guidelines for Foreign Exchange Reserve Management". The IMF study clearly brings out that the basic traditional objectives of reserve management, viz., safety, liquidity and return are evident across all countries included in the case study. However, increasingly the focus is on efficient management of reserves in order to maximize return (or reduce costs) while preserving capital and liquidity.

The case study clearly brings out that India, along with Hong Kong, Israel, and Tunisia consider preservation of purchasing power of reserves as a long – term objective. An attempt has been made to discuss the reserve management practices in the Reserve Bank as a case study in the light of general policies pursued by various countries (IMF, 2003b).
ESSENTIAL FRAMEWORK FOR RESERVE MANAGEMENT

The essential framework for reserve management in the Reserve Bank is provided by the legal enactments as regards currency, market and instruments for investment. The legal parameters are provided in the Reserve Bank of India Act, 1934. Broadly, the law permits the following investment categories: (i) deposits with other central banks and the Bank for International Settlements (BIS); (ii) deposits with foreign commercial banks; (iii) instruments representing sovereign/sovereign-guaranteed debt where residual maturity does not exceed 10 years; and (iv) other instruments/institutions as approved by the Central Board of the Reserve Bank. The reserve management strategies are continuously reviewed by the Reserve Bank in consultation with the Government. In deploying reserves, attention is paid to the currency composition and duration of investment. All foreign currency assets are invested in assets of top quality while a good proportion is convertible into cash at short notice. The choice of the highest possible quality investment instruments and explicit constraints on critical portfolio variables, such as limits on various securities, currencies, counter-parties and sovereigns form the basic elements of reserve management. The counterparties with whom deals are conducted are also subject to a rigorous selection process. Counterparties could be banks, subsidiaries of banks or security houses. Such counter parties are approved by the Reserve Bank taking into account their international reputation and track record apart from factors such as size, capital, credit rating, financial position and service provided by them. The reserves are also invested in money market including deposits with top international commercial banks.

EXTERNAL ASSET MANAGERS

Several European Monetary Enterprises, such as Brazil, Chile, Mexico and Korea use external managers for reserve management. In India, a small portion of the reserves has been assigned to external asset managers with the objectives of gaining access to and deriving benefit from their market research.
It also helps to take advantage of the technology available with asset managers while utilizing the relationship to have the required training/exposure to the Reserve Bank’s personal responsible for foreign exchange reserve management. The asset managers are carefully selected from among the internationally reputed asset management companies. They are given clear investment guidelines and benchmarks and their performance is evaluated at periodic intervals by a separate unit within the middle office. External asset managers’ views and outlook on international bond and currency markets are examined and taken as inputs.

AUDIT AND MANAGEMENT INFORMATION SYSTEM

In almost all EMEs participating in the IMF case study (IMF, 2003b), reserve management activities are audited annually by an independent external auditor as part of the annual audit of the reserve management entity’s financial statements to ensure compliance with appropriate accounting standards. In the Reserve Bank, there is a system of concurrent audit for monitoring compliance in respect of all the internal control guidelines, independent of the process flows. Furthermore, reconciliation of nostro accounts is done on a daily basis in respect of major currencies. In addition to the annual inspection by the Inspection Department of the Reserve Bank and Statutory Audit by external auditors, there is a system of appointing a management auditor to audit dealing room transactions. The main objective of such an audit is to see that risk management systems are functioning properly and internal control guidelines are adhered to.

MANAGEMENT OF GOLD RESERVES

The reserve bank has a modest gold holding of 357 tonnes; of this, 65 tonnes (18.2 per cent of total gold holdings of the Reserve Bank) is held abroad. The fact that gold held with the Reserve Bank provides an ample cushion to the reserves of the country was demonstrated in the critical periods of the foreign exchange crisis in 1991. Loans were raised against the collateral
of gold from the Bank of Japan and the Bank of England. On repayment of the
loans in November 1991, the gold was not brought back and since December
1991, but was placed as gold deposits with Bank of England and BIS (the latter
on a specific request, as BIZ normally does not accept gold deposits). These
gold stocks are in short-term interest bearing deposits in terms of provisions of
the Reserve Bank of India Act, and they earn a return of about one per cent per
annum.

In this connection, the recommendation of the High Level Committee on
Balance of Payments (Chairman: C. Rangarajan) is relevant. The Committee
had stated that it would be advantageous to locate about one-fourth of the gold
holding of the Reserve Bank at an offshore centre so that the same could be
utilized in times of need. In terms of Section 33(2) of the RBI Act, gold should
be held at least to the extent of Rs. 115 crore (which translates into a physical
quantity of 3 tonnes approximately at current market price) as assets in the
Issue Department. Furthermore, as per Section 33 (5) of the Reserve Bank of
India Act, not less than 85 per cent of the gold held as assets of the Issue
Department shall be held in India.

