# Corporate Hedging for Foreign Exchange Risk in India

**Submitted by:**

**Anuradha Sivakumar and Runa Sarkar**
**Industrial and Management Engineering Department**
**Indian Institute of Technology, Kanpur**
**Kanpur, India-208016**
**Contact: anuradha@iitk.ac.in**
**runa@iitk.ac.in**

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## Abstract

This paper attempts to evaluate the various alternatives available to the Indian corporates for hedging financial risks. By studying the use of hedging instruments by major Indian firms from different sectors, the paper concludes that forwards and options are preferred as short term hedging instruments while swaps are preferred as long term hedging instruments. The high usage of forward contracts by Indian firms as compared to firms in other markets underscores the need for rupee futures in India. In addition, the paper also looks at the necessity of managing foreign currency risks, and looks at ways by which it is accomplished. A review of available literature results in the development of a framework for the risk management process design, and a compilation of the determinants of hedging decisions of firms.

The paper concludes by pointing out that the onus is on Reserve Bank of India, the apex bank of the country, and its Working Group on Rupee Futures to realise the need for rupee futures in India and the convertibility of the rupee.

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# 1. Introduction

In 1971, the Bretton Woods system of administering fixed foreign exchange rates was abolished in favour of market-determination of foreign exchange rates; a regime of fluctuating exchange rates was introduced. Besides market-determined fluctuations, there was a lot of volatility in other markets around the world owing to increased inflation and the oil shock. Corporates struggled to cope with the uncertainty in profits, cash flows and future costs. It was then that financial derivatives – foreign currency, interest rate, and commodity derivatives emerged as means of managing risks facing corporations.

In India, exchange rates were deregulated and were allowed to be determined by markets in 1993. The economic liberalization of the early nineties facilitated the introduction of derivatives based on interest rates and foreign exchange. However derivative use is still a highly regulated area due to the partial convertibility of the rupee. Currently forwards, swaps and options are available in India and the use of foreign currency derivatives is permitted for hedging purposes only.[1]

This study aims to provide a perspective on managing the risk that firm's face due to fluctuating exchange rates. It investigates the prudence in investing resources towards the purpose of hedging and then introduces the tools for risk management. These are then applied in the Indian context. The motivation of this study came from the recent rise in volatility in the money markets of the world and particularly in the US Dollar, due to which Indian exports are fast gaining a cost disadvantage. Hedging with derivative instruments is a feasible solution to this situation.

This report is organised in 6 sections. The next section presents the necessity of foreign exchange risk management and outlines the process of managing this risk. Section 3 discusses the various determinants of hedging decisions by firms, followed by an overview of corporate hedging in India in Section 4. Evidence from major Indian firms from different sectors is summarized here and Section 5 concludes.

[1] Sourced from www.rbi.org

## 2. Foreign Exchange Risk Management: Process & Necessity

Firms dealing in multiple currencies face a risk (an unanticipated gain/loss) on account of sudden/unanticipated changes in exchange rates, quantified in terms of exposures. Exposure is defined as a contracted, projected or contingent cash flow whose magnitude is not certain at the moment and depends on the value of the foreign exchange rates. The process of identifying risks faced by the firm and implementing the process of protection from these risks by financial or operational hedging is defined as foreign exchange risk management. This paper limits its scope to hedging only the foreign exchange risks faced by firms.

### 2.1 Kinds of Foreign Exchange Exposure

Risk management techniques vary with the type of exposure (accounting or economic) and term of exposure. Accounting exposure, also called translation exposure, results from the need to restate foreign subsidiaries' financial statements into the parent's reporting currency and is the sensitivity of net income to the variation in the exchange rate between a foreign subsidiary and its parent.

Economic exposure is the extent to which a firm's market value, in any particular currency, is sensitive to unexpected changes in foreign currency. Currency fluctuations affect the value of the firm's operating cash flows, income statement, and competitive position, hence market share and stock price. Currency fluctuations also affect a firm's balance sheet by changing the value of the firm's assets and liabilities, accounts payable, accounts receivables, inventory, loans in foreign currency, investments (CDs) in foreign banks; this type of economic exposure is called balance sheet exposure. Transaction Exposure is a form of short term economic exposure due to fixed price contracting in an atmosphere of exchange-rate volatility.

