ABSTRACT

The Foreign Exchange (FX) Risk Management is one of the major components of business finance and economics. It is a challenging task of corporate managers across the world. The exchange rates of various currencies evolved over a period of time taking a cue from barter trading system for commodities. Gold, British Pound Sterling (GBP) and US Dollar (USD) have emerged as reference rates in the FX market. As the countries depend on imports and exports for economic success and development, fluctuation of its local currency against major currencies has a direct impact on the profit and loss of the government, companies and firms which have FX exposure.

In India, the Indian Rupee (INR) was linked to GBP at the time of independence and its value was Rs.13.33 per GBP which was equivalent to INR 1 = USD 0.31. Until the early seventies, the exchange market was perceived as fixed rate regime and mainly merchant transactions were transacted. With the collapse of Breton Woods agreement and floatation of major currencies, an opportunity rose for market players to trade in currency volatilities in the borderless and 24 hours market. As a first step, RBI allowed banks to undertake intra-day trading in foreign exchange in 1978 with a stipulation of maintaining "square" or "near square" position at the close of each business each day. During the period 1975-1992, the exchange rate of rupee was officially determined by the RBI in terms of a weighted basket of currencies of India’s major trading partners and there were significant restrictions on the current account transactions.

In July 1991, the economic reforms were initiated by the Government. A two-step downward adjustment in the exchange rate of the rupee was effected on July 1 and 3, 1991 with a view to placing it at an appropriate level in line with the inflation differential to maintain the competitiveness of exports. Subsequently, the Liberalised Exchange Rate Management System (LERMS) involving dual exchange rate mechanism was instituted in March 1992 following the recommendations of the High Level Committee on Balance of Payments. This was followed by the ultimate convergence of the dual rates effective from March 1, 1993. This unification of exchange rate of the rupee marked the beginning of the era of market determined exchange rate regime of rupee, based on demand and supply in the forex market. It was also an important step in the progress towards current account convertibility, which was
finally achieved in August 1994 by accepting Article VIII of the Articles of Agreement of the International Monetary Fund.

The Sodhani Committee, an Expert Group constituted by RBI in November 1994 studied the FX market in India and came up with far reaching recommendations to develop, deepen and widen the forex market. As part of important liberalisation measures, (a) banks were allowed freedom to fix their trading limits, permitted to borrow and invest funds in the overseas markets up to specified limits, accorded freedom to determine interest rates on FCNR deposits within ceilings and were allowed to use derivative products for asset-liability management purposes; and (b) corporates were given flexibility to book forward cover based on past turnover to use a variety of instruments like interest rates and currency swaps, caps/collars and forward rate agreements in the international forex market. Rupee-foreign currency swap market for hedging longer term exposure has developed substantially in the last few years.

The forex market is made up of Authorised Dealers (generally banks), some intermediaries with limited authorisation and end users viz., individuals, corporates, institutional investors and others. It is regulated by RBI. The average monthly turnover in the merchant segment of the forex market increased to US$ 40.5 billion in 2003-2004 from US$ 27.0 billion in 2002-2003; as against, the market's average monthly turnover increased sharply to US$ 174.7 billion in 2003-2004 from US$ 130 billion in the previous year; and the balance was contributed by the Inter-bank segment.

This Thesis is a modest attempt to carry out research analysis of the instruments in Indian FX market, understand the rules and regulations, find out the correlation between different variables of foreign exchange market. And to obtain the market feed back of select Indian companies and compare with risk management practices in advanced countries selected; and develop a strategy for managing FX exposure of Indian companies in view of dynamic and volatile nature of the forex market.