To sum up, India’s foreign exchange reserves have risen significantly in
the last few years. From the point of view of the central bank, the level of
reserves is intricately linked with the exchange rate management. Based on the
various reserve adequacy indicators, the level of foreign exchange reserves in
India is comfortable. India has also been included as a creditor country under
the FTP at the IMF in view of its comfortable level of reserves. Prepayment of
certain loans has been carried out by India. The actual impact of the foreign
exchange reserve management policies followed by India has been highly
positive as it resulted in orderly movements in exchange rates with lower
volatility. Together, these developments have led to a sharp increase in the
confidence level of domestic and foreign investors in the strength of the Indian
economy. India’s reserve management policies have also been described by the
IMF as being “comparable to global best practices” in a recent study of 20 select industrial and developing countries (IMF, 2003b).

Forex reserves is not available as there have been divergence of views in terms of coverage of items, ownership of assets, liquidity aspects and need for a distinction between owned and non-owned reserves. Nevertheless, for policy and operational purposes, most countries have adopted the definition suggested by the International Monetary Fund (Balance of Payments Manual, and Guidelines on Foreign Exchange Reserve Management, 2001); which defines reserves as external assets that are readily available to and controlled by monetary authorities for direct financing of external payments imbalances, for indirectly regulating the magnitudes of such imbalances through intervention in exchange markets to affect the currency exchange rate, and/or for other purposes.

The standard approach for measuring international reserves takes into account the unencumbered international reserve assets of the monetary authority; however, the foreign currency and the securities held by the public including the banks and corporate bodies are not accounted for in the definition of official holdings of international reserves.

In India, the Reserve Bank of India Act 1934 contains the enabling provisions for the Reserve Bank to act as the custodian of foreign reserves, and manage reserves with defined objectives. The powers of being the custodian of foreign reserves is enshrined, in the first instance, in the preamble of the Act. The ‘ reserves ’ refer to both foreign reserves in the form of gold assets in the Banking Department and foreign securities held by the Issue Department, and domestic reserves in the form of ‘bank reserves’. The composition of foreign reserves is indicated, a minimum reserve system is set out, and the instruments and securities in which the country’s reserves could be deployed are spelt out in the relevant Sections of the RBI Act.
In brief, in India, what constitutes forex reserves; who is the custodian and how it should be deployed are laid out clearly in the Statute, and in an extremely conservative fashion as far as management of reserves is concerned. In substantive terms, the Reserve Bank functions as the custodian and manager of forex reserves, and operates within the overall policy framework agreed upon with Government of India.

**HOLD FOREX RESERVES**

Technically, it is possible to consider three motives i.e., transaction, speculative and precautionary motives for holding reserves. International trade gives rise to currency flows, which are assumed to be handled by private banks driven by the transaction motive. Similarly, speculative motive is left to individual or corporate. Central bank reserves, however, are characterised primarily as a last resort stock of foreign currency for unpredictable flows, which is consistent with precautionary motive for holding foreign assets. Precautionary motive for holding foreign currency, like the demand for money, can be positively related to wealth and the cost of covering unplanned deficit, and negatively related to the return from alternative assets.

From a policy perspective, it is clear that the country benefits through economies of scale by pooling the transaction reserves, while subserving the precautionary motive of keeping official reserves as a ‘war chest’. Furthermore, forex reserves are instruments to maintain or manage the exchange rate, while enabling orderly absorption of international money and capital flows. In brief, official reserves are held for precautionary and transaction motives keeping in view the aggregate of national interests, to achieve balance between demand for and supply of foreign currencies, for intervention, and to preserve confidence in the country’s ability to carry out external transactions.

Reserve assets could be defined with respect to assets of monetary authority as the custodian, or of sovereign Government as the principal. For the
monetary authority, the motives for holding reserves may not deviate from the monetary policy objectives, while for Government, the objectives of holding reserves may go beyond that of the monetary authorities. In other words, the final expression of the objective of holding reserve assets would be influenced by the reconciliation of objectives of the monetary authority as the custodian and the Government as principal. There are cases, however, when reserves are used as a convenient mechanism for Government purchases of goods and services, servicing foreign currency debt of Government, insurance against emergencies, and in respect of a few, as a source of income.

It is difficult to lay down objectives in very precise terms, nor is it possible to order all relevant objectives by order of precedence in view of emerging situations which are described later. For the present, a list of objectives in broader terms may be encapsulated viz., (a) maintaining confidence in monetary and exchange rate policies, (b) enhancing capacity to intervene in forex markets, (c) limiting external vulnerability by maintaining foreign currency liquidity to absorb shocks during times of crisis including national disasters or emergencies; (d) providing confidence to the markets especially credit rating agencies that external obligations can always be met, thus reducing the overall costs at which forex resources are available to all the market participants, and (e) incidentally adding to the comfort of the market participants, by demonstrating the backing of domestic currency by external assets.