The most common definition of the measure of exchange-rate exposure is the sensitivity of the value of the firm, proxied by the firm's stock return, to an unanticipated change in an exchange rate. This is calculated by using the partial derivative function where the dependant variable is the firm's value and the independent variable is the exchange rate (Adler and Dumas, 1984).

### 2.2 Necessity of managing foreign exchange risk

A key assumption in the concept of foreign exchange risk is that exchange rate changes are not predictable and that this is determined by how efficient the markets for foreign exchange are. Research in the area of efficiency of foreign exchange markets has thus far been able to establish only a weak form of the efficient market hypothesis conclusively which implies that successive changes in exchange rates cannot be predicted by analysing the historical sequence of exchange rates.(Soenen, 1979). However, when the efficient markets theory is applied to the foreign exchange market under floating exchange rates there is some evidence to suggest that the present prices properly reflect all available information.(Giddy and Dufey, 1992). This implies that exchange rates react to new information in an immediate and unbiased fashion, so that no one party can make a profit by this information and in any case, information on direction of the rates arrives randomly so exchange rates also fluctuate randomly. It implies that foreign exchange risk management cannot be done away with by employing resources to predict exchange rate changes.

### 2.2.1 Hedging as a tool to manage foreign exchange risk[2]

There is a spectrum of opinions regarding foreign exchange hedging. Some firms feel hedging techniques are speculative or do not fall in their area of expertise and hence do not venture into hedging practices. Other firms are unaware of being exposed to foreign exchange risks. There are a set of firms who only hedge some of their risks, while others are aware of the various risks they face, but are unaware of the methods to guard the firm against the risk. There is yet another set of companies who believe shareholder value cannot be increased by hedging the firm's foreign exchange risks as shareholders can themselves individually hedge themselves against the same using instruments like forward contracts available in the market or diversify such risks out by manipulating their portfolio. (Giddy and Dufey, 1992).

There are some explanations backed by theory about the irrelevance of managing the risk of change in exchange rates. For example, the International Fisher effect states that exchange rates changes are balanced out by interest rate changes, the Purchasing Power Parity theory suggests that exchange rate changes will be offset by changes in relative price indices/inflation since the Law of One Price should hold. Both these theories suggest that exchange rate changes are evened out in some form or the other. Also, the Unbiased Forward Rate theory suggests that locking in the forward exchange rate offers the same expected return and is an unbiased indicator of the future spot rate. But these theories are perfectly played out in perfect markets under homogeneous tax regimes. Also, exchange rate-linked changes in factors like inflation and interest rates take time to adjust and in the meanwhile firms stand to lose out on adverse movements in the exchange rates**.**

The existence of different kinds of market imperfections, such as incomplete financial markets, positive transaction and information costs, probability of financial distress, and agency costs and restrictions on free trade make foreign exchange management an appropriate concern for corporate management. (Giddy and Dufey, 1992) It has also been argued that a hedged firm, being less risky can secure debt more easily and this enjoy a tax advantage (interest is excluded from tax while dividends are taxed). This would negate the Modigliani-Miller proposition as shareholders cannot duplicate such tax advantages. The MM argument that shareholders can hedge on their own is also not valid on account of high transaction costs and lack of knowledge about financial manipulations on the part of shareholders.

There is also a vast pool of research that proves the efficacy of managing foreign exchange risks and a significant amount of evidence showing the reduction of exposure with the use of tools for managing these exposures. In one of the more recent studies, Allayanis and Ofek (2001) use a multivariate analysis on a sample of S&P 500 non-financial firms and calculate a firms exchange-rate exposure using the ratio of foreign sales to total sales as a proxy and isolate the impact of use of foreign currency derivatives (part of foreign exchange risk management) on a firm's foreign exchange exposures. They find a statistically significant association between the absolute value of the exposures and the (absolute value) of the percentage use of foreign currency derivatives and prove that the use of derivatives in fact reduce exposure.