The document contains 5 chapters and separate section on Appendices. The first chapter is Introductory in nature and gives definition of Foreign Exchange Exposure, Risk Management tools and background for the study. Chapter 2 includes, study of literature related to the current topic of FX risk management both in India and abroad. In addition, the methodology adopted to carry out the Research study is dovetailed
namely, background for the study by stating the problem and its importance, listing objectives, raising hypothesis, methodology including scope, data sourcing and tools for analysis. Chapter 3 covers the developments related to foreign exchange market in India; factors affecting the exchange rate movement of INR, the trend of the variables and the USD/INR exchange rate with the help of tables and charts. In Chapter 4, detailed analysis and discussions are carried out covering the practices followed in select FX markets like USA, Germany, UK, Australia, Finland, Chile, Sweden etc. The FX risk management practices by Indian companies and the responses to the questionnaire are analysed. In last Chapter 5, Conclusions from the study drawn and summarized. Suggestions and Recommendations are given.

The appendices section covers (1) Chronology of events related to FX operations - Crisis and Reforms - 1991 to 2005, (2) List of Companies Participated in Survey; (3) Questionnaire; (4) Financial Derivatives Timeline; (5) to (12) Statistical analysis of FX variables Trade Surplus as % of GDP, Import Cover, Short Term debt/Total Debt%, Debt Service Coverage ratio (DSR), External Debt, % change in external debt, FII net sales/purchases, FX Reserves Vs. USD/INR exchange rate; (13) A Primer on Technical Analysis in Foreign Exchange Markets; (14) Hedging FX Exposure in an MNC – a Case Study, (15) Glossary of FX terms; (16) Bibliography and (17) Index. The Bibliography provides 148 references that could be a rich source of information to future researchers.

Generally all businesses are open to risks from movements in prices of raw material, cost of capital, foreign exchange rates and interest rates etc. and need to be managed so as to minimize the risk and maximize the returns.

1.1 Foreign exchange (FX) exposure: FX exposure arises from many different activities viz.

A visitor going to another country has the exchange rate risk that if that country’s currency appreciates against his country’s currency, the trip will be more expensive as he/she needs to spend more of his own currency.

An exporter who sells its products in foreign currency (FC) has the risk that if the value of that FC reduces then the revenues in local currency will be low.
An importer who buys goods priced in FC has the risk when it appreciates thereby making the local currency cost greater than budgeted.

Individuals, companies and fund managers who own foreign assets are exposed to fluctuations in the currencies movements and they may gain or lose depending on the appreciation or depreciation of the holding currency when repatriated.

In the competitive world where imports and exports are integral part of the business, companies have exposure to Foreign Exchange. The magnitude of the risk due to this exposure varies depending on cash flows, exchange rates and interest rates movements.

Eitman and Stonehill (1986) and Shapiro (1991) define the three types of foreign exchange exposure as:

(a) **Translation exposure**: occurs due to accounting based changes in consolidated financial statements caused by exchange rate changes.

(b) **Transactions exposure**: occurs when exchange rates change between the time that an obligation is incurred and the time it is settled, thus affecting actual cash flows.

**Economic exposure**: reflects the change in the present value of the firm’s expected future cash flows as a result of an unexpected change in exchange rates.

**Nature of FX transactions**: These could be of capital or revenue in nature as shown Table It is essential that the company has set up a team in the Corporate Finance/Treasury department to manage FX exposure and the risks thereof.

There is a need to have robust IT systems as to monitor the gaps with proper reports. The management should get timely data and information on the FX risks of the company periodically and take appropriate action required.

This is linked to the rules and regulations of the central bank i.e. Reserve bank of India relating to FX transactions. And the exchange rate and interest rate movements. It is required to develop various scenarios with underlying assumptions so that this risk can be mitigated. For example: US Dollar and Swiss Frank currency pair do not show wide variations where as USD/Euro and USD/INR have been showing high swings/variations.
It is a statistical tool to measure the probable loss when a particular variable, say exchange rate, moves adverse against the reference at a particular confidence level based on historical data. VaR gives broad indicator of profit/loss, company could make if the rate changes by a particular percentage. Systems should be put in place to monitor VaR.

Volatility risk reflects the speed at which asset prices fluctuate. The more rapidly prices changes, the more volatile the asset is said to be. Financial risk managers factor volatility variables into complex VaR formulas to predict price ranges of a derivative portfolio.