At a formal level, the objective of reserve management in India could be found in the RBI Act, where the relevant part of the preamble reads as ‘to use the currency system to the country’s advantage and with a view to securing monetary stability’. This statement may be interpreted to hold that monetary stability means internal as well as external stability; implying stable exchange rate as the overall objective of the reserve management policy. While internal stability implies that reserve management cannot be isolated from domestic macroeconomic stability and economic growth, the phrase ‘to use the currency
system to the country’s advantage’ implies that maximum gains for the country as a whole or economy in general could be derived in the process of reserve management, which not only provides for considerable flexibility to reserve management practice, but also warrants a very dynamic view of what the country needs and how best to meet the requirements. In other words, the financial return or trade off between financial costs and benefits of holding and maintaining reserves is not the only or the predominant objective in management of reserves.

**Evolution of Reserve Management Policy in India**

India’s approach to reserve management, until the balance of payments crisis of 1991 was essentially based on the traditional approach, i.e., to maintain an appropriate level of import cover defined in terms of number of months of imports equivalent to reserves. For example, the Reserve Bank’s Annual Report 1990-91 stated that the import cover of reserves shrank to 3 weeks of imports by the end of December 1990, and the emphasis on import cover constituted the primary concern say, till 1993-94. The approach to reserve management, as part of exchange rate management, and indeed external sector policy underwent a paradigm shift with the adoption of the recommendations of the High Level Committee on Balance of Payments (Chairman: Dr. C. Rangarajan). The Report, of which I had the privilege of being Member- Secretary, articulated an integrated view of the issues and made specific recommendations on foreign currency reserves. The relevant extracts are:

“It has traditionally been the practice to view the level of desirable reserves as a percentage of the annual imports - say reserves to meet three months imports or four months imports. However, this approach would be inadequate when a large number of transactions and payment liabilities arise in areas other than import of commodities. Thus, liabilities may arise either for discharging short-term debt obligations or servicing of medium-term debt, both interest and principal. The Committee recommends that while determining the
target level of reserve, due attention should be paid to the payment obligations in addition to the level of imports. The Committee, recommends that the foreign exchange reserves targets be fixed in such a way that they are generally in a position to accommodate imports of three months.

In the view of the Committee, the factors that are to be taken into consideration in determining the desirable level of reserves are: the need to ensure a reasonable level of confidence in the international financial and trading communities about the capacity of the country to honour its obligations and maintain trade and financial flows; the need to take care of the seasonal factors in any balance of payments transaction with reference to the possible uncertainties in the monsoon conditions of India; the amount of foreign currency reserves required to counter speculative tendencies or anticipatory actions amongst players in the foreign exchange market; and the capacity to maintain the reserves so that the cost of carrying liquidity is minimal.”

With the introduction of market determined exchange rate as mentioned in the Reserve Bank’s Annual Report, 1995-96 a change in the approach to reserve management was warranted and the emphasis on import cover had to be supplemented with the objective of smoothening out the volatility in the exchange rate, which has been reflective of the underlying market condition.

Against the backdrop of currency crises in East-Asian countries, and in the light of country experiences of volatile cross-border capital flows, the Reserve Bank’s Annual Report 1997-98 reiterated the need to take into consideration a host of factors, but is noteworthy for bringing to the fore the shift in the pattern of leads and lags in payments/ receipts during exchange market uncertainties and emphasised that besides the size of reserves, the quality of reserves also assume importance. Highlighting this, the Report stated that unencumbered reserve assets (defined as reserve assets net of encumbrances such as forward commitments, lines of credit to domestic entities, guarantees and other contingent liabilities) must be available at any
As a part of prudent management of external liabilities, the Reserve Bank’s policy is to keep forward liabilities at a relatively low level as a proportion of gross reserves and the emphasis on prudent reserve management i.e., keeping forward liabilities within manageable limits, was highlighted in the Reserve Bank’s Annual Report, 1998-99.

The Reserve Bank’s Annual Report, 1999-2000 stated that the overall approach to management of India’s foreign exchange reserves reflects the changing composition of balance of payments and liquidity risks associated with different types of flows and other requirements and the introduction of the concept of liquidity risks is noteworthy.

“The policy for reserve management is built upon a host of identifiable factors and other contingencies, including, inter alia, the size of the current account deficit and short term liabilities (including current repayment obligations on long term loans), the possible variability in portfolio investment, and other types of capital flows, the unanticipated pressures on the balance of payments arising out of external shocks and movements in repatriable foreign currency deposits of nonresident Indians.”

While focusing on prudent management of foreign exchange reserves in recent years, the Reserve Bank’s Annual Report 2000-01 elaborated on ‘liquidity risk’ associated with different types of flows. The Report stated that with the changing profile of capital flows, the traditional approach of assessing reserve adequacy in terms of import cover has been broadened to include a number of parameters which take into account the size, composition, and risk profiles of various types of capital flows as well as the types of external shocks to which the economy is vulnerable.