[2] Based on Giddy, Ian H and Dufey, Gunter,1992, *The Management of Foreign Exchange Risk*

**2.3 Foreign Exchange Risk Management Framework[3]**

Once a firm recognizes its exposure, it then has to deploy resources in managing it. A heuristic for firms to manage this risk effectively is presented below which can be modified to suit firm-specific needs i.e. some or all the following tools could be used.

- **Forecasts:** After determining its exposure, the first step for a firm is to develop a forecast on the market trends and what the main direction/trend is going to be on the foreign exchange rates. The period for forecasts is typically 6 months. It is important to base the forecasts on valid assumptions. Along with identifying trends, a probability should be estimated for the forecast coming true as well as how much the change would be.

- **Risk Estimation:** Based on the forecast, a measure of the *Value at Risk* (the actual profit or loss for a move in rates according to the forecast) and the *probability* of this risk should be ascertained. The risk that a transaction would fail due to *market-specific problems*[4] should be taken into account. Finally, the Systems Risk that can arise due to inadequacies such as reporting gaps and implementation gaps in the firms' exposure management system should be estimated.

- **Benchmarking:** Given the exposures and the risk estimates, the firm has to set its limits for handling foreign exchange exposure. The firm also has to decide whether to manage its exposures on a cost centre or profit centre basis. A cost centre approach is a defensive one and the main aim is ensure that cash flows of a firm are not adversely affected beyond a point. A profit centre approach on the other hand is a more aggressive approach where the firm decides to generate a net profit on its exposure over time.

- **Hedging:** Based on the limits a firm set for itself to manage exposure, the firms then decides an appropriate hedging strategy. There are various financial instruments available for the firm to choose from: futures, forwards, options and swaps and issue of foreign debt. Hedging strategies and instruments are explored in a section.

- **Stop Loss:** The firms risk management decisions are based on forecasts which are but estimates of reasonably unpredictable trends. It is imperative to have stop loss arrangements in order to rescue the firm if the forecasts turn out wrong. For this, there should be certain monitoring systems in place to detect critical levels in the foreign exchange rates for appropriate measure to be taken.

- **Reporting and Review:** Risk management policies are typically subjected to review based on periodic reporting. The reports mainly include profit/ loss status on open contracts after marking to market, the actual exchange/ interest rate achieved on each exposure, and profitability vis-à-vis the benchmark and the expected changes in overall exposure due to forecasted exchange/ interest rate movements. The review analyses whether the benchmarks set are valid

[3] Based on inputs from Kshitij Consultancy Services

[4] For example, the foreign exchange market of a developing country may be highly regulated and thus exposed to sudden swings due to frequent policy changes.

and effective in controlling the exposures, what the market trends are and finally whether the overall strategy is working or needs change.

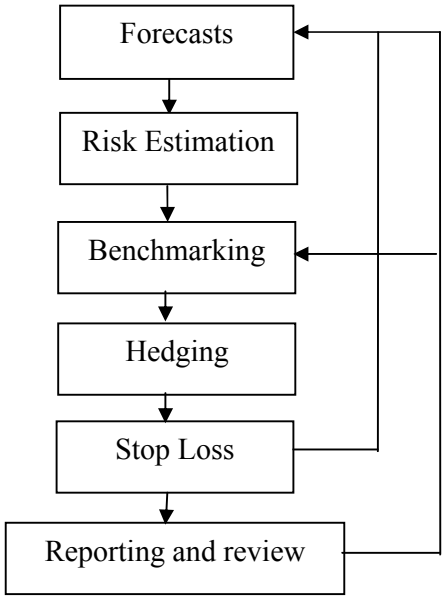


Figure 1: Framework for Risk Management

**2.4 Hedging Strategies/ Instruments**

A derivative is a financial contract whose value is derived from the value of some other financial asset, such as a stock price, a commodity price, an exchange rate, an interest rate, or even an index of prices. The main role of derivatives is that they reallocate risk among financial market participants, help to make financial markets more complete. This section outlines the hedging strategies using derivatives with foreign exchange being the only risk assumed.