**Hedging & Risk Management policies**

The first step in implementing procedural best practices is to formulate an Enterprise-wide risk policy, inter-alia for management of FX Exposure. Top management/Board should lay down policy guidelines and procedures to be followed by the risk management or treasury officials of the company from time to time with respect to Hedging strategies and techniques to be used with proper controls. A strong management information system should also be in place for active monitoring the positions and alert the top management for proper decision making. It is the responsibility of the senior management to be aware of the direction or trend in rates movement and expectations of such shifts and the effects of the changes on profitability and balance sheet size of the company. Risk Reporting & monitoring process must be put in place giving the pertinent information in various formats inter-alia with proper controls like Limits, stop loss limits and breach of any limits, etc. as (a) To err is human and (b) A stitch in time saves nine.

Management should actively monitor the risk of loss and FX positions open and take appropriate decision to minimize losses by taking counter positions using hedges.

The objectives of the current research study are:

To find out the instruments available in India and understand the rules and regulations governing the FX business in India.

To analyze and find out the correlation of different variables of foreign exchange market vis-à-vis USD/INR exchange rates.

To obtain the market feedback from select companies regarding FX management; compare with FX risk management practices followed in select advanced countries.
To develop a strategy for managing Indian companies' FX exposure in view of dynamic and volatile nature of the forex market.

Study of literature related to the current topic of FX risk management both in India and abroad is covered in this chapter. In addition, the methodology adopted to carry out the Research study is dovetailed.

A research work to be more realistic, rightly directed, properly analysed, critically evaluated, better conclusive and not duplicated is possible only when the review of the 'Area of research' is undertaken. It may be noted that review of the existing literature plays an equally important role than the research work itself, as it gives the lead to embark on expanding the existing research area or explore new areas for study.

Research has been carried on related topics by Avadhoot Nadkarni and Rajat Acharya. Studies have been undertaken in Czech Republic by Lacinaand; in USA by Sajjid Chinoy relating to the subject of study.

**RESEARCH DESIGN**

Financial sector reforms started in India with liberalization of economy in 1991. This has led to many opportunities as well as threats to the Indian corporates, which have exposure to FC in the form of imports and exports.

- The Indian Rupee (INR) was under the Fixed Exchange System (FES) linked to the British Pound Sterling (GBP) and through it to other currencies.

- This system of fixed exchange rates could not withstand the pressure emanating from inadequacies of international liquidity arrangement, suspension of convertibility of US Dollar (USD) into gold and increase in the price of oil. As a result of these a rapidly fluctuating and floating exchange rates were born in 1971.

- However, in India, Reserve Bank of India (RBI), the Central Bank, in GBP and Foreign Exchange Dealers' Association (FEDAI) used to give 'rate schedule' to Authorised Dealers (Ads, i.e. Banks and Institutions) based on which the rates to customers were quoted the exchange rates. This system of 'rate schedule' was
abolished effective from 1 January 1984 paving the way for quoting to customers based on on-going market rates by Ads.

- The balance of payment crisis witnessed in the country during the period 1990-91 was marked by record low level of foreign exchange reserves, widening current deficit, Gulf crisis, increasing oil import bill and dwindling/withdrawal of funds by Non-Residents. The foreign exchange reserves were at USD 5,834 Mn (comprising Gold-3,496 Mn, SDRs-102 Mn and FC Assets-2,236 Mn).

- This crisis has prompted the Government of India (GOI) to initiate the structural reforms in 1991 and bring the sagging economy from the brink of collapse.

- To begin with Rupee was devalued in June and July 1991, the fragmented subsidies on exports were replaced with EximScrip, which gave exporters freely tradable import entitlements equivalent to 30-40% of their export earnings. The EximScrip was replaced with Liberalised Exchange Rate Management System (LERMS) introduced in 1992 thus dual exchange rate system was born. LERMS was replaced with Unified exchange rate system in August 1993 and RBI adopted direct quotation system then onwards. Under this unified exchange rate system, RBI allowed Rupee to find its level in the market, albeit with smaller intervention, as and when RBI deemed fit to intervene.