Governor Jalan’s latest statement on Monetary and Credit Policy (April 29, 2002) provides, an up-to-date and comprehensive view on the approach to
reserve management and of special significance is the statement: “a sufficiently high level of reserves is necessary to ensure that even if there is prolonged uncertainty, reserves can cover the “liquidity at risk” on all accounts over a fairly long period. Taking these considerations into account, India’s foreign exchange reserves are now very comfortable.” (Paragraph 23)…

“The prevalent national security environment further underscores the need for strong reserves. We must continue to ensure that, leaving aside short-term variations in reserves level, the quantum of reserves in the long-run is in line with the growth of the economy, the size of risk-adjusted capital flows and national security requirements. This will provide us with greater security against unfavourable or unanticipated developments, which can occur quite suddenly.”

The above discussion points to evolving considerations and indeed a paradigm shift in India’s approach to reserve management. The shift has occurred from a single indicator to a menu or multiple indicators approach. Furthermore, the policy of reserve management is built upon a host of factors, some of them are not quantifiable, and in any case, weights attached to each of them do change from time to time.

**The Appropriate Level of Forex Reserves**

Basic motives for holding reserves do result in alternative frameworks for determining appropriate level of foreign reserves. Efforts have been made by economists to present an optimising framework for maintaining appropriate level of foreign reserves and one viewpoint suggests that optimal reserves pertain to the level at which marginal social cost equals marginal social benefit. Optimal level of reserves has also been indicated as the level where marginal productivity of reserves plus interest earned on reserve assets equals the marginal productivity of real resources and this framework encompasses exchange rate stability as the predominant objective of reserve management. Since the underlying costs and benefits of reserves can be measured in several ways, these approaches to optimal level provide ample scope for developing a host of indicators of appropriate level of reserves.
It is possible to identify four sets of indicators to assess adequacy of reserves, and each of them do provide an insight into adequacy though none of them may by itself fully explain adequacy. First, the money based indicators including reserve to broad money or reserves to base money which provide a measure of potential for resident based capital flight from currency. An unstable demand for money or the presence of a weak banking system may indicate greater probability of such capital flights. Money based indicators, however, suffer from several drawbacks. In countries, where money demand is stable and confidence in domestic currency high, domestic money demand tends to be larger and reserves over money ratios, relatively small. Therefore, while a sizable money stock in relation to reserves, prima facie, suggests a large potential for capital flight out of money, it is not necessarily a good predictor of actual capital flight. Money based indicators also do not capture comprehensively the potential for domestic capital flight. Moreover, empirical studies find a weak relationship between money based indicator and occurrence and depth of international crises.

Secondly, trade based indicators, usually the import-based indicators defined in terms of reserves in months of imports provide a simple way of scaling the level of reserves by the size and openness of the economy. It has a straightforward interpretation- a number of months a country can continue to support its current level of imports if all other inflows and outflows cease. As the measure focuses on current account, it is relevant for small economies, which have limited access and vulnerabilities to capital markets. For substantially open economies with a sizable capital account, the import cover measure may not be appropriate.

Thirdly, debt based indicators are of recent origin; they appeared with episodes of international crises, as several studies confirmed that reserves to short term debt by remaining maturity is a better indicator of identifying financial crises. Debt-based indicators are useful for gauging risks associated with adverse developments in international capital markets. Since short-term
debt by remaining maturity provides a measure of all debt repayments to nonresidents over the coming year, it constitutes a useful measure of how quickly a country would be forced to adjust in the face of capital market distortion. Studies have shown that it could be the single most important indicator of reserve adequacy in countries with significant but uncertain access to capital markets.

Fourthly, more recent approaches to reserve adequacy have suggested a combination of current-capital accounts as the meaningful measure of liquidity risks. Of particular interest, is the Guidotti Rule, which has received wide appreciation from many central bankers including Alan Greenspan, postulates that the ratio of short term debt augmented with a projected current account deficit (or another measure of expected borrowing) could serve useful an indicator of how long a country can sustain external imbalance without resorting to foreign borrowing. As a matter of practice, the Guidotti Rule suggests that the countries should hold external assets sufficient to ensure that they could live without access to new foreign borrowings for up to twelve months. This implies that the usable foreign exchange reserves should exceed scheduled amortisation of foreign currency debts.

Alan Greenspan suggests a Liquidity at ‘Risk ’Rule that takes into account the foreseeable risks that a country could face in the event of (a) near absence of a purely non-interventionist exchange rate policies and (b) cost-benefit trade-off in the quantity of reserve accumulation. Accordingly, a country’s liquidity position could be calculated under a range of possible outcomes for relevant financial variables such as exchange rate, commodity prices, credit spreads, etc. While the concept of ‘Liquidity at Risks’ has been broadly discussed at different fora, it appears that no specific methodology has been outlined. It has been left to institutions and countries to develop their own approaches.
Level of Forex Reserves in India

The Indian approach to determining adequacy of forex reserves has been evolving over the past few years, especially, since the pioneering Report of the High Level Committee on Balance of Payments, culminating in Governor Jalan’s exposition of the combination of global uncertainties, domestic economy and national security considerations in determining liquidity at risk and thus assessing reserve adequacy. It is appropriate to submit stylised facts in relation to some of the indicators of reserve-adequacy described here without making any particular judgment about adequacy.

