
UNIT 8 MEASURING AND MANAGING TRANSACTION EXPOSURE

Structure

- 8.0 Objectives
- 8.1 Introduction
- 8.2 Concept and Measurement of Transaction Exposure
- 8.3 Techniques of Transaction Exposure Management
 - 8.3.1 Forward Market Hedge
 - 8.3.2 Money Market Hedge
 - 8.3.3 Exposure Netting
 - 8.3.4 Currency Risk Sharing
 - 8.3.5 Leading and Lagging
 - 8.3.6 Currency Options
 - 8.3.7 Currency Futures
 - 8.3.8 Currency Swaps
- 8.4 Let Us Sum Up
- 8.5 Key Words
- 8.6 Terminal Questions/Exercises

8.0 OBJECTIVES

After studying this unit you should be able to :

- explain the concept of transaction exposure
- describe various techniques of transaction/exposure management
- compare and contrast different hedging techniques.

8.1 INTRODUCTION

Exposure is a word commonly used in day-to-day life. You may have referred to your friend getting exposed to business ethics in his or her corporate career. Your joining this course itself is getting you exposed to the world of international finance. However, the word exposure may also carry a negative connotation especially when some degree of uncertainty of outcome is involved. Our specific reference is to the outcome of changes in foreign exchange rates on corporate profitability or the overall position of a company. Foreign currency exposures arise whenever a business has an income or expenditure, or an asset or liability in a currency other than the balance sheet currency. In unit 7 you learnt about the different types of currency risks. In this unit, you will learn about the concept and measurement of transaction exposure and main techniques of transaction exposure management.

8.2 CONCEPT AND MEASUREMENT OF TRANSACTION EXPOSURE

All of us know that foreign exchange rates are highly volatile. In a free market, changes occur practically every second. The movement in foreign exchange rates occurs as a result of genuine trade transactions in the case of highly regulated markets like the Indian market where speculation is strictly prohibited. Thus, export and import transactions or borrowings and lending in foreign currency move foreign exchange rates in India. The intra-day trends may be more predictable than slightly longer-term trends; but the uncertainty does exist. And where there is a substantial time gap between the date of the contract and its maturity, the uncertainty can be quite fearsome. The time gap will depend on the credit period permissible for such transactions. At present, the Reserve Bank of India permits a credit period of up to six months - actually 180 days to be precise, for export and import transactions. Now,

surely, 180 days is a long enough period for forecasts of movements in foreign exchange rates to be rendered imprecise. Hence, there arises a transaction exposure which needs to be measured and managed well in order to minimise its negative effect on corporate profitability or wealth. The treasury departments managing foreign exchange fluctuations are sometimes looked upon as profit centres - whereby, the main objective becomes that of making a profit out of foreign exchange movements. Yet, the primary aim remains that of avoiding the uncertainty relating to the future exchange rate that will prevail on the date the contract matures. A company's transaction exposure is measured currency by currency and equals the difference between contractually fixed future cash inflows and outflows in each currency. How does one avoid uncertainty of the future exchange rate or say manage exposure? Let us discuss the main techniques of transaction exposure management in the following section.

8.3 TECHNIQUES OF TRANSACTION EXPOSURE MANAGEMENT

8.3.1 Forward Market Hedge

You may note that there are various techniques available to avoid uncertainty of the future foreign exchange rates. Forward market hedge is one such technique. The term hedging refers to mean a transaction undertaken specifically to offset some exposure out of the firm's usual operations. A forward market hedge refers to a transaction specifically undertaken in the forward market. The transaction is normally a forward contract with an authorised dealer, i.e., one authorised to deal in foreign currency - that is, sell or purchase foreign currency. Most commercial banks have been authorised to deal in foreign currency by the Reserve Bank of India. And so, a firm which is expecting a receivable or a payable sometime in the near future can enter into a forward contract with an authorised commercial bank to fix the rupee rate vis-a-vis the foreign currency in which the receivable or the payable will materialise. This effectively avoid the uncertainty of the future exchange rate; for whatever the rate prevailing at that time, the firm has locked in a rate for itself. There are a few things you should note about forward contracts.