- The GOI had set up Sodhani Committee in 1994 to study the Foreign exchange market in India and suggest measures to strengthen the system. In sequel to that GOI constituted Tarapore Committee in 1997 to study Capital Account Convertibility (CAC) and suggest road map for introduction of CAC and remove all restrictions on capital movement into and outside the borders of country. The Committee has suggested a period of 3 years starting from 1997-98, 1998-99 and 1999-2000 for this purpose, subject to satisfying various sign posts like achieving fiscal deficit of 3.5% to 5% of GDP, inflation of 3.5% to 4.5%, strong financial system, sufficient foreign exchange reserves to the tune of about 28 billion US dollars, stable currency position and so on. Though the reserves position is comfortable at USD 34 billion, RBI has adopted wait and watch position before lifting all controls.

- Meanwhile, RBI has been allowing gradual relaxations under FEMA for strengthening the forex market in India. The forward market for foreign currencies started with introduction of LERMS by RBI and later on left to Ads in the foreign
exchange market. On account of restrictions on free movement of capital and with the administered rates of interest, the forward margins are not truly reflective of interest rate differentials as in the advanced economies, but gradually being corrected. RBI has allowed booking, cancellation and re-booking of forward contracts from time to time in respect of corporate genuine exposures.

- Also, RBI has allowed Ads to write Options to resident customers to cover their genuine exposure subject to certain conditions with effect from 1 January 1994. In case of imports under long term and commercial borrowings the repayment of which extends beyond 5-7 years, the exchange risk is considerably higher at the time of remittances. There are several instruments, which have been acknowledged as ‘durable hedging mechanism’ that has come into vogue in the international markets viz. currency swaps and interest rate swaps.

With the changing business environment corporates are required to take proactive approach to manage the FC exposure. To site related examples...

- The exchange rate as on March/April 1991 was 1USD=Rs.19.53 (i.e. for Rs. 100 = USD 5.12 as per indirect quotation) and the 6 month forwards were at a premium of 2.73% p.a. against USD and at a discount of 2.76% p.a. against GBP. In those days the GBP was the anchor currency of RBI.

- The Rupee was devalued to around Rs.21.40 per Dollar on June 29, 1991, to Rs.23.25 on July 1, 1991 and to Rs.26 on July 3, 1991 for a total decline of around 22%. EximScrip, which gave exporters freely tradable import entitlements equivalent to 30-40% of their export earnings to boost exports. In February 1992, LERMS was introduced by abolishing the EximScrip and the dual exchange rate system was introduced.

- From March 3, 1992 to February 28, 1993, this dual exchange rate system existed. It consisted of (1) a market-determined exchange rate covering 60% of all forex remittances and (2) the official rate, which was determined by RBI for the balance 40% of export proceeds (to be sold to RBI at Rs.26 per USD).

- From March 1, 1993, the unified exchange rate system was introduced for all transactions and also the Direct Method of quotation (for e.g. 1 USD = Rs. X). From March 4, 1992 the Dollar became the intervention currency.
In August 1994, the Rupee was made convertible for all current account transactions. Rupee was gradually allowed to find appropriate level in market.

The Rupee was quoted around Rs.31.37 per USD and the forward premium levels about 1% in 1994. Also, the spot USD/INR rate has gradually depreciated to Rs. 35.91 on March 1, 1997 and Rs. 39.72 in April 1998. This is because, hither to RBI was controlling the spot rates and now it is left to market forces. Market forces include Banks (Authorised Dealers), Financial Institutions, Corporates (Importers and exporters), Government and brokers.

Rupee was quoting at Rs. 46.64 per USD on March 30, 2001 indicating depreciation of about 7% p.a. between 1994 and 2001.

The six-month forward premium levels touched a peak of 24% p.a. in January 1998 and as on March 2001 it was hovering at 8% p.a. Different market participants will have different views of the market movement and take positions accordingly.

When there is high volatility, companies are exposed to more risk if they keep their positions open. Rates could move to their advantage or disadvantage. Supply and demand is constantly changing in the market, and this causes the foreign exchange rate continually to change.