The foreign exchange reserves include three items; gold, SDRs and foreign currency assets. As on May 3, 2002, out of the US$ 55.6 billion of total reserves, foreign currency assets account the major share at US$ 52.5 billion. Gold accounts for about US$ 3 billion. In July 1991, as a part of reserve management policy, and as a means of raising resources, the Reserve Bank temporarily pledged gold to raise loans. The gold holdings, thus have played a crucial role of reserve management at a time of external crisis. Since then, Gold has played passive role in reserve management.

The level of foreign exchange reserves has steadily increased from US$ 5.8 billion as at end- March, 1991 to US$ 54.1 billion as at end-March 2002 and further to US$ 55.6 billion as at May 3, 2002. The traditional measure of trade based indicator of reserve adequacy, i.e., the import cover (defined as the twelve times the ratio of reserves to merchandise imports ) which shrank to 3 weeks of imports by the end of December 1990, has improved to about 11.5 months as at end- March 2002. In terms of money-based indicators, the proportion of net foreign exchange assets of the Reserve Bank (NFA) to currency with the public has sharply increased from 15 per cent in 1991 to 109 per cent as at end-March 2002.
Management of International Reserves

In the recent years, for several reasons, increasing attention is being paid to management of international reserves. First, advent of the Euro as an alternate currency to US dollar; second, movement of many central banks out of gold; third, changes in exchange rate regimes; fourth, changing views on reserve adequacy and its role in crisis prevention; and fifth, operational use of “reserve targets” in calculating financing gaps by IMF. The attention to the subject is evidenced by increasing emphasis on transparency, accountability in various fora, and more recently, the issue of IMF guidelines on the subject.

Operationally, reserve management is a process that ensures that adequate official public sector foreign assets are readily available to and controlled by the authorities for meeting a defined range of objectives for a country. A reserve management entity is normally made responsible for the management of reserves and associated risks. Invariably, the reserve management entity is the central bank and hence the objectives of reserve management tend to be critical as they would encompass the objectives of the monetary authority and the objectives of a portfolio manager or the custodian of reserves. As a monetary authority, a central bank’s primary objective is to ensure macroeconomic financial stability in general and external stability in particular. As a custodian, the central bank’s main objectives are to ensure liquidity, safety and yield on deployment of reserves.

In considering management of reserves, the benefits and costs of holding reserves are constantly assessed. On the benefits, recent international financial crises have shown that holding and managing sufficient reserves and disclosing adequate information to markets helps a country to prevent external crises, especially those stemming from the capital account. The growing appreciation of the role of reserves in crises prevention and as a buffer to manage exchange market pressures has given reserve management a more central role, now than before, in national economic policies. Maintaining high level of reserves to tide over external shocks, however, involves opportunity
cost. The opportunity cost of holding reserves is the foregone investment because resources have been used to purchase reserves instead of increasing domestic capital. The marginal productivity of domestic capital is the opportunity cost of holding reserves and reserves management seeks to minimize the opportunity costs against the benefits that accrue from holding reserves.

The objectives of reserve management vary across countries, and a recent survey of reserve management practices of select countries provide good insights on the subject. First, most countries hold reserves to support monetary policy. While ensuring liquidity in foreign exchange market to smooth out undue short-term fluctuations in exchange markets constitutes the primary objective, some countries take a cautious approach to intervention. Smaller countries, hold reserves mainly for consideration of transaction motives to meet external payment imbalances as well as a store of wealth. Precautionary motive of holding reserves to mitigate adverse external shocks is implicit in most countries’ objectives though among a few, it finds explicit mention. Few countries explicitly use international reserves as the backing for monetary base and to maintain the stability and integrity of the monetary and financial system.

From a policy perspective, the objective of holding reserves to support monetary policy is common to most countries and the objective of holding reserves in regard to many emerging economies is primarily to maintain international confidence about its short-term payment obligations as well as confidence in monetary and financial policies.

Secondly, most countries have informal coordination between debt management and reserve management policies. As part of informal coordination, most countries take into account external debt indicators, particularly the maturity composition of short-term and long-term debt, as part of reserve management.
Thirdly, in regard to transparency and disclosure standards, many countries adhere to the IMF’s Special Data Dissemination Standards (SDDS) requirement. Most countries publish data on external debt and reserves on an annual basis in either their central bank annual reports or other reports of Government.

Fourthly, liquidity and safety (low risks) prevail upon reserve management entities in most countries as part of objective of reserve management. The yield objective is secondary to most countries in reserve management.