Firstly, a forward contract cannot be entered into for an unlimited period. The maximum period was earlier directly related to the maximum credit period permissible, i.e., six months. Under the new RBI guidelines, the maximum period has now been extended to one year. A firm may, therefore, enter into a one-year forward contract or of any shorter duration. Now, you will wonder as to what will happen if the firm's transaction for which a forward hedge is desired extends beyond a period of one year. It is typical in case of foreign currency loans wherein not only the principal amount but also the series of interest payments is likely to extend beyond a period of one year. In such a case, there is the facility of roll-over contracts. A roll-over contract is rolled over for the next desired period every time the maturity date arrives. Let us take the example of a foreign currency loan which involved hedging through a forward contract for the principal amount as well as the interest series. Let us say, the table of repayments [US\$] runs as follows:

Time Period (t)	Interest	Principal Repayment	Loan Outstanding
0			5,00,000
1	25,000	1,00,000	4,00,000
2	20,000	1,00,000	3,00,000
3	15,000	1,00,000	2,00,000
4	10,000	1,00,000	1,00,000
5	5,000	1,00,000	

The firm receives the loan of US\$ 500,000 at time=0 and converts it into rupees at the spot rate. At the same time, it obtains a forward cover for \$500,000 to cover the principal amount and \$25,000 to cover the interest instalment. At t=1, it must take

delivery of \$5,25,000 at the contracted forward rate, but since it requires only \$1,25,000, it will sell \$400,000 at the spot rate prevailing then and again buy forward the same amount along with \$20,000 of interest payment. On \$400,000, we would say that the firm has done a swap - sold spot and bought forward. For buying \$400,000 forward, the swap rate will apply and for buying \$20,000 forward, the outright forward rate will apply. Corporates generally gain in the swap market as the turnover there is much larger than in the outright forward market. Swaps are common in the interbank market which explains their huge turnover. The swap rate, for example, may be Rs 32.50/\$1 as against the outright forward rate of Rs 32.70/\$1. At $t=2$, once again, the firm will take delivery of \$420,000 ; sell \$300,000 spot and again purchase it forward along with the needed interest amount of \$ 15,000. The series continues until the entire principal amount along with interest is paid off.

Next is the question of whether a forward contract must necessarily be for a fixed period. An option in the period of the contract may be desired when there is some uncertainty as regards the exact date of a receivable or payable. For example, the best a firm may know is that shipment will arrive anytime between the third and the sixth month of the date of the contract. Accordingly, payment is also due within the third and the sixth month. The firm, obviously, cannot enter into an outright forward contract for a fixed period. The firm, in such a case, can enter into a option forward contract. However, it must be remembered that an option forward contract proves to be quite expensive for the firm, as the authorised dealer will take the maximum benefit of the premium or discount for itself. Let us take an example to understand it.

Let us say that a firm's payables are denominated in DM. As you are aware, there are no direct quotes available of DM vs. rupee or for that matter for any non-dollar currency against the rupee. The rate vis-a-vis the rupee in such cases is calculated via two steps: step 1 is obtaining the DM/\$ rate and step 2 involves obtaining the \$/Rs. rate. A simple multiplication of the two rates (recall cross rate) will give the DM/rupee rate. For the purpose of illustrating an option forward contract, let us say that the authorised dealer deals only with the rate vis-a-vis the US dollar. Let us further say that on a particular day, the following rates are ruling in the market:

DM/\$ spot : 1.6200/1.6210

DM/\$ 3 month forward : 1.5950/1.5970

DM/\$ 6 month forward : 1.5700/1.5730

Clearly, the DM is at a premium for both the 3 month and the 6 month maturity. If the customer wanted to buy DM (sell \$), the bank will charge the largest possible premium for the purchase of dollars over the option period. The 3 month forward rate is DM 1.5950/\$ and the 6 month forward rate is DM 1.5700/\$. As is obvious, the six month forward rate of DM 1.5700/\$ is more favourable for the bank as it has to give fewer DM for every dollar it purchases from the customer firm. That is, the bank charges the six month premium when it sells DM (buys \$). But, if the firm wanted to sell DM (buy \$), the bank will charge the 3 month premium for the sale of dollars. The two rates applicable are DM 1.5970/\$ and DM 1.5730/\$ — the bank will choose DM 1.5970/\$ as it gets more DM for every dollar it sells.

This was the case when DM was at a premium to the dollar. Now, let us take the case of the DM being quoted at a discount. Let us say the rates are as follows:

DM/\$ 3 month forward: 1.6440/1.6460

DM/\$ 6 month forward: 1.6680/1.6710

For the sale of DM (purchase of \$) to the customer in this case, the bank will quote the rate 1.6440/\$ as it has to give fewer DM for every dollar it purchases - that is, it gives the least possible discount to the customer. For the purchase of DM from the customer (sale of \$), it will quote the rate 1.6710/\$ as it gets maximum DM for every dollar sold - that is, it takes the maximum possible discount from the customer.