Exchange rates depend on various factors viz. exchange control regulations issued by RBI under erstwhile Foreign Exchange Regulation Act 1973 (FERA) and now Foreign Exchange Management Act 1999(FEMA), inflows and outflows of Foreign Currency (FC) of the country, favourable market conditions, growth in industry, demand for products, domestic savings, rate of inflation, balance of payments position, foreign exchange reserves.

Companies with exports have natural hedge against their FC loan repayments. If the company is a net importer it is better to adopt risk management techniques like forward cover booking, currency swaps, interest rate swaps and options to minimise the risk of volatility in premium and spot levels. The forward premium levels will have substantial impact on profitability of the company.

The companies have the choice (1) to keep the position open or (2) to hedge cover fully or (3) to hedge partially. Therefore, the need for Risk Management has
become imminent for optimisation of income and minimisation of cost. The cost or the premium paid for booking forward cover is like an insurance premium, which protects the company’s liabilities.

- **Under the forward contract**, the future obligations becomes crystal clear at the time of contract and hence, the company management can plan and manage cash flows efficiently. In India, forward contracts are more popular as it is tailor made and settlement takes place on value dates.

- The forward differential is a function of spot rate, interest rates, demand and supply, liquidity in the market, imports and exports, debt servicing obligations, tourism, Non-resident deposits, Foreign Direct Investments (FDI) and Foreign Institutional Investors (FIIs) portfolio investments into and out of the country.

- The finance manager has to be vigilant all the times, he is required to track the currency movements and forward premium levels and decide to get locked into at a particular level, called comfort level, in consultation with top management.

- It may also be mentioned that company has to track the currency movement of the countries of import and/or exports vis-à-vis USD and its likely impact on INR. For e.g. steep depreciation of South East Asian currencies had an impact on INR and India’s exports and Imports by having competitive advantage. However, RBI has not allowed INR to depreciate the way South East Asian Currencies by taking stringent measures against speculators. There was reduced scope for speculators to beat down INR because of strong fundamentals of the Indian Economy.

- Hence, there is an urgent need to study on “the regulatory mechanism, instruments available for forex risk management in India, study the factors affecting the exchange rates, understand the awareness of corporate executives on depth of forex market” and to suggest “methods for effective management of FC exposure by Indian Corporates”.

Multi-national corporations (MNCs) often sell products in various countries with prices denominated in corresponding local currencies. Thus, they possess a multitude of cash flows that are sensitive to changes in exchange rates. Together with interest rates, and commodity prices, these three financial price risks are the subject of the growing field of financial risk management. This essay will in turn discuss various methods and
procedures that a MNC could use to hedge its cash flows and investments against foreign exchange risk through an example of an unreal MNC – ABC Inc.

ABC Inc. is a multi-national million dollar computer peripheral manufacturing business. It has manufacturing plants in Asia, Eastern Europe and Africa. Its products are sold to Europe, Australia and the US. The company results are value in terms of euros as a base currency.

Like many other firms, ABC Inc. attempts to manage its financial exposures through hedging. So, we need to understand what hedging is before discussing the different methods used in hedging.

Hedging is the taking of a position, acquiring a cash flow, an asset or a contract that will rise (fall) in value and offset a fall (rise) in the value of an existing position. It therefore protects the owner of the existing assets from potential loss. However, it also eliminates any gain from an increase in the value of the asset hedged against. The value of a firm is the net present value of all expected future cash flows. The fact that these cash flows are expected means that nothing about the future is certain. So, firms use hedging to reduce risks or uncertainties.

Reduction in risk in future cash flows improves the planning capability of the firm. If the firm can be more accurate in predicting future cash flows, it may be able to undertake specific investments or activities that it might otherwise not consider.

Reduction of risk in future cash flows reduces the likelihood that the firm’s cash flows will fall below a necessary minimum. This minimum point, often referred to as the point of financial distress, lies left of the center of the distribution of expected cash flows.