Fifthly, most countries use benchmarks for managing currency composition of reserves though information to the public about the benchmarks for the underlying currency composition of reserves is generally not made available. Information about the underlying norms for adopting the benchmarks are, however available in a number of countries.

Management of Forex Reserves in India

In India, legal provisions governing management of foreign reserves are set out in the RBI Act and Foreign Exchange Management Act, 1999 and they also govern the open market operations for ensuring orderly conditions in the forex markets, the exercise of powers as a monetary authority and the custodian in regard to management of foreign exchange assets.

In practice, holdings of gold have been virtually unchanged other than occasional sales of gold by the Government to the Reserve Bank. The gold reserves are managed passively. Currently, accretion to foreign currency reserves arises mainly out of purchases by the Reserve Bank from the Authorised Dealers (i.e. open market operations), and to some extent income from deployment of forex assets held in the portfolio of the Reserve Bank (i.e. reserves, which are invested in appropriate instruments of select currencies). The RBI Act stipulates the investment categories in which the Reserve Bank is permitted to deploy its reserves. The aid receipts on Government account also
flow into reserves. The outflow arises mainly on account of sale of foreign currency to Authorised Dealers (i.e. for open market operations). There are occasions when forex is made available from reserves for identified users, as part of strategy of meeting lumpy demands on forex markets, particularly during periods of uncertainty. The net effect of purchases and sale of foreign currency is the most determining one for the level of forex reserves, and these include such sale or purchase in forward markets (which incidentally is very small in magnitude).

While operationally the level of reserves is essentially a result of sale and purchase transactions, the level is also one of the objectives of exchange rate policy, and the issue needs to be considered in the overall context of exchange rate management. The exchange rate is determined by the market, i.e. forces of demand and supply. The objectives and purposes of exchange rate management are to ensure that economic fundamentals are reflected in the external value of the rupee as evidenced in the sustainable current account deficit. Subject to this general objective, the conduct of exchange rate policy is guided by three major purposes: first, to reduce excess volatility in exchange rates, while ensuring that the movements are orderly and calibrated; second, to help maintain an adequate level of foreign exchange reserves and third, to help eliminate market constraints with a view to the development of a healthy foreign exchange market. Basically, the policy is aimed at preventing destabilising speculation in the market while facilitating foreign exchange transactions at market rates for all permissible purposes. The

Reserve Bank makes sales and purchases of foreign currency in the forex market, basically to even out lumpy demand or supply in the thin forex market; large lumpiness in demand is mainly on account of oil imports, leads and lags and external debt servicing on Government account. Such sales and purchases are not governed by a predetermined target or band around the exchange rate.
The essence of portfolio management of reserves by the Reserve Bank is to ensure safety, liquidity and optimisation of returns. The reserve management strategies are continuously reviewed by the Reserve Bank in consultation with Government. In deploying reserves, attention is paid to the currency composition, duration and instruments. All of the foreign currency assets are invested in assets of top quality while a good proportion should be convertible into cash at short notice. The counterparties with whom deals are conducted are also subject to a rigorous selection process. In assessing the returns from deployment, the total return (both interest and capital gains) is taken into consideration. Circumstances such as lumpy demand and supply in reserve accretion are countered through appropriate immunisation strategies in deployment. One crucial area in the process of investment of the foreign currency assets in the overseas markets, relates to the risk involved in the process viz. credit risk, market risk and operational risk. While there is no set formula to meet all situations, the Reserve Bank utilises the accepted portfolio management principles for risk management.

**Forex Reserves and Quasi-fiscal Activities**

Central Banks perform a number of Quasi Fiscal Activities (QFAs). QFAs can be defined as an operation or measure carried out by a central bank with an effect that can, in principle, be duplicated by budgetary measures in the form of an explicit tax, subsidy or direct expenditure and that has or may have an impact on the financial operations of the central bank. In a broader sense, QFAs also include certain activities, such as, those relating to exchange rates, open market operations and cash reserve ratio, which have fiscal implications but cannot be obviously duplicated in terms of explicit taxes and subsidies in the budget. Central banks’ QFAs broadly arise from their role as a regulator of the financial system, as a banker to the Government, and as a regulator of the foreign exchange system.
QFAs of the central bank as a regulator of the foreign exchange often pertain to exchange rate and sterilized operations to offset the effect of unusual cross border capital flows.

Impact of QFAs is difficult to quantify. First, the impact of QFAs is merged with the impact of other operations and thereby is reflected in the consolidated picture in the balance sheet of the central bank. It has not been possible to separate in the balance sheets the impact emerging exclusively from the QFAs from other operations. Secondly, market clearing rates cannot be accurately predicted in an administered interest rate regime and therefore, it would be difficult to estimate the element of subsidy/tax involved in such operations. Thirdly, the QFAs are performed on an ongoing basis covering innumerable transactions and, therefore, their measurement is virtually impossible. Fourthly, the impact of certain QFAs like credit ceiling and exchange related measures are not certain.