- **Forwards:** A forward is a made-to-measure agreement between two parties to buy/sell a specified amount of a currency at a specified rate on a particular date in the future. The depreciation of the receivable currency is hedged against by selling a currency forward. If the risk is that of a currency appreciation (if the firm has to buy that currency in future say for import), it can hedge by buying the currency forward. E.g if RIL wants to buy crude oil in US dollars six months hence, it can enter into a forward contract to pay INR and buy USD and lock in a fixed exchange rate for INR-USD to be paid after 6 months regardless of the actual INR-Dollar rate at the time. In this example the downside is an appreciation of Dollar which is protected by a fixed forward contract. The main advantage of a forward is that it can be tailored to the specific needs of the firm and an exact hedge can be obtained. On the downside, these contracts are not marketable, they can't be sold to another party when they are no longer required and are binding.

- **Futures:** A futures contract is similar to the forward contract but is more liquid because it is traded in an organized exchange i.e. the futures market. Depreciation of a currency can be hedged by selling futures and appreciation can be hedged by buying futures. Advantages of futures are that there is a central market for futures which eliminates the problem of double

coincidence. Futures require a small initial outlay (a proportion of the value of the future) with which significant amounts of money can be gained or lost with the actual forwards price fluctuations. This provides a sort of leverage. The previous example for a forward contract for RIL applies here also just that RIL will have to go to a USD futures exchange to purchase standardised dollar futures equal to the amount to be hedged as the risk is that of appreciation of the dollar. As mentioned earlier, the tailorability of the futures contract is limited i.e. only standard denominations of money can be bought instead of the exact amounts that are bought in forward contracts.

- **Options:** A currency Option is a contract giving the right, not the obligation, to buy or sell a specific quantity of one foreign currency in exchange for another at a fixed price; called the Exercise Price or Strike Price. The fixed nature of the exercise price reduces the uncertainty of exchange rate changes and limits the losses of open currency positions. Options are particularly suited as a hedging tool for contingent cash flows, as is the case in bidding processes. Call Options are used if the risk is an upward trend in price (of the currency), while Put Options are used if the risk is a downward trend. Again taking the example of RIL which needs to purchase crude oil in USD in 6 months, if RIL buys a Call option (as the risk is an upward trend in dollar rate), i.e. the right to buy a specified amount of dollars at a fixed rate on a specified date, there are two scenarios. If the exchange rate movement is favourable i.e the dollar depreciates, then RIL can buy them at the spot rate as they have become cheaper. In the other case, if the dollar appreciates compared to today's spot rate, RIL can exercise the option to purchase it at the agreed strike price. In either case RIL benefits by paying the lower price to purchase the dollar

- **Swaps:** A swap is a foreign currency contract whereby the buyer and seller exchange equal initial principal amounts of two different currencies at the spot rate. The buyer and seller exchange fixed or floating rate interest payments in their respective swapped currencies over the term of the contract. At maturity, the principal amount is effectively re-swapped at a predetermined exchange rate so that the parties end up with their original currencies. The advantages of swaps are that firms with limited appetite for exchange rate risk may move to a partially or completely hedged position through the mechanism of foreign currency swaps, while leaving the underlying borrowing intact. Apart from covering the exchange rate risk, swaps also allow firms to hedge the floating interest rate risk. Consider an export oriented company that has entered into a swap for a notional principal of USD 1 mn at an exchange rate of 42/dollar. The company pays US 6months LIBOR to the bank and receives 11.00% p.a. every 6 months on 1st January & 1st July, till 5 years. Such a company would have earnings in Dollars and can use the same to pay interest for this kind of borrowing (in dollars rather than in Rupee) thus hedging its exposures.

- **Foreign Debt:** Foreign debt can be used to hedge foreign exchange exposure by taking advantage of the International Fischer Effect relationship. This is demonstrated with the example of an exporter who has to receive a fixed amount of dollars in a few months from present. The exporter stands to lose if the domestic currency appreciates against that currency in the meanwhile so,

to hedge this, he could take a loan in the foreign currency for the same time period and convert the same into domestic currency at the current exchange rate. The theory assures that the gain realised by investing the proceeds from the loan would match the interest rate payment (in the foreign currency) for the loan.