One must remember that in all cases, the amount of the forward cover cannot exceed the value of the underlying commercial transaction. That is because no speculation is permissible under Indian laws. Another aspect relating to forward contracts is that although it does not offer any flexibility to the customer in terms of the rate (the contract with the authorised dealer must be honoured at the fixed rate), it offers the facility of cancellation and rebooking of forward contracts. Forward contracts can be cancelled at or before maturity depending on the view taken by the corporate on the future prevailing rates or due to some genuine reason, for example, delayed shipment of goods. For a forward sale by the customer to the bank, cancellation on due date is deemed as purchase by the bank at the contracted forward rate and a simultaneous sale at the then ruling spot rate. If the currency has appreciated beyond the forward rate, the difference is recovered from the customer; conversely, the gain, if any, is paid to the customer. The bank charges a flat fee every time the contract is cancelled. Let us now take up other method of hedging.

8.3.2 Money Market Hedge

As opposed to the forward market, one may use the money market for the purpose of hedging transaction exposures. But for that, one has to have access to international money markets for short-term borrowings as well as investments. Essentially, money market hedge involves arbitrage between the Euro deposit market and the spot and forward foreign exchange market. As you would agree, an investor in choosing between assets denominated in different currencies looks for the highest possible return adjusted for exchange rate changes. And, since there is a great deal of uncertainty regarding exchange rates, arbitrageurs will arbitrage between various assets using forward contracts to take care of the exchange risk. This kind of arbitrage provides a link between foreign exchange markets and securities markets in different currencies and is called the covered interest arbitrage. Covered interest arbitrage links the forward premia and discounts directly with interest rate differentials between currencies. This will happen only in a free market where there is no exchange control or restrictions on the movement of funds. Let us assume, the following rates prevail in a free market:

US dollar interest rate	:	5%
Rupee interest rate	:	10%

In this market condition, anybody would like to borrow US dollars, convert into rupees and avail of the higher interest rate on rupees. The clear profit-making opportunity will surely increase demand for US dollars as more players enter the market for making a profit. As a result, the dollar will begin to be quoted at a premium to the rupee while interest rate on dollars will move up and on rupees will fall. Ultimately, equilibrium will settle at a premium which will be exactly equal to the interest rate differential between the dollar and the rupee. What this means is that it should not matter to an investor in which currency he invests as higher interest rate yielding currencies are bound to be quoted at a discount in a free market. Thus, in efficient markets, covered investment in any currency would give the same returns. There are no riskless arbitrage profits to be had. This is the famous covered interest parity theorem. However, departures from this theorem exist because of transaction costs, political risks, withholding taxes on interest, government restrictions, etc. Because of such restrictions, significant difference may occur between the forward premia / discounts and Euro market interest differentials between two currencies. Such an imperfection will present opportunities for cost savings.

So, what really happens in a money market hedge? A firm with planned receivables in a currency can hedge by borrowing in that currency so that the outflows on account of interest and repayments can be set off against the receivables. Conversely, the firm could obtain a forward cover and if the covered interest theorem prevailed, the forward discount/premium would be exactly equal to the interest differential between the two currencies. But, due to the departures from the covered interest theorem, there may be a cost saving using the money market hedge. Let us take an example:

Suppose a German firm has a 90 day Dutch Guilder (DG) receivable of DG 10,000,000. It has access to Euro deposit markets in DM as well as DG. To cover this exposure, it can execute the following sequence of transactions:

1. Borrow DG in the Euro DG market for 90 days.
2. Convert DG spot into DM.
3. Use DM in its operations, e.g., to pay off a short-term bank loan or finance inventory.
4. When the receivable is settled, use it to pay off the DG loan.

Suppose, the rates are as follows:

DG/DM spot:	1.1025/35	90 day forward:	1.1045/65
Euro DG interest rates:	5.25/5.50		
Euro DM interest rates:	4.75/5.00		

A comparison between the spot and the forward rate clearly shows that the DG is at a discount to the DM. But the covered interest parity does not hold.

Let us now compare forward cover against the money market cover.