On a very general plane it can be argued that sterilised intervention by the central bank to contain the liquidity impact of capital flows often involve a trade-off between low return assets and high return assets as far as the central bank is concerned. Earning from the deployment of foreign exchange is understandably lower than the interest loss on account of open market sale of government securities essentially due to interest rate differentials.

**Communications Policies**

Issues in transparency and disclosure constitute an important aspect of reserve management, within the broader framework of monetary, fiscal and financial polices. Thus, the policy as well as all relevant information are articulated through a variety of means from time to time, the most significant being the Monetary and Credit Policy Statements by Governor, RBI. The speeches of Governor and Deputy Governors are important sources of policy analysis, actions and intentions. The Annual Reports of the Reserve Bank provide authentic version of RBI’s perspective as approved by its Board. The
Report on Currency and Finance provides research output from the professionals in the Reserve Bank. The periodical publications, Press Releases and Discussion Papers are also important sources of information.

The Reserve Bank has been providing, on a regular basis, appropriate data directly relating to foreign exchange market operations. The Reserve Bank publishes daily data on exchange rates, forward premium, foreign exchange turnover etc. in the Weekly Statistical Supplement (WSS) of the Reserve Bank Bulletin with a time lag of one week, the movement in foreign exchange reserves of the Reserve Bank on a weekly basis are also published. The Reserve Bank publishes data on nominal effective exchange rate (NEER) and real effective exchange rate (REER), RBI’s purchases and sales in the foreign exchange market along with outstanding forward liabilities on reserves, etc., in the RBI Bulletin with a time lag of one month. A 5-country and a 36-country trade based NEER and REER is published in the Reserve Bank Bulletin. The Reserve Bank has all along, been ahead of many developing and industrial country central banks, been publishing the size of its gross intervention (purchase and sale) per month and its net forward liability position. The daily reference rate of US dollar and Euro as well as the middle rates for four major currencies, viz., US dollar, GBP, Euro and Japanese yen are also available in the RBI website.

As a part of the Special Data Dissemination Standards, IMF prescribed a data template for disclosure of the International reserves and foreign currency liquidity in respect of countries, which have subscribed to SDDS. India’s approach to reserve management closely follows international standards and codes, especially with regard to transparency, disclosure, accountability and data dissemination of foreign reserves. India is among the 49 countries, which have adopted the SDDS template for publication of detailed data on forex reserves. The data template provides some information on a number of parameters including currency composition, deployment of forex reserves and forward positions. These data are made available on monthly basis in the RBI
website as well as the country section of the IMF SDDS site, from the month of October, 2001.

**Issues**

It is proposed to consider five sets of issues covering policy matters; adequacy; costs and benefits; management aspects; and dissemination of information.

**Policy Matters**

First, a critical issue is whether all the external assets are readily available for use. The management of foreign currency assets in India ensures such availability though in respect of a large part of gold which is a small part of official reserves, the quality is not in a form that is readily accepted in international financial markets. There is no likelihood of use of gold in reserves in the foreseeable future. Nevertheless, India has devised mechanisms by which a part of the gold holdings of the Reserve Bank could be converted into usable foreign currency. An incidental issue relates to the policy on enhancement or otherwise of gold component in the foreign exchange reserves and the way it is managed. The proportion of gold in our reserves is coming down in view of accretion to foreign currency reserves and the policy in regard to both holdings and management has been passive.

Secondly, an issue common to many central banks is the advantage in clearly spelling out policy objectives in regard to forex reserves. The mandate as well as the practice in India clearly indicate that maintaining stability is an overriding objective but the detailing of objectives has to reckon the changing circumstances. As explained in the presentation on evolution of policy in India, a very dynamic view, based on multiple indicator approach has been adopted. In this background, the practice of detailing of the context and objectives as is being done in the recent Monetary and Credit Policy Statements of Governor Jalan appears to be very appropriate; since such statements indicate the objectives ex ante, supplementing the earlier practice of reporting the policy
and management, ex post in the Annual Report. The major objective as articulated in recent Policy Statements appears to be to infuse and sustain confidence in the financial markets on our liquidity position and operate therein as appropriate, with a view to containing volatility in forex markets and contributing to financial stability.

**Adequacy or Appropriate Level**

First, the dominant concern of policy is maintaining confidence in our ability to provide liquidity and, there is no precise way of defining at what level the confidence factor would be undermined. In practice, policy makers should make judgements on (a) the difficulties in reviving confidence once it starts getting eroded; (b) the focus of market participants on incremental changes more than total size; and (c) demonstration of willingness to use the reserves when warranted without committing to do so and getting locked into a straight jacket situation. The issue of managing the level of reserves thus becomes, in many ways, as important as the level itself.