### 2.4.1 Choice of hedging instruments[5]

The literature on the choice of hedging instruments is very scant. Among the available studies, Géczy et al. (1997) argues that currency swaps are more cost-effective for hedging foreign debt risk, while forward contracts are more cost-effective for hedging foreign operations risk. This is because foreign currency debt payments are long-term and predictable, which fits the long-term nature of currency swap contracts. Foreign currency revenues, on the other hand, are short-term and unpredictable, in line with the short-term nature of forward contracts. A survey done by Marshall (2000) also points out that currency swaps are better for hedging against translation risk, while forwards are better for hedging against transaction risk. This study also provides anecdotal evidence that pricing policy is the most popular means of hedging economic exposures.

These results however can differ for different currencies depending in the sensitivity of that currency to various market factors. Regulation in the foreign exchange markets of various countries may also skew such results.

## 3. Determinants of Hedging Decisions

The management of foreign exchange risk, as has been established so far, is a fairly complicated process. A firm, exposed to foreign exchange risk, needs to formulate a strategy to manage it, choosing from multiple alternatives. This section explores what factors firms take into consideration when formulating these strategies.

### 3.1 Production and Trade vs. Hedging Decisions

An important issue for multinational firms is the allocation of capital among different countries production and sales and at the same time hedging their exposure to the varying exchange rates. Research in this area suggests that the elements of exchange rate uncertainty and the attitude toward risk are irrelevant to the multinational firm's sales and production decisions *(Broll,1993)*. Only the revenue function and cost of production are to be assessed, and, the production and trade decisions in multiple countries are independent of the hedging decision.

The implication of this independence is that the presence of markets for hedging instruments greatly reduces the complexity involved in a firm's decision making as it can separate production and sales functions from the finance function. The firm avoids the need to form expectations about future exchange rates and formulation of risk preferences which entails high information costs.

### 3.2 Cost of Hedging[6]

[5] Sourced from Allayannis, George , Eli Ofek, 2001**,** Exchange rate exposure, hedging, and the use of foreign currency derivatives

[6] Based on, L.A. Soenon, 1979, Efficient Market Implications for Foreign Exchange Exposure Management

Hedging can be done through the derivatives market or through money markets (foreign debt). In either case the cost of hedging should be the difference between value received from a hedged position and the value received if the firm did not hedge. In the presence of efficient markets, the cost of hedging in the forward market is the difference between the future spot rate and current forward rate plus any transactions cost associated with the forward contract. Similarly, the expected costs of hedging in the money market are the transactions cost plus the difference between the interest rate differential and the expected value of the difference between the current and future spot rates. In efficient markets, both types of hedging should produce similar results at the same costs, because interest rates and forward and spot exchange rates are determined simultaneously. The costs of hedging, assuming efficiency in foreign exchange markets result in pure transaction costs. The three main elements of these transaction costs are brokerage or service fees charged by dealers, information costs such as subscription to Reuter reports and news channels and administrative costs of exposure management.

### 3.3 Factors affecting the decision to hedge foreign currency risk[7]

Research in the area of determinants of hedging separates the decision of a firm to hedge from that of how much to hedge. There is conclusive evidence to suggest that firms with larger size, R&D expenditure and exposure to exchange rates through foreign sales and foreign trade are more likely to use derivatives. (*Allayanis and Ofek, 2001)* First, the following section describes the factors that affect the decision to hedge and then the factors affecting the degree of hedging are considered.

- **Firm size:** Firm size acts as a proxy for the cost of hedging or economies of scale. Risk management involves fixed costs of setting up of computer systems and training/hiring of personnel in foreign exchange management. Moreover, large firms might be considered as more creditworthy counterparties for forward or swap transactions, thus further reducing their cost of hedging. *The book value of assets is used as a measure of firm size.*

- **Leverage**: According to the risk management literature, firms with high leverage have greater incentive to engage in hedging because doing so reduces the probability, and thus the expected cost of financial distress. Highly levered firms avoid foreign debt as a means to hedge and use derivatives.

- **Liquidity and profitability:** Firms with highly liquid assets or high profitability have less incentive to engage in hedging because they are exposed to a lower probability of financial distress. *Liquidity is measured by the quick ratio, i.e. quick assets divided by current liabilities). Profitability is measured as EBIT divided by book assets.*

- **Sales growth**: Sales growth is a factor determining decision to hedge as opportunities are more likely to be affected by the underinvestment problem. For these firms, hedging will reduce the probability of having to rely on external financing, which is costly for information asymmetry reasons, and thus enable them to enjoy uninterrupted high growth. *The measure of sales*

[7]Based on What makes firms manage FX risk? Kim , Sung 2005

*growth is obtained using the 3-year geometric average of yearly sales growth rates.*

As regards the degree of hedging Allayanis and Ofek (2001) conclude that the sole determinants of the degree of hedging are exposure factors (foreign sales and trade). In other words, given that a firm decides to hedge, the decision of how much to hedge is affected solely by its exposure to foreign currency movements.

This discussion highlights how risk management systems have to be altered according to characteristics of the firm, hedging costs, nature of operations, tax considerations, regulatory requirements etc. The next section discusses these issues in the Indian context and regulatory environment.

# 4. An Overview of Corporate Hedging in India

The move from a fixed exchange rate system to a market determined one as well as the development of derivatives markets in India have followed with the liberalization of the economy since 1992. In this context, the market for hedging instruments is still in its developing stages. In order to understand the alternative hedging strategies that Indian firms can adopt, it is important to understand the regulatory framework for the use of derivatives here.

## 4.1 Development of Derivative Markets in India [8]

The economic liberalization of the early nineties facilitated the introduction of derivatives based on interest rates and foreign exchange. Exchange rates were deregulated and market determined in 1993. By 1994, the rupee was made fully convertible on current account. The ban on futures trading of many commodities was lifted starting in the early 2000s. As of October 2007, even corporates have been allowed to write options in the atmosphere of high volatility.[9]

Derivatives on stock indexes and individual stocks have grown rapidly since inception. In particular, single stock futures have become hugely popular. Institutional investors prefer to trade in the Over-The-Counter(OTC) markets to interest rate futures, where instruments such as interest rate swaps and forward rate agreements are thriving. Foreign exchange derivatives are less active than interest rate derivatives in India, even though they have been around for longer. OTC instruments in currency forwards and swaps are the most popular. Importers, exporters and banks use the rupee forward market to hedge their foreign currency exposure. Turnover and liquidity in this market has been increasing, although trading is mainly in shorter maturity contracts of one year or less. The typical forward contract is for one month, three months, or six months, with three months being the most common.

The Indian rupee, which is being traded on the Dubai Gold and Commodities Exchange (DGCX), crossed a turnover of $23.24 million in June 2007.

## 4.2 Regulatory Guidelines for the use of Foreign Exchange Derivatives[10]

With respect to foreign exchange derivatives involving rupee, residents have access to foreign exchange forward contracts, foreign currency-rupee swap instruments and currency options – both cross currency as well as foreign currency-rupee. In the case of derivatives involving only foreign currency, a range of products such as Interest Rate Swaps, Forward Contracts and Options are allowed. While these products can be used for a variety of purposes, the fundamental requirement is the existence of an underlying exposure to foreign exchange risk i.e. derivatives can be used for hedging purposes only.

The RBI has also formulated guidelines to simplify procedural/documentation requirements for Small and Medium Enterprises (SME) sector. In order to ensure that SMEs understand the risks of these products, only banks with which they have credit relationship are allowed to offer such facilities. These facilities should also have some

[8] Based on Indian Derivative Markets by Asani Sarkar
[9] Economic Times, Oct 30,2007
[10] Sourced from www.rbi.org

relationship with the turnover of the entity. Similarly, individuals have been permitted to hedge upto USD 100,000 on self declaration basis.

Authorised Dealer(AD) banks may also enter into forward contracts with residents in respect of transactions denominated in foreign currency but settled in Indian Rupees including hedging the currency indexed exposure of importers in respect of customs duty payable on imports and price risks on commodities with a few exceptions. Domestic producers/users are allowed to hedge their price risk on aluminium, copper, lead, nickel and zinc as well as aviation turbine fuel in international commodity exchanges based on their underlying economic exposures. Authorised dealers are permitted to use innovative products like cross-currency options; interest rate swaps (IRS) and currency swaps, caps/collars and forward rate agreements (FRAs) in the international foreign exchange market. Foreign Institutional Investors (FII), persons resident outside India having Foreign Direct Investment (FDI) in India and Non-resident Indians (NRI) are allowed access to the forwards market to the extent of their exposure in the cash market.

**4.3 Hedging Instruments for Indian Firms**

The recent period has witnessed amplified volatility in the INR-US exchange rates in the backdrop of the sub-prime crisis in the US and increased dollar-inflows into the Indian stock markets. In this context, the paper has attempted to study the choice of instruments adopted by prominent firms to stem their foreign exchange exposures. All the data for this has been compiled from the 2006-2007 Annual Reports of the respective companies. A summary of the foreign exchange risk hedging behaviour of select Indian firms is given in Table 1.

**Table 1: Evidence of Derivative use for Hedging FX Risk in Indian Firms**

| Instruments | Currency(mn) | Rs (Cr) | Nature of exposure |
|---|---|---|---|
| **Reliance Industries** | | | |
| Currency Swaps | | 1064.49 | Earnings in all businesses are linked to USD. The key input, crude oil is purchased in USD. All export revenues are in foreign currency and local prices are based on import parity prices as well. |
| Options Contracts | | 2939.76 | |
| Forward Contracts | | 5764.10 | |
| **Maruti Udyog** | | | |
| Forward Contracts | 6411 (INR-JPY)<br>70 ($-INR) | | Import/Royalty payable in Yen and Exports Receivables in dollars. |
| Currency swaps | 124.70(USD -INR) | | Interest rate and forex risk. |
| **Mahindra and Mahindra** | | | |
| Forward Contracts | 350 (INR-JPY)<br>2(INR-EUR)<br>27.3($-INR) | | Trade payables in Yen and Euro and export receivables in dollars. |
| Currency Swaps | 5390 (JPY-INR) | | Interest rate and foreign exchange risk. |
| **Arvind Mills** | | | |
| Forward Contracts | 152.98 ($-INR)<br>2.25 (GBP-INR)<br>5 (INR-$) | 703.67<br><br>21.88 | Most of the revenue is either in dollars or linked to dollars due to export. |
| Option Contracts | 122.5 ($-INR) | 547.16 | |
| **Infosys** | | | |
| Forward Contracts | 119 ($-INR) | 529 | Revenues denominated in these currencies. |
| Options Contracts<br>Range barrier options | 4 ($-INR)<br>8 (INR-$)<br>2 ($-INR)<br>3 (Eur-INR) | 18<br>36<br>971 | |
| **Tata Consultancy Services** | | | |
| Forward Contracts | 15 (Eur-INR)<br>21 (GBP-INR) | 265.75 | Revenues largely denominated in foreign currency, predominantly US$, GBP, and Euro. Other currencie include Australian $, Canadian $, South African Rand, and Swiss Franc |
| Option Contracts | 830 ($-INR)<br>47.5 (Eur-INR)<br>76.5 (GBP-INR) | 4057 | |
| **Ranbaxy** | | | |
| Forward Contracts | | 2894.589 | Exposed on accounts receivable and loans payable. Exposure in USD and Jap Yen |
| **Dr. Reddy's Labs** | | | |
| Forward Contracts | 398 ($-INR)<br>11(Eur $) | | Foreign currency earnings through export, currency requirements for settlement of liability for import of goods. |
| Options Contracts | 30 (EUR-$) | | |

**Note:**

1. $-INR Forward contracts denote selling of USD forwards to convert revenues to INR. INR-$ Forward contracts denote buying of USD forwards to meet USD payment obligations.
2. $-INR Option contracts are Put options to sell USD. INR-$ are Call options to buy USD

**4.4 Discussion on Hedging by Indian Firms**

From Table 1, it can be seen that earnings of all the firms are linked to either US dollar, Euro or Pound as firms transact primarily in these foreign currencies globally. Forward contracts are commonly used and among these firms, Ranbaxy and RIL depend heavily on these contracts for their hedging requirements. As discussed earlier, forwards contracts can be tailored to the exact needs of the firm and this could be the reason for their popularity. The tailorability is a consideration as it enables the firms to match their exposures in an exact manner compared to exchange traded derivatives like futures that are standardised where exact matching is difficult.

RIL, Maruti Udyog and Mahindra and Mahindra are the only firms using currency swaps. Swap usage is a long term strategy for hedging and suggests that the planning horizons for these companies are longer than those of other firms. These businesses, by nature involve longer gestation periods and higher initial capital outlays and this could explain their long planning horizons.

Another observation is that TCS prefers to hedge its exposure to the US Dollar through options rather than forwards. This strategy has been observed among many firms recently in India[11]. This has been adopted due to the marked high volatility of the US Dollar against the Rupee. Options are more profitable instruments in volatile conditions as they offer unlimited upside profitability while hedging the downside risk whereas there is a risk with forwards if the expectation of the exchange rate (the guess) is wrong as firms lose out on some profit. The use of Range barrier options by Infosys also suggests a strategy to tackle the high volatility of the dollar exchange rates. Software firms have a limited domestic market and rely on exports for the major part of their revenues and hence require additional flexibility in hedging when the volatility is high. Another implication of this is that their planning horizons are shorter compared to capital intensive firms.

It is evident that most Indian firms use forwards and options to hedge their foreign currency exposure. This implies that these firms chose short-term measures to hedge as opposed to foreign debt. This preference is possibly a consequence of their costs being in Rupees, the absence of a Rupee futures exchange in India and curbs on foreign debt. It also follows that most of these firms behave like Net Exporters and are adversely affected by appreciation of the local currency. There are a few firms which have import liabilities which would be adversely affected by Rupee depreciation. However it must be pointed out that the data set considered for this study does not indicate how the use of foreign debt by these firms hedges their exposures to foreign exchange risk and whether such a strategy is used as a substitute or complement to hedging with derivatives.

[11]The Economic Times, 01,Sep, 2007

## 5. Conclusion

Derivative use for hedging is only to increase due to the increased global linkages and volatile exchange rates. Firms need to look at instituting a sound risk management system and also need to formulate their hedging strategy that suits their specific firm characteristics and exposures.

In India, regulation has been steadily eased and turnover and liquidity in the foreign currency derivative markets has increased, although the use is mainly in shorter maturity contracts of one year or less. Forward and option contracts are the more popular instruments. Regulators had initially only allowed certain banks to deal in this market however now corporates can also write option contracts. There are many variants of these derivatives which investment banks across the world specialize in, and as the awareness and demand for these variants increases, RBI would have to revise regulations.

For now, Indian companies are actively hedging their foreign exchanges risks with forwards, currency and interest rate swaps and different types of options such as call, put, cross currency and range-barrier options. The high use of forward contracts by Indian firms also highlights the absence of a rupee futures exchange in India. However, the Dubai Gold and Commodities Exchange in June, 2007 introduced Rupee- Dollar futures that could be traded on its exchanges and had provided another route for firms to hedge on a transparent basis. There are fears that RBI's ability to control the partially convertible currency will be subdued by this introduction but this issue is beyond the scope of this study. The partial convertibility of the Rupee will be difficult to control if many exchanges offer such instruments and that will be factor to consider for the RBI.

The Committee on Fuller Capital Account Convertibility had recommended that currency futures may be introduced subject to risks being contained through proper trading mechanism, structure of contracts and regulatory environment. Accordingly, Reserve Bank of India in the Annual Policy Statement for the Year 2007-08 proposed to set up a Working Group on Currency Futures to study the international experience and suggest a suitable framework to implement the proposal, in line with the current legal and regulatory framework.

The limitation of this study is that only one type of risk is assumed i.e the foreign exchange risk. Also applicability of conclusion is limited as only very few firms were reviewed over just one time period. However the results from this exploratory study are encouraging and interesting, leading us to conclude that there is scope for more rigorous study along these lines.

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