With forward cover, each DG sold will give 90 days later an inflow of:

$$DM(1/1.1065) = DM 0.9038$$

The present value of this (at 4.75% p.a) is:

$$0.9038/(1+(0.0475/4)) = DM 0.8931$$

To cover using the money market, for each DG of receivable, the firm will borrow DG equivalent to : $1/(1+(0.055/4)) = DG 0.9864$. Next, the firm sells these DG spot to get DM equivalent to $(0.9864/1.1035) = DM 0.8939$. The firm will then pay off the DG loan when the receivable matures.

Thus, with the money market cover, there is a net gain of DM 0.0008 [DM 0.8939 - DM 0.8931] per DG of receivable or DM 8,000 for the 10 million guilder receivable.

8.3.3 Exposure Netting

From forward market hedging and money market hedging, let us now go on to yet another method of transaction exposure management. Exposure netting, as the name implies, involves adding up two or more exposures to arrive at the net exposure. The net exposure may be smaller than any single exposure if some exposures automatically get cancelled out due to their opposite impacts. Exposure netting, thus, implies that each transaction need not be looked upon independently for the purpose of hedging; the whole corporate picture must be obtained before any hedging technique is applied. This is known as the portfolio approach to hedging. — it recognises that the total variability or risk of a currency exposure portfolio should be less than the sum of the individual variabilities of each currency exposure considered in isolation.

For example, it is easy to see that a DM 1 million receivable and DM 1 million payable cancel each other out, with no net exposure. However, such exposure netting can also be accomplished by using positions in different currencies, where exchange rates are expected to move in such a way that losses (gains) on the first exposed position would be offset by gains (losses) on the second exposed position.

In practice, exposure netting involves one of the following three possibilities:

1. A firm can offset a long position in a currency with a short position in the same currency.
2. If the exchange rate movements of two currencies are positively correlated, then the firm can offset a long position (e.g. a receivable) in one currency with a short movement (e.g., a payable) in the other.

3. If the currency movements are negatively correlated, then short (or long) positions can be used to offset each other.

Netting assumes importance in the context of cash management in a multinational corporation with a number of subsidiaries and extensive intra-company transactions. Netting not only reduces the amount of exposures to be covered company-wide but also minimises company payments. To be able to use netting effectively, the company must have continuously updated information on inter-subsidiary payments position as well as payables and receivables to outsiders. One way of ensuring efficient information gathering is to centralise cash management. We will deal with it a little later.

8.3.4 Currency Risk Sharing

Currency risk sharing as an exposure management technique is directly related to the strategy of risk shifting which corporates follow by invoicing transactions in their home currency. Hence, if a German firm is exporting to Great Britain and is invoicing its goods in DM, it obviously does not face any currency risk. Currency risk has been shifted to the British firm which will have to convert Pounds into DM at the agreed date in order to pay for the goods it is importing. But, there is one thing you must note. Although the German firm may be benefitting on the exchange rate front, it may be losing out on the price front. The British firm may have already planned for the maximum Pounds it is willing to pay for the goods it needs to purchase from the German firm. Depending on the DM/Pound forward rate, the British firm will quote a price which may not work to the benefit of the German firm. Hence, it is not possible to gain from risk-shifting if one is dealing with informed customers or suppliers.

Currency risk sharing is implemented by developing a customised hedge contract embedded in the underlying trade transaction. This hedge contract typically takes the form of a price adjustment clause whereby a base price is adjusted to reflect certain exchange rate changes. For example, a base price could be set at DM 25 million, but the parties would share the currency risk beyond a neutral zone. The neutral zone represents the currency range in which risk is not shared. Suppose, the neutral zone is specified as a band of exchange rates: $\$0.39-0.41 : 1 \text{ DM}$, with a base rate of $\text{DM } 1 = \$0.40$. This means that the exchange rate can fall as far as $\$0.39 : 1 \text{ DM}$ or rise as high as $\$0.41 : 1 \text{ DM}$ without reopening the contract. But, if the DM depreciates from $\$0.40$ to, let us say, $\$0.35$, the actual rate will have moved $\$0.04$ beyond the lower boundary of the neutral zone ($\$0.39 : 1 \text{ DM}$). This amount is shared equally. Thus, the exchange rate actually used in settling the transaction would be $\$0.38 : 1 \text{ DM}$ ($\$0.40 - 0.04/2$). In currency risk-sharing, therefore, a firm shares both its loss and its profit with its partner. Thus, if the DM