Secondly, there are judgements involved in assessing whether the level of forex reserves provides comfort in the face of some weakness in domestic fundamentals. Such a comfort will perhaps not be forthcoming if the current account deficit is not sustainable or exchange rate is highly overvalued. For example, it has been argued that high level of reserves could, under some circumstances, give comfort against weaknesses in the financial sector or high public debt or encourage laxity in financial and fiscal policies.

Thirdly, many indicators of adequacy of reserves do, to a significant extent, capture the potential for drawdown by non-residents while the factors governing drawdown by residents through capital flight are not easily assessed.

Hence, the domestic perceptions of level of reserves add to the comfort in withstanding drawdown through capital flight, and experience indicates that crisis of confidence in currency often originates among residents.
Fourthly, the leads and lags in trade and even invisibles can significantly influence supply and demand in markets, particularly when markets are not fully developed. How should reserve adequacy be assessed with reference to prevalence of such leads and lags? If the leads and lags can be demonstrably impacted by discretionary administrative measures, the amount of reserves needed to moderate such leads and lags may be reduced.

Fifthly, where there is lumpiness in demand and supply as is the case in India, the forex reserves have to be used for meeting the temporary mismatches in forex markets. In such a situation, the incremental changes in the level of forex reserves may also be correspondingly large. There is a tendency among the analysts and media to react negatively to erosion in a more intensive way and positively to addition to reserves in a less intensive way. A higher level of reserves may possibly give greater scope for changes by making them appear marginal.

Sixthly, it was widely felt that contingent credit lines from private sector could be negotiated and thus actual level of forex reserves to be maintained may be correspondingly brought down. The Contingency Credit Line (CCL) from the International Monetary Fund could also have similar effect. India had not accessed this facility, and in any case, experience of other countries has not been very satisfactory on this.

Seventhly, bilateral or multilateral relations at Government level do provide some indications, though on a judgemental basis, of the forex resources that may be readily accessed in case of difficulties. In other words, geopolitical factors do give different levels of comfort of ready availability of forex resources from official sector through bilateral or multilateral channels. India has to constantly make and review its assessment of such access, noting that adequacy of forex reserves needs to be assessed with reference to changing perceptions of the economy in the market place as well as among Governments or the official sector. In brief, a practical issue is, how much of judgemental,
non-economic, and non-market considerations are relevant in assessing adequacy of forex reserves?

**Cost and Benefits**

First, a major question on the level of reserves relates to the scope for measuring overall economic costs and benefits of holding reserves. While concepts of marginal social costs, or opportunity costs are useful for analytical purposes, computation is difficult though assessments are not impossible.

Second, if it is assumed that the direct financial cost of holding reserves is the difference between interest paid on external debt and returns on external assets in reserves, such costs have to be treated as insurance premium to assure and maintain confidence in the availability of liquidity. The benefits of such a premium are not merely in terms of warding off risks but also in terms of better credit rating and finer spreads that many private participants may get while contracting debt. The costs of comfort level in reserves are often met by some benefits, but both are difficult to measure, in financial or economic, and in quantitative terms.

Third, if the level of reserves is considered to be significantly in the high comfort zone, it may be possible to add greater weight to return on forex assets than on liquidity thus reducing net costs if any, of holding reserves.

Fourth, such calculations of costs of holding reserves by comparing return on forex reserve with costs of external debt may imply that addition to reserves has been made by contracting additional external debt. In India, almost the whole of addition to reserves in the last few years has been made while keeping the overall level of external debt almost constant.

Fifth, the costs and benefits of adding or not adding to reserves should be assessed with a medium-term view. For example, in case there is uncertainty about capacity to acquire needed reserves at a later date, a country may prefer
to acquire them sooner than later. Indeed, an inter- temporal view of the adequacy as well as costs and benefits of forex reserves may be in order.

Finally, it is necessary to assess the costs of not adding to reserves through open market operations at a time when the capital flows are strong. In other words, the costs and benefits of forex reserves may have something to do with the open market operations, both in money and forex markets than merely the level itself. In brief, the costs and benefits arise as much out of open market operations of the central bank as out of management of levels of reserves.

Management Aspects

First, sound legislative framework and institutional arrangements are fully in place, with the Reserve Bank being the owner and custodian of reserves, but operating in consultations with Government as necessary. There is no particular need for any changes in this regard.

Second, the Reserve Bank does not have the legal authority to borrow or draw against external credit lines from the non-official sector. Should there be enabling changes in the law? Similarly, there are severe legal limitations on active management of gold reserves to optimise returns and should they be relaxed? Deep seated conservatism is reflected in hesitancy to alter the legislative framework.

Thirdly, there is close co-ordination between the Reserve Bank and Government with regard to magnitudes, composition and maturities of external debt, both in official and private sector. Such co-ordination as it exists today is clearly enhancing the effectiveness of reserve management.

Fourthly, co-ordination between monetary, exchange rate and reserve management is extremely important and it is ensured operationally and articulated publicly through the Monetary and Credit Policy Statements, in a comprehensive manner.