Management has a comparative advantage over the individual shareholder in knowing the actual risk of the firm. Regardless of the level of disclosure provided by the firm to the public, management always possesses an advantage in the depth and breadth of knowledge concerning the real risks and returns inherent in any firm’s business.
Markets are usually in disequilibrium because of structural and institutional imperfections, as well as unexpected external shocks. Management is in a better position than shareholders to recognize disequilibrium conditions and to take advantage of one-time opportunities to enhance the firm’s value through selective hedging.

Indian companies are satisfied with existing products available for FX risk management. RBI and Government policies are satisfactory. Technical indicators are used for short term hedging. In the medium term, the positions are kept open. The fundamentals are referred but not depended on as RBI intervenes to ensure stability of INR when it becomes volatile. USD/INR exchange rates are mainly driven by Demand and Supply rather than interest rate differential. Companies use products across the spectrum like forwards, options, swaps, FRAs for managing FX Exposure. If RBI publishes the composition of REER and prescribe the range (say 3-5%) +/- it would help corporate. Public sector banks take the major share of FX business followed by private sector and then foreign banks. Market participants prefer gradual depreciation of Indian Rupee.

Strengthening of USD hurts export earnings and makes import cheaper for India and vice-versa. Accordingly any un-hedged portions shall result in a loss or gain. Thus, currency risk due to an unfavorable change in the value of USD/INR will result in an unpredictable decrease in earnings, cash flow or value.

Each individual investment or trading or exchange cover decision should be viewed as discrete decision. A clear objective should be set, with risks identified and managed before the decision is implemented. It should be ensured that the company is not over exposed to any particular risk. Company executives are required to verify the rates, confirmations etc. given by banks and check MTM of the positions, periodically and report to management to take necessary and appropriate action.

Successful Currency Risk Management
It is essential to systematically implement hedging action as long as the market provides prices which cover a company’s budgeted costs/realisation prices so that any adverse movements in USD/INR rates will not cause pressure on margins and also corporates will not be caught unaware all of a sudden. The best hedging decisions are made when risk
managers acknowledge that market movements are unpredictable. A hedge should always seek to minimize risk. It should not represent a gamble on the direction of market prices.

A well-designed hedging program reduces both risks and costs. Hedging frees up resources and allows management to focus on the aspects of the business in which it has a competitive advantage by minimizing the risks that are not central to the basic business. Ultimately, hedging increases shareholder value by reducing the cost of capital and stabilizing earnings.

To measure their risk exposure at a central level, corporates can make use of a few complex models of risk valuation such as Value at Risk (VaR) and sensitivity analysis to the extent possible considering the risk/return trade off.

Clearly, performance measurement standards, accountability and limits of some form must be part of a treasury foreign currency hedging program. Space does not permit a detailed examination of trading control methods, but some broad principles can be stated.

First, management must elucidate the goals of exchange risk management, preferably in operational terms rather than in platitudes such as "we hedge all foreign exchange risks."

Second, the risks of in-house trading (for that’s often what it is) must be recognized. These include losses on open positions from exchange rate changes, counterparty credit risks, and operations risks.

Third, for all net positions taken, the firm must have an independent method of valuing, marking-to-market, the instruments traded. This marking to market need not be included in external reports, if the positions offset other exposures that are not marked to market, but is necessary to avert hiding of losses. Wherever possible, marking to market should be based on external, objective prices traded in the market.

Fourth, position limits should be made explicit rather than treated as "a problem we would rather not discuss." Instead of hamstringing treasury with a complex set of rules, limits can take the form of prohibiting positions that could incur a loss (or gain) beyond a certain amount, based on sensitivity analysis. As in all these things, any attempt to cover up losses should reap severe penalties.
Finally, counterparty risks resulting from over-the-counter forward or swap contracts should be evaluated in precisely the same manner as is done when the firm extends credit to, say, suppliers or customers. In all this, the chief financial officer might well seek the assistance of an accounting or consulting firm, and may wish to purchase software tailored to the purposes.

**FX Exposure Management Policy**

It is essential to have a well documented Policies and procedures highlighting the following items for efficient FX management.

- Mission
- Objectives
- Definitions
- Policy guidelines
- Roles and responsibilities
- FX Exposure management
- Controls – Reporting & Corrective actions