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HEDGING APPROACHES TO REDUCE FOREIGN EXCHANGE RATE EXPOSURE IN INDIAN PERSPECTIVE

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ABSTRACT

Home currency invoicing and hedging permit worldwide engaged organizations to decrease their exposure to foreign exchange rate deviations. This paper talks about foreign exchange rate exposure and risk expressing transaction risk, translation risk and economic risk. The paper states that home currency invoicing and hedging with currency derivatives let a reasonably uncomplicated administration of transaction and translation exposure and risk and argues its feasibility of use in diverse situation. It's complicated to manage economic risk because of its characteristics, but the paper argues that normal hedging offers potential to manage it. In addition, the management techniques for foreign exchange rate exposure is discussed and accompanied with a study of their real application. This paper tries to assess the available options to the Indian corporate for hedging exchange risks. The paper also talks about the requirement of managing foreign exchange risks, and argues the ways by which it is accomplished.

KEYWORDS

exchange rate risk, invoicing currency, transaction risk, translation risk and economic risk.

INTRODUCTION

Risk is a natural phenomenon of human behavior. For that reason, it arises in perhaps every facet of human effort. Captivatingly, it is not easy to come across a general explanation of the notion of risk, as it arises by stimulating diverse forms reliant on the nature of person action. Individual attitudes towards risk are borne out of the universal belief that monetary returns and risks are nearly forever extremely tangled, both in amount as well as in concurrence. The progression of our society, when seen as a sequence of joint returns garnered by civilization, can inescapably be linked with risk-taking on the part of persons and societies who created.

Foreign exchange risk affects a business's financial situation by fluctuations in the currency exchange rates. The risk is mainly sensitive for businesses that do transaction in more than one currency (like, exporters and importers). On the other hand, other business organizations are in some way exposed to foreign exchange risk if, their business is based on imported goods and services.

Where upward and downward movement in the currency exchange rates put impact on the business's profitability, currency risk should be governed. In a business where the vital functions are unlike financial services, the foreign exchange risk should be controlled in such a way that the concentration of the business is on delivering the main goods or services with no exposure to financial risks.

Due to unforeseen fluctuations in currency exchange rates firms who deals in more than one currency has to bear a risk in terms of unanticipated loss or profit and is further exposed to foreign exchange exposure. Foreign exchange exposure's is a probable cash flow whose scale is not sure at the instant rather it depends on the rate of the foreign exchange. Foreign exchange risk management is the way of identifying risks faced by the firm and executing the process of securing from these risks by financial or operational hedging.

We may say that the foreign exchange rate risk relate to the consequence of unpredicted exchange rate changes on the value of the firm. It may also be said that due to unhedged foreign exchange exposure it is the likely direct loss or indirect loss in the business, value of assets and liabilities, cash flows, net income and, which in turn changes its market capitalization in the stock market from a move in the foreign exchange rate. Firms' with multinational operations should diagnose the precise current risk exposure and then decide the strategy to hedge and the alternative financial hedging instruments to deal with these currency risks.

To carry out national and international monetary transactions every country has its own currency. A pair of currency is involved for all the international business transactions. For example, say if a firm in India wishes to source funds from global fiscal marketplace in United States currency i.e., US dollars (foreign currency) for short duration or long duration then on the date of maturity the borrowed amount would have to be repay in specific decided currency along with accrued interest on loan amount. It illustrates that the borrowed US dollars (foreign currency) sourced in the country (India) will be exchanged into Indian National Rupees (home currency), and when borrowed money (in USD) are repaid to the lender then the home currency (INR) will be exchanged into lender's currency (USD). As a result, the currency units of a country engage an exchange of one currency for another.

Foreign exchange rate in general is the price of one currency for other currency. The foreign exchange market of a country offers the operational system to exchange different pair of currencies and consequently, it assist in transfer of purchasing power of currency from one country to another. Trading in foreign currencies has grown immensely over the past several decades due to enormous growth of international trade as can be seen in the figure 3.1(USD 17.3 trillion merchandise exports of 160 WTO members in 2012 and USD 17.8 trillion in 2013).

TABLE 1: WORLD MERCHANDISE EXPORTS AND IMPORTS

Year	1948	1953	1963	1973	1983	1993	2003	2013
World merchandise exports: USD (in billions)	59	84	157	579	1838	3684	7380	18301
World merchandise imports: USD (in billions)	62	85	164	594	1883	3800	7696	18409

Source: https://www.wto.org/english/res_e/statis_e/its2014_e/its2014_e.pdf

The firms are exposed to the risk of foreign exchange rate movements because of incessant change in the exchange rates. Due to fluctuations in exchange rates the foreign currencies denominated cash flows, assets and liabilities of a firm experience a change in the value over a period of time. This inconsistency causes foreign exchange rate risk in the worth of cash flows, assets and liabilities. From the time when the fixed exchange rate system was dropped out in the early 1970s, particularly in developed countries, the currency risk has turn out to be extensive for various business firms. Outcome of this is that, a range of risk hedging financial instruments like foreign currency futures, foreign currency forwards, foreign currency options, and foreign currency swaps are being used to hedge the foreign exchange risk. Exporters who invoice their receivables in foreign currency utilize currency derivatives and lock the foreign currency exchange rate at a high level so as to secure their earnings from the depreciation of the foreign currency. In a same way the importers who invoice their payables in foreign currency utilize currency derivatives and lock the foreign currency exchange rate at a low level so as to secure their earnings from the appreciation of the foreign currency. Investors from India who invests in a foreign currency denominated securities would use currency derivatives and lock the foreign currency exchange rate at a high level so as to secure their revenue from the depreciation of the foreign currency.

Foreign exchange speculators get a rewarding base due to high degree of volatility of conversion rates. Currency futures contracts are mainly used from the many available currency derivatives instruments. Currency futures are exchange traded contracts. These are offered and traded through an organized exchange. The fundamental purpose of the futures exchange is to relocate risk from the hedger to someone who is keen to bear the risk for profit. Organized exchanges offer customers protection and grievance procedures, beside other benefits. The futures contracts undertake the future exchange rate between the pair of currencies and can be obtained at the offered rate by the currency exchange for a particular date in the future. The most recurrent users of these contracts are exporters

who invoice their receivables in foreign currency. They wish to safeguard themselves from the depreciation in the foreign currency exchange rate through locking the future foreign currency exchange rate at a high level.

A main supposition in the notion of foreign exchange risk is that exchange rate movements are not predictable and that this is determined by how efficient the foreign exchange markets are. Soenen in 1979 in the research work concluded that, foreign exchange markets has been able to create only a weak form of the efficient market hypothesis categorically which implies that consecutive movements in currency exchange rates cannot be predicted by analyzing the past series of foreign exchange rates. In 1992 Giddy and Dufey has concluded that if the efficient markets theory is applied to the foreign exchange market under floating exchange rates there is some indication which advocate that the current prices appropriately replicate all available information. This suggests that exchange rates respond to latest information in an urgent and impartial manner, and this information could not be used as a base to earn profit by any one of the party to the foreign exchange transaction. Foreign exchange rates vary arbitrarily in case; information on trend of the rates arrives randomly. It signifies that to forecast foreign exchange rate changes, foreign exchange risk management cannot be through with by engaging means.

All those firms that have exposure to foreign exchange risk must sensibly administer & manage its exposure mutually with management of other risks because the risk that is caused by unfavorable movements in foreign exchange rates could result in a loss to the company. The magnitude of risk is derived out by multiplying the amount of exchange rate changes with the volume and duration of the foreign currency exposure.

In today's era foreign currency markets have turned into complex global exposure management due to globalization of financial markets and advancement in Foreign exchange market. It is multifaceted primarily for the reason that the companies as they develop internationally have to bear multiplicity of exposure because of increasing size and the mounting volatility & variations in currency conversion rates of the foreign exchange markets. Therefore, a rational and fair approach is essential in view of formulating firms' foreign exchange risk management strategy. The preliminary aspect in such a programme is to settle on the precise amount of the assets which are under risk.

SOURCE OF FOREIGN EXCHANGE RISK

Foreign exchange risk for a business can crop up from a number of causes, such as:

- From which country the company imports or to which country the company exports
- If costs, for instance capital outlay, are denominated in foreign currency
- If proceeds of exports is customary in foreign currency
- If income, for instance dividends, interest and royalties received from foreign company
- where the firm's advances and/or borrowings are denominated (and thus receivable and/or payable) in foreign currency
- if the firm has assets in a foreign country such as foreign currency term deposits operations or auxiliary units that are valued in a foreign currency

RISKS IN FOREIGN EXCHANGE TRADING

Foreign exchange risk is the probable direct loss to a firm due to unhedged foreign exchange exposure or indirect loss in the its cash flows, assets and liabilities, net profit and, in turn, its stock market value because of movement in the exchange rate. In general we may say that currency rate risk is related with the impact on the value of the firm caused by unanticipated changes in the exchange rate. Exchange rate risk inherent in global firms' operations can be managed by determining the precise kind of existing risk exposure, the hedging strategy and the accessible financial instruments to deal with these currency risks.

Since Global firms are into international operations they become participants in currency markets. Firm needs to recognize the kind of risks that it is exposed to and the quantity of risk they bear. The three main types of exchange rate risk are:

1. TRANSACTION RISK

It is principally cash flow risk which deals with the consequence of foreign exchange rate fluctuation on transactional account exposure related to receivables i.e., export contracts, payables i.e., import contracts or repatriation of dividends. Whenever exchange rate varies in the currency of denomination of any such contract it will affect in a direct transaction exchange rate risk to the firm.

2. TRANSLATION RISK

It is fundamentally balance sheet exchange rate risk. It tells about exchange rate changes to the valuation of a foreign subsidiary and, in line, to the consolidation of a foreign subsidiary to the parent company's balance sheet. For a foreign subsidiary translation risk is typically measured by the exposure of net assets (assets less liabilities) to probable exchange rate changes. While doing consolidation of financial statements, on the basis of accounting regulations affecting the parent company the translation could be completed either at the closing exchange rate or at the average exchange rate of the period. Hence, though income statements are generally translated at the average exchange rate over the period, balance sheet exposures of foreign subsidiaries are usually translated at the current exchange rate at the time of consolidation.

3. ECONOMIC RISK

It reveals mainly the risk to the firm's present value of future operating cash flows from exchange rate fluctuations. In core we may say that, economic risk shows the outcome of exchange rate changes on revenues and operating expenses. Where cost of domestic inputs and imports are treated as an expense of the firm and domestic sales and exports are treated as revenue for the firm. Economic risk is generally applied to the present value of future cash flow operations of a firm's parent company and foreign subsidiaries.

To build up a strategy for managing currency risk recognition of the different kind of currency risk, together with their measurement, is crucial.

OPTIMIZATION OF FOREIGN EXCHANGE RISK

As per their fundamental origin exposure management methods can be classified into internal and external techniques. The main aim of internal techniques is to diminish or avoid an exposed position to come up. Internal techniques are primarily exercise as a part of firm's regulatory financial management and intend to minimize its exposure to exchange risk.

External techniques fundamentally are the contractual actions to offer shield against an exchange loss which may occur from an existing translation or exposed position.

These techniques are executed to give security against the likelihood that exchange losses will result from the foreign exchange risk exposure which the internal techniques have not been able to reduce.

INTERNAL TECHNIQUES

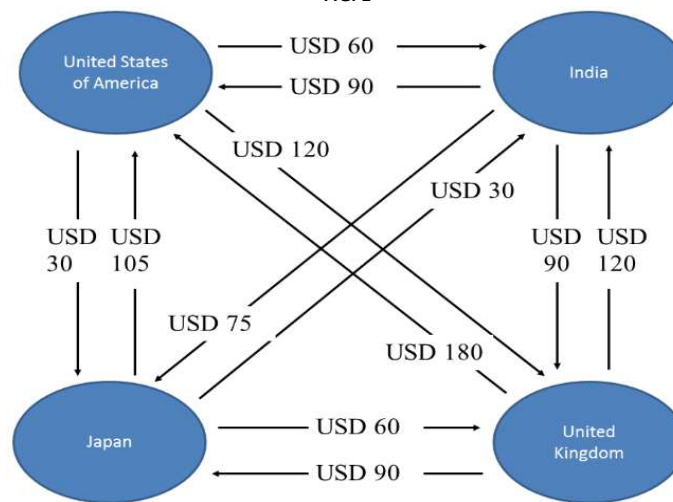
NETTING

Offsetting of exposures in one currency with exposure in the same or another currency is the concept of netting. In this exchange rates are likely to move high in such a way that losses or gains on the first exposed position should be offset by gains or losses on the second currency exposure. There are two types of netting i.e., bilateral netting and multilateral netting.

Each pair of subsidiaries nets out their own positions with each other in bilateral netting. Cash flows are reduced by the lower of each firm's purchases from or sales to its netting partner.

Consider an Indian Multinational Corporation with subsidiary in US, United Kingdom and Japan and the following foreign exchange transactions which may be seen in the figure:

FIG. 1



Assuming the exchange rate to be USD/INR 60.00, US will owe India USD 60 and India will owe USA USD 90. In nutshell India will owe USA USD 30 i.e., (USD 90 – USD 60). With this it may save one transfer, save float, save INR 1800 foreign exchange i.e., [(USD 90 – USD 60) x USD/INR 60]. India will owe United Kingdom USD 90 and United Kingdom will owe India USD 120. In nutshell United Kingdom will owe India USD 30 i.e., (USD 120 – USD 90). With this it may save one transfer, save float, save INR 1800 foreign exchange i.e., [(USD 120 – USD 90) x USD/INR 60]. United Kingdom will owe Japan USD 90 and Japan will owe United Kingdom USD 60. In nutshell United Kingdom will owe Japan USD 30 i.e., (USD 90 – USD 60). With this it may save one transfer, save float, save INR 1800 foreign exchange i.e., [(USD 90 – USD 60) x USD/INR 60]. Japan will owe US USD 105 and US will owe Japan USD 30. In nutshell Japan will owe US USD 75 i.e., (USD 105 – USD 30). With this it may save one transfer, save float, save INR 4500 foreign exchange i.e., [(USD 105 – USD 30) x USD/INR 60]. Japan will owe India USD 30 and India will owe Japan USD 75. In nutshell India will owe Japan USD 45 i.e., (USD 75 – USD 30). With this it may save one transfer, save float, save INR 2700 foreign exchange i.e., [(USD 75 – USD 30) x USD/INR 60]. United Kingdom will owe US USD 180 and US will owe United Kingdom USD 120. In nutshell United Kingdom will owe US USD 60 i.e., (USD 180 – USD 60). With this it may save one transfer, save float, save INR 3600 foreign exchange i.e., [(USD 180 – USD 120) x USD/INR 60]. Bilateral Netting would reduce the number of foreign exchange transactions as follows; Examine United States of America and Indian affiliate. Bilateral Netting: United States of America and India net out at USD 30, United Kingdom and India net out at USD 30, United Kingdom and Japan net out at USD 30, Japan and US net out at USD 75, India and Japan net out at USD 45 and United Kingdom and US net out at USD 60.

Before bilateral netting:

- Total funds (gross) to be moved: USD 1050

With bilateral netting:

- Total funds (net) to be moved: USD 270

This is a reduction of USD 780 in foreign exchange transactions.

Studies have shown the following benefits of netting:

- Decrease in the expenses associated with moving funds internationally.
- Decrease in the number of foreign exchange transactions (also reduces costs).
- Reduction in intra-company floats (wire transfers can take up to 5 days).
- Savings in administrative time.

MATCHING

Netting is relevant only to the operations of a multinational company relatively than exporters or importers. It is usually used only for inter company flows occurring out of groups receipts and payments. As compared to this, matching applies to both inter-company cash flows and third parties. It can be applied by the exporter, importer and the multinational company. Matching is the procedure in which a firm matches its currency inflows with its currency outflows with respect to amount and timing. Receipts received in a particular currency are used to make payments in that currency and consequently, it lessen the necessity to hedge foreign exchange risk exposure. Only for unmatched fraction of foreign currency cash flows hedging is required. If futures exchange rate seems cheaper than the expected spot rate then the aggressive firm may choose to capture futures contract on its currency payables and leave the currency receivables exposed to exchange risk. There may be two types of matching:

- Natural Matching
- Parallel Matching

NATURAL MATCHING

In natural matching operation, two-way cash flow in the same foreign currency is required.

PARALLEL MATCHING

In parallel matching if the movements in two currencies are parallel, gains in one foreign currency are likely to be offset by losses in another. However, both sides of the parallel match lead to exchange losses or gains if the exchange rates move in opposite direction to expectations.

LEADING AND LAGGING

It is an adjustment of intercompany credit terms; leading means a prepayment of a trade obligation and lagging means a delayed payment. If an importer (payment) expects that the currency it is due to pay will depreciate, it may attempt to delay payment. This may be achieved by agreement or by exceeding credit terms. If an exporter (receipt) expects that the currency it is due to receive will depreciate over the next three months it may try to obtain payment immediately. This may be achieved by offering a discount for immediate payment. The problem lies in guessing which way the exchange rate will move. This is another way of managing exposures by shifting the timing of the exposures by leading and lagging payables and receivables. The rule of thumb is lead i.e. advance payables and lag i.e. postpone receivables in strong currencies and conversely in weak currencies.

Lead and lags in combination with netting form an important cash management strategy for multinationals with extensive intra-company payments.

It is principally intercompany technique while netting and matching are entirely defensive measures. Intercompany leading and lagging is a part of risk-optimizing strategy or an aggressive strategy that optimizes anticipated exchange gains. Leading and lagging requires a lot of discipline on the part of participating subsidiaries.

Lot of discipline is needed on the part of participating subsidiaries using leading and lagging. Global business firms which use leading and lagging strategy extensively may either assess subsidiary performance in a pre-interest basis or take into consideration interest charges and credits to conquer evaluation trouble.

PRICING POLICY

There are two types of pricing strategy to control foreign exchange risk exposure.

- Price variation
- Currency of invoicing

Price variation: To defend themselves against exchange rate risk firms may increase selling prices to offset the unfavorable effects of exchange rate movements. However, the analysis of competitive situation, customer credibility, price controls and internal delays is required for making the decision to increase the selling price.

Currency of invoicing: A global firm may be able to move the complete exchange rate risk to the other party by invoicing its exports in its home currency and insist that its imports too be invoiced in its home currency. In simple terms, persist that all foreign customers pay in your home currency and that your company pays for all imports in your home currency.

However the exchange-rate risk has not disappeared, but it has just been passed onto the counterparty. Though opposite firm may not be satisfied with the strategy and just look for a substitute supplier. It may be attainable if firm is in a monopoly position, however in a competitive situation this is an impractical approach.

EXTERNAL TECHNIQUES

Exporters and importers as well as multinational corporations use external techniques of hedging. External exposure hedging techniques cost are fixed and predetermined. The key external exposure management techniques are as follows:

FORWARD EXCHANGE AGREEMENTS

An agreement in which two parties agree to exchange a pair of currencies with each other at a specified exchange rate on particular future date or within future specified duration is a forward agreement. Forward agreement diminish exchange risk ingredient in the foreign transactions. Forward price is paid to safeguard from the foreign exchange risk and optimum cost alternative should be selected to reduce the cost of purchase. However, some disagreement is there on how to calculate cost of forward cover primarily because there are two types of cost involved an ex-ante cost and an opportunity cost.

Assume an Indian exporter who expects to receive USD 1 million in six months. Suppose that the price of the dollar is Rs. 60 now. If the price of the dollar falls by 10 per cent, the exporter loses Rs.60 lakhs. But by selling dollars forward the exporter locks in the current forward rate of Rs. 60.50 which means even after dollar depreciating by 10 percent in the next 6 months, the exporter would still get Rs.60.50 per dollar. Thus, the exporter has fully hedged him i.e. he took a financial position to reduce his exposure to exchange rates.

SHORT TERM BORROWING

Firms may hedge risks in the forward market through short-term borrowing technique. A firm may borrow dollar or any other foreign currency or the home currency. Short-term borrowing has a few benefits over forward cover. Using short term borrowing techniques, two major complexities of the settlement dates and the ongoing stream of foreign currency are simply solved. If the exposed receivable has been computable then the cost of short-term borrowing cover is the home currency amount which would have been received. The short-term borrowing technique yields the amount at the settlement date which is the foreign currency converted into home currency less the spot rate.

DISCOUNTING

The fundamental objective of discounting is to exchange the proceeds from the foreign currency receivable into the home currency as quickly as feasible. This technique may be adopted to resolve the problems of ongoing foreign currency exposures and uncertain settlement dates. In discounting techniques, the effective discount rate less the home currency deposit rate is the cost.

FORFAITING

Forfaiting as a hedging technique may be used as a resource to cover export receivables.

Forfaiting is the term usually used to indicate the purchase of obligations which is maturing at some future date and the obligation arising from deliveries of goods and services generally export transactions without recourse to any prior holder of the obligation.

The forfaiter will deduct interest in advance for the whole period of credit and give out the net proceeds instantly. The exporter thus nearly converts his credit based sales into a cash transaction. It almost removes the risk of nonpayment, once the goods have been delivered to the foreign buyer as per agreement with the stipulated conditions of sale. The exporter approaches a forfaiter before completing a transaction's structure. Once the forfaiter confirms the deal and sets the discount rate, the exporter can include the discount into the selling price. The exporter then accepts a commitment issued by the forfaiter, signs the contract with the importer, and acquire, if needed, a guarantee from the importer's bank that offers the documents needed to complete the forfaiting. The exporter delivers the goods to the importer and delivers the documents to the forfaiter who authenticate them and pays for them as settled in the commitment. The exporter delivers the goods to the importer and delivers the documents to the forfaiter who validates them and pays for them as decided in the commitment.

GOVERNMENT EXCHANGE RISK GUARANTEE

In most of the countries in this world government agencies are providing insurance against export credit risk and have also initiated special export financing schemes for exporters in order to encourage exports. Some of these agencies have begun to provide exchange risk insurance to their exporters and the standard export credit guarantees. To avail this service the exporters have to pay a small premium on their export sales and for this premium the government agency take up the responsibility of all exchange losses and gains beyond an assured level. At earlier stages, such exchange risk guarantee schemes were launched to support capital goods exports where receivable exposures were of long-term nature. Government exchange risk guarantees can also be provided to cover foreign currency borrowing by public bodies. In all situations all the various exposure management techniques are not accessible because of restrictions imposed by the market-place and by regulatory system. In the similar mode, the availability of internal techniques is mainly a function of the international participation of each firm.

FORWARD COVER

To hedge purchases as well as sales forward cover may be used. It may be two types' explicitly forward purchases cover and forward sales cover.

Forward purchase cover is extended to have terms and conditions associated with export of goods & services. Time period of delivery of currency should not be beyond seven days of the possible date of receipt as per the forward purchase cover. It may be provided for purchases of proceeds of foreign currency notes from licensed qualified money changers, provided that the currency notes were exported through the bank, for realization and credit to the bank's account. Hedging can be done for all other necessities associated to export.

Forward sales cover is extended to imports of goods & services in India, where the import is allowable as per the Import Control Regulation and repayment of foreign currency loans, approval from RBI for availing such loan should have been acquired. Such approval ought to have the information of currency, amount of interest and the repayment procedure.

The forward cover would have to offer repayment as per established terms & conditions. Repayment liabilities under such loans would be carried forward for several years and as the market would not forecast rate beyond six to seven months it would not be feasible to fix the forward rate for such future dates.

OPTIONS

An option is a contract between two parties known as the buyer and the seller or writer where buyer of a contract buys a right to buy or sell an underlying on a specific future date at a predetermined price. Options are rights and not obligations to buy and sell underlying. It is an exchange traded contract. The buyer of a contract has to pay an option premium to the seller (*Foreign exchange*) of a contract for the right but not the obligation to buy or sell a certain amount of a specified quantity of one currency in exchange at a preset price for a specified period of time. The right to buy a currency is a call option and the right to sell a currency is a put option.

Foreign currency options are contracts that have an upfront fee, and give the owner the right, but not the obligation to trade domestic currency for foreign currency (or vice versa) in a specified quantity at a specified price over a specified time period. There are many diverse styles of options like puts and calls, European style, American style, and future-style etc. The vital variation between an option and the other hedging techniques is that an option has a nonlinear payoff profile. They allow the elimination of downside risk without cutting off the benefit from upside risk.

On the basis of the exercise time the determination of the payoff price or the prospect of a payoff there are diverse kinds of options. While several different ranges exist, there are a few that corporations have found functional for the use of hedging transaction exposures.

Out of many the one is the average rate option. Over the life of the contract this option has the average spot price as its payoff price. As a result these options can be valuable to a firm that has a stable stream on inflows or outflows in a particular currency over time. One large average rate option will fundamentally work as a hedge for the total stream of transaction. In addition, the firms will lock in an average exchange rate over the period. Since the average rate is relatively less volatile than the closing rate, this option will be cheaper than corresponding typical options. Thus the firms are able to reduce transaction costs and reap the benefits from the hedging in due course of the averaging effect.

Basket rate option is one more accepted exotic option for corporations. In place of buying options on a group of currencies individually, the firms can take an option based upon some weighted average of currencies that go with its transaction blueprint. Since currencies are not perfectly correlated the average exchange rate will be less volatile and this option will consequently be cheaper.

FUTURES

Futures are contract between two parties where buyer and seller of a contract do a contract to buy or sell an underlying on a specific future date at a predetermined price. It is an exchange traded contract. Future contracts are similar to forward agreement but are more liquid as these are traded on recognized exchanges. Since these are exchange traded and therefore have standardized and limited contract sizes, maturity dates, initial collateral, and several other features. Specified that futures contracts are available in only certain sizes, maturities and currencies, it is usually not likely to get a precisely offsetting position to entirely eliminate the exposure. These are traded on an exchange and therefore have a liquid secondary market. In case the contract timing does not go with the exposure timing then these can be unwind easily in the secondary market.

SWAPS

Swaps is a contract between two parties, known as counter-parties, who agrees to swap payments between them for an agreed time period as per the rules agreed in the agreement. It is a financial transaction which engages two counter-parties who agreed conditions to exchange flows of payments or cash flows overtime on the basis of agreement at the commencement of the contract. Swap is similar to a sequence of forward agreements. Swaps engage a chain of exchanges between counter parties at particular futures dates.

CHOOSING BETWEEN INSTRUMENTS

The firm should take into consideration the costs and the decisive home currency cash flows which should also be properly adjusted for time value of every method based upon the rates available to the firm while selecting between these diverse financial techniques. The diverse techniques have different kind of cash flows at different points in time and this should also be taken into consideration by the firm. Considering the assumption of risk neutrality in efficient markets, all of these contracts must be priced so that their expected net present value is zero. This means that, techniques, like forward and futures, that have no upfront payment will have a zero expected payoff; while options, depending on their strike price and maturity, will have an expected payoff whose discounted value is equal to the upfront premium.

TRANSACTION HEDGING UNDER UNCERTAINTY

Hedging does not take the arguments of uncertainty about either the timing or the existence of an exposure.

UNCERTAINTY ABOUT TRANSACTION DATE

Many corporate treasurers are reluctant to commit themselves to the before time shelter of foreign currency cash flow. This is because, even though they are certain that a foreign currency transaction will take place, however they are not certain about the accurate date of the transaction happening. These sought of uncertainties crops up due to probable disparity of maturities of transaction and hedge are unsubstantiated. When more exact information is available firms may adjust the maturity date of financial contracts at a later date through the mechanism of rolling or early unwinding. The consequential risk borne by the firm from the maturity mismatch is generally reasonably small as compared to the total risk of leaving a transaction exposed in anticipation of superior information becomes accessible.

Let us take an illustration on an Indian exporter who had been expecting to receive, from a foreign purchaser, a payment of USD 5 million at a future date t. In the beginning, he had hedged himself by selling forward the USD 5 million at a forward price of USD1 = INR 60.00. Moving towards date t, he is intimated that his foreign customer will pay one month later at date t+1. As a result, at date t the Indian producer have to roll over his forward contract on the basis of the then prevailing exchange rates:

Spot rate at t (USD/INR): 58.35 / 45

One-month Franc discount 75 / 100 (Outright forward 59.10 / 59.45)

The Indian exporter's transactions can be seen below:

TABLE 2

Time	Transaction	Exchange rate	Cash Flow (INR in millions)
0	Forward sale of USD 5 million to t	USD/INR 60	0.00
t	Roll over: spot purchase of USD 5million	USD/INR 59.45	300.00
		USD/INR 60.20	- 297.25
	forward sale of \$1m to t+1	(59.45 + 0.75)	2.75
t+1	Execute forward contract		301.00

Observe that the rollover rate is not a usual forward rate. This rate is calculated by tagging the swap bid rate of 75 Indian National paisa relating normally to the exporter's forward sale of INR onto the current spot ask price of 59.45 USD/INR at which he has just bought USD. In view of the fact that the rollover only need the bank to enter a swap as opposed to a swap and a spot. On a spot purchase through a forward sale transaction, the bank does not charge a bid-ask spread for the forward round trip component.

Now the Indian exporter collects his INR in two installments. Assume he re-invests his profits on the original forward contract, INR 2.75m for 30 days at the INR deposit rate, which happens to be 9.00% at the time. This produces a small amount of interest equal to INR 0.20m. In total the exporter collects an amount equal to INR 301.00 + 2.75 + 0.20 = INR 303.95 millions. This can be decomposed as:

INR 303.95 = INR 300 + 3.75 + 0.20

or, the proceeds of the original forward rate contracted at time 0 for maturity t, plus the forward premium prevailing at date t for the extra month, plus the interest on the gain from rolling over the forward contract.

Despite the fact that it is not easy to separate the interest rate risk arising from the unanticipated delay of the payment which was inevitable and the basis risk arising from hedging the wrong maturity, we can see that the risky components of the roll over return (3.75 + 0.20) are small in size relative to the exchange rate risk that would have been borne if the transaction had not been hedged, even if incorrect. Thus the fact that the maturity of a recognized transaction is not known is not satisfactory reason to delay the hedging of the transaction.

UNCERTAINTY REGARDING EXISTENCE OF EXPOSURE

One more type of uncertainty that occur concerning transaction exposure is in submitting bids with prices fixed in foreign currency for future contracts. As a bid is accepted, the firm will either make payment or has to receive foreign currency denominated cash flows. Since it is a contingent transaction exposure this is an unusual source of exchange rate risk. An option is perfectly matched in such cases. The firm is actually concerned in getting insured against unfavorable exchange rate movements between the time the bid is submitted and the time it may be accepted. As a result an option is capable to guard the value of the foreign currency cash flows related with the bid against unfavorable currency movements. The option price, which can be incorporated in the bid, defend the value of the expected cash flows from declining below a predetermined level and signify the most the firm can lose due to currency risk. In these circumstances there are four probable results which may be the bid is either accepted or rejected and the option is either exercised or let to expire. The effective proceeds to the firm per unit of option contract are equal to the net cash flows of the project.

TABLE 3

<i>Circumstance</i>	<i>Bid Accepted</i>	<i>Bid Rejected</i>
If spot price is superior than exercise price then let the option expire	Spot Price	0
If spot price is inferior than exercise price then exercise the option	Exercise Price	(Exercise Price – Spot Price)

OPERATIONAL TECHNIQUES FOR MANAGING TRANSACTION EXPOSURE

Through implementing operational strategies that have the worth of offsetting existing foreign currency exposure we can manage transaction exposures. At the time when sound currency derivative market do not exist these techniques are particularly significant for the contracted foreign currencies.

These techniques comprises of:

RISK SHIFTING

To reduce the foreign exchange exposure firm should not have the foreign exchange exposure. By saying that it can be infer that if the firms do invoicing of all transactions in their home currency then it can stay away from transaction exposure. Since one party to a transaction has to bear transaction exposure for a foreign currency transaction therefore this technique cannot work for every firm. Usually the firm that is able to bear the foreign exchange risk at the lowest cost will bear the exposure. Certainly, the choice on which firm will bear the currency risk possibly will affect the concluding price at which the contract is finalized.

CURRENCY RISK SHARING

The contract may be agreed on in such a mode that any fluctuation in the foreign exchange rate from a settled upon currency rate for the date of the transaction will be divide between both the parties. This alternative of sharing the risk may be applied to evade the currency risk. As we know that one party's loss is the other party's gain therefore short terms transaction exposure is approximately a zero sum game.

Say for instance an Indian firm 'X' contracts to pay a US firm 'Y' USD 100 in 3 months based upon an agreed on spot rate for three months from now of USD/INR 60, thus costing the Indian firm INR 6000. However, under risk sharing the Indian firm and the US firm agree to share the exchange rate gain or loss faced by the Indian firm by adjusting the USD price of the goods accordingly. Thus, if the rate in 3 months turns out to be USD/INR 58, then rather than only costing the Indian firm USD 100 * 58 = INR 5800, the INR 200 gain over the agreed upon rate is split between the firms resulting in the Indian firm paying INR 5900 and the US firm receiving USD 101.72. Alternatively if the exchange rate had fallen to USD/INR 62, then instead of paying INR 6200 for the good, the exchange rate loss to the Indian firm is shared and it only pays INR 6100 and the US firm accepts USD 98.39. Note that this does not eliminate the transaction exposure, it simply splits it.

LEADING AND LAGGING

As already discussed in earlier section one of the operating strategy to shrink the magnitude of transaction gains and losses involves playing with the timing of foreign currency cash flows. At the time when the foreign currency is appreciating in which an existing nominal contract is denominated, firm be keen on to pay off the liabilities before time and get the receivables later. The former is known as leading and the latter is known as lagging. Obviously when the foreign currency is depreciating in which a nominal contract is denominated, firm feel like to pay off the liabilities later and to get the receivables before time.

REINVOICING CENTERS

A re invoicing center is a separate corporate subsidiary that deals with in one location all transaction exposure from intra-company trade. The manufacturing associates export the goods to the foreign distribution associates only by exporting to the re invoicing center. The re invoicing center then exports the goods to the foreign distribution associate. The significance of the re invoicing center is that the transactions with each associate are carried out in the associate's home currency, and the re invoicing center takes up all the transaction exposure. The major benefits for using re invoicing centers are the advantage related with centralized management of transaction exposures from within company sales, the capability to place foreign currency prices in advance to help out foreign associates budgeting processes, and an enhanced capability to deal with intra associate cash flows as all associate settle their intra-company accounts in their local currency. Re invoicing centers are generally an offshore (third country) associate in order to meet the criteria for domestic nonresident category and benefit from the probable tax and currency market access advantages that arise during that distinction.

OPERATING EXPOSURE

Firm has to bear the changes in the relative prices due to the changes in the real foreign exchange rate. Competitiveness of the firm is affected by the changes in relative prices. As we know that diverse competitive situation entails a different economic actuality, it is improbable that the firm's main operational selection will be most advantageous. As a result, on the basis of its view regarding the determination of the real foreign exchange rate movement, the firm possibly will wish to do some changes in its operating strategy. In reply to the exchange rate change a firm requires some accessible elasticity that permits it some liberty to revise its operations. In the direction of purely carrying out the unfavorable foreign exchange rate movement the firm possibly will require short-term cash flow shield during the installation of elasticity or may be complete cash flow cover if the suppleness, or otherwise real operating options, does not exist. The firm may treat this operating flexibility or operating options as real hedges to save from financial dent itself from real exchange rate movement. By using financial instruments the firm may provisionally defend or insure cash flow. Consequently both real operational and financial hedging strategies are vital for the management of a firm's operating exposure to foreign exchange rates.

OPERATIONAL STRATEGIES FOR MANAGING OPERATING EXPOSURE

The impact of foreign exchange rate movements on the firm's real operations is operating exposure. So the firm managing this exposure should consider operation reactions to exchange rate movements. Preferably the firm would like to arrange its functional department like operations, production and manufacturing, sourcing of resources, sales and marketing in that way in which the firm can take action when there is a change in the real exchange rate in order to get gain of the enhanced competitive positions and also to restrict the damage caused due to competitiveness decline. These possibly will be the anticipated measures that offer the firm an operating alternative, or minor changes in the intensity of operations that strives to diminish the unfavorable impact of exchange rate movements on firm value. Operational strategies call for the firms to act in response to the new economic atmosphere which generates from the exchange rate change and formulate changes to the economic actions of the firm. In financial hedging, firm without taking any factual economic measures receive an agreed cash flow if there is any exchange rate change.

DIVERSIFYING OPERATIONS

Firm may come up with an alternative of diversifying into functional operations with offsetting exposures to the exchange rate so as to deal with the impact of exchange rate exposure on the firm's cash flows. This strategy generates a likely operating hedge that maintains total foreign currency cash flows balanced even at the time of fluctuations in real exchange rate. Say for instance; firm may merge the manufacture and exporting of the products with an importing operation that imports competitive customer products from foreign manufacturers. This strategy has its apparent advantages however; it has some probable weaknesses like it may make the firm doing the transactions which may not lead to any obvious comparative benefit which may make a way of incompetent source of funds. We may say that the firm may observe both the transactions as corresponding and permit cross subsidization to take place for longer duration of time and is not able to judge the financial feasibility of each operation.

Thus, if a firm is not able to execute this strategy vigilantly, this can become a costly strategy for hedging an operating exposure.

FINANCIAL STRATEGIES FOR MANAGING OPERATING EXPOSURE

The objectives of financial strategies for hedging operating exposure are assessing and supervising the currency composition of a debt of a firm, and considering that there should be inverse correlation between the net payoffs and the impact of real exchange rate change on firm value.

CURRENCY DENOMINATION OF FIRM DEBT

The ultimate objective of hedging is to optimize the impact of exposure. By matching foreign currency inflows with foreign currency outflows this may be achieved for managing real operating exposure. Long term currency flows affect operating exposure and foreign exchange rate fluctuations affect future foreign currency revenues therefore to offset the impact on anticipated cash flows the firm may adopt the hedging strategy denominating a few of their long term debt in foreign currency.

This can be understood with the following case:

An Indian subsidiary of a parent company in United States of America has a project that needs USD 2 million as a capital. Below are the cash flows from the Indian subsidiary to U.S. parent when the project is financed with USD 2 million loan. (Inflows are randomly determined, based upon negative exposure to Spot rate (USD/INR)).

TABLE 4

Spot Rate (USD/INR)	60	55	65
INR Net Operating Inflows	INR 200	INR 210	INR 190
USD Inflows	USD 3.33	USD 3.81	USD 2.92
Pay Back USD Loan	- USD 2	- USD 2	- USD 2
USD to Parent Company	USD 1.33	USD 1.81	USD 0.92

Now consider cash flows to United States of America parent company with 10 million INR loan for the project:

TABLE 5

Spot Rate (USD/INR)	60	55	65
INR Net Operating Inflows	INR 200	INR 210	INR 190
Pay Back INR loan	- INR 100	- INR 100	- INR 100
Net INR Profit	INR 100	INR 110	INR 90
USD to Parent Company	USD 1.67	USD 2	USD 1.38

As a result the foreign currency debt has diminished volatility in the cash flow arising from the exchange rate exposure. Thus by denominating debt in foreign currencies in an estimated projected potential revenues that firm anticipate in coming years, it is able to decrease the impact of exchange rate movements on the value of firm.

If borrowing in foreign currencies is costly may be because foreign lenders have no knowledge about the borrowers or costs of issuing debt at foreign country are higher as compared to in home then, the firm is capable of borrowing in home country from their financial market and subsequently may go for a swap agreement for converting the home currency debts obligations into foreign currency debt obligations.

SWAPS

Swaps are the agreements in which it is agreed that the buyer can swap one set of cash flows for another. As a result the buyer of swap agreement gives consent to pay periodically agreed on some financial price and in return will receive payments periodically agreed on some other financial price. Interest rate swaps are mainly one of the most widespread swaps. In Interest rate swap agreement a firm be in agreement with the counterparty to pay the variable interest rate over time on a particular principal amount while at the same time receiving fixed interest rate payments on the same principal amount. Usually, the rates are computed in such a manner that the present value of the probable payments equal the present value of the fixed receipts. Therefore the swap is an agreement of zero net present value. In view of the fact that the principal amount is merely theoretical, it is used just to agree on the amount of the payments, no money is swapped up front or at the end.

In currency swaps firm may go for either fixed or floating interest rates since pair of currencies are involved. Fixed currency swaps are mainly the most accepted currency swaps in which a fixed rate in one currency is swapped with a fixed rate in another currency. Since pair of currencies is involved, original principal amounts is exchanged between both the parties to swap agreement. By and large these principal amounts are of identical value given the two currencies' spot rate. These original principals are exchanged back at the maturity of the swap agreement.

Below is an example of the cash flows to a firm entering a foreign currency swap. In this example the firms swap initial principal's amount, cash flows of interest payments take place periodically and at the maturity the firms make the terminal interest payments and swap back the initial principals amount.

An Indian firm comes to a decision that it should borrow USD for a long term in line to hedge the USD cash flows it US subsidiary. It evaluates that the cost of making a USD debt issue at New York is significantly more than its cost of issuing INR debt in New Delhi. In the same way, assume that a US firm comes to a decision that it should borrow INR for a long term in line to hedge the INR cash flows of its Indian subsidiary. It also evaluates that the cost of making a INR debt issue in New Delhi is considerably more than its costs of issuing USD debt in New York (not considering currency issue). The individual costs for 10 year debt are as follows:

TABLE 6

Firm	Borrowing Interest Rate	
	USD	EUR
Indian firm	8%	9.5%
US firm	8.40%	9%

In view of the fact that each firm has a relative benefit in issuing debt in its own market, these two firms could gain from issuing their debt domestically and agreeing on a currency swap. Presuming the swap rates are INR 8%/8.15% and USD 9% / 9.30%

The usual swap agreement denote that the principal amount swapped initially be roughly equal at the current spot exchange rate. In this example the swap could be agreed out bilaterally but, more typically, is carried out with the intermediation of a bank. In the above example, assuming that these amounts are USD 1 million and INR 60 million (i.e., the initial spot rate is USD1 = INR 60). At the beginning of the swap the Indian firm receives USD 1m from the financial counterparty and delivers to them INR 60m. After that the Indian firm makes half yearly interest payments of USD 0.0465m (USD 1m x 9.30%/2) to the counterparty (bank) and receives INR 2.52m (INR 60m x 8.40%/2) from them for the next ten years.

The US firm receives from the swap counterparty INR 60m and delivers to them USD 1m at commencement. The US firm then receives half yearly payments USD 0.045m (USD 1m x 9%/2) and pays INR 2.445m (INR 60m x 8.15%/2). Each year the bank retains the differences as its reward and at the end of ten years the parties re-exchange the original principal amounts with the counterparty.

In principle, the firms have agreed to a series of 20 half yearly forward agreements that require the exchange of INR 2.445m for USD 0.045m (for the US firm) and USD 0.0465m for INR 2.52m (for the Indian firm) and large long dated forward for the re-exchange of principles at INR 60m for USD 1m at year ten. The implied forward rates are such that the present values of the cash flows over the contract are equal, although at early cash flows have a negative present value for the Indian firm and the later cash flows have a negative present value for the U.S. firm. For both firms, this swaps acts as a hedge for the stream of foreign currency cash flows they expect to receive from their foreign subsidiary. The firms can exchange the original principals into home currency and use the proceeds to pay off outstanding debt, or even pay back the original loan used to create the swap, knowing that it will have to repay that amount of foreign currency at maturity.

Through sound developed swap markets that is presently available, and the increasing number of mediators offering to write swaps for customers, a firm can swap just about any set of cash flows for some other form of cash flows. Swaps can also be successfully executed to hedge other forms of macroeconomic risk.

OPTIONS

Currency options contract is an accepted technique for the firm to defend the home currency value of future foreign currency cash flows and reducing the impact of transaction exposure. Though exchange traded options contracts are available for a short tenure, OTC (over the counter) option can be bought or sold, even for a long tenure. A firm can balance a fiscal offset to the impact of likely unfavorable currency fluctuations on the flow of foreign currency cash flows through forming a portfolio of long tenure call options in foreign currency. Since the terms and conditions like price, quantity and expiry, etc. of the options are fixed by the exchange, it is almost not possible to have an ideal hedge because the accurate quantity of foreign currency cash flows is unknown at each point of time in the future.

Initially firm should recognize their operating exposure before applying currency options. In the case, when the home currency appreciates in terms of foreign currency and the value of their operating cash flows in the home currency reduces then the firm should take long position in the put option of foreign currency. In the case, when the home currency appreciates in terms of foreign currency and the value of their operating cash flows in the home currency increases then the firm should take long position in the call option of foreign currency. As options decreases risk they do not remove it like future contracts do.

Options contracts are dearer in particular if compared with futures contracts. When firm purchases options to hedge operating exposure, particularly when it is hedging for last quite a few years needed a significant large amount to pay option premium. However, considering the cash flows in foreign currency for some prospective advantage in the future organization may avoid paying option premium now.

There are a number of feasible ways out to deal with this dilemma. Firm may merely cut the level of cover that it is purchasing, may be going for less quantity of options; or may go for lesser amount of security they offer in terms of the exercise price. Firm may quit some of the excessive benefit of its foreign exchange exposure by writing a currency option on it to facilitate funding some of the shortcoming guard that firm is concerned in purchasing. Taking short position in out-of-the-money foreign currency call option the firm may go for taking long position in the long term out-of-the-money put option, this may offers the preferred safety against the unfavourable movement and the firm can acquire the cover at reduced price. Evidently the total price to firm will come to be identical as fraction of the total price is provisional, take in at the time of the firm offering its gain by maturing the call option and that too for extremely advantageous exchange rate movements. These are known as zero premium hybrid options contracts. Two European style zero premium hybrid options contracts are as follows:

CONCLUDING VIEWS ON FINANCIAL HEDGING OF OPERATING EXPOSURE

Some essential elements are present which requires to be considered regarding financial hedging of operating exposure. Hedging firm should consider that it is going to hedge the effects of real exchange rate movements on the firm by means of financial contracts that are denominated in nominal values. Consequently the firm is replacing home price risk for real exchange rate risk by locking in hedge of real operational flows with contracts on particular nominal exchange rates. Say for instance, an Indian exporting firm who wish to hedge the anticipated cash flows denominated in USD for the year by taking short position in currency futures at the USD futures price. Later unpredictably there was inflation in India and INR depreciates in terms of USD which has no impact on the real exchange rate. There would have no impact on the estimated USD cash flows, but the Indian exporting firm would have to exchange then at a higher USD/INR exchange rate than would now be applicable. Since the firm had hedged nominal exchange rate rather than real exchange rates, it has to bear an economic loss.

Hedger should also consider that financial hedging of operating exposure is a next finest way out. Where strategic hedging of exposure ends, hedger should start applying financial hedging to hedge operating exposure. Financial hedges contracts are for a predetermined magnitude and for a preset time period. They are not capable of modifying the new competitive situations which the hedging firm has to face, however they are able to reduce the shock of a real exchange rate fluctuations. Financial hedges are not a permanent measure for the hedging firm to protect from unfavorable movement in competitive environment rather it provides protection for a short period of time that permits it the economic competence to take a decision on how to respond in economic manner to the changed competitive environment.

TRANSLATION OR ACCOUNTING EXPOSURE

Translation exposure is impact of unexpected fluctuations in foreign exchange rates on the real home currency value of assets and liabilities, recorded in the financial statements of a firm.

Following are the ways to translate foreign currency to home currency

- **Current/Non-Current Method:** In this method the current assets and current liabilities of a firm are translated at current foreign exchange rate
- **Monetary/ Non-Monetary Method:** In this method the monetary assets and liabilities of a firm are translated at current foreign exchange rate
- **Temporal Method:** This method is same as Monetary/Non-Monetary method however inventory may be translated at current exchange rate if it is recorded in the financial books at market value
- **Current Rate Method:** In this method the position statement and income statement objects are translated at current exchange rate

Firm exposed with accounting exposure cannot control it like it is able to manage the economic and transaction exposure.

APPRAISING HEDGING OUTCOMES

We may treat hedging as an indemnity product. If any unfavorable event happens only then we use it. We do not wish to use it because we are not comfortable with adverse movements in the currency rate. As we know that nobody would like to face adverse event therefore, they go for hedging the foreign exchange exposure and spend money on it. Conversely, hedger spends money to buy the financial hedging instrument for having mental peace and protection against unfavorable happenings. Hedging is always done in anticipation of happening or not happening of some event therefore its success can be evaluated only on or after the date of maturity of the hedging contract.

Lowering a firm's exposure from major foreign exchange rate fluctuations firm has to assess and manage currency risk. Firms who are engaged in worldwide operations and investments are exposed to foreign exchange exposure. Their profit margin is affected by fluctuations in the currency exchange rate since it affects firm supplies, finished goods markets and the worth of assets and liabilities. Subsequent to the currency crisis incidents of the previous decade and the resultant keen global consideration of accounting and balance sheet risks has necessitated cautious management of currency risk.

Firms engaged into international business employ diverse hedging strategies on the basis of the particular sort of currency risk. Business managers have turned practical in managing these risks because these risks may perhaps be unfavorable to the profitability and the market valuation of a firm. Seeing the demand for protection against the currency risks financial engineers are coming up with a multiplicity of financial hedging instruments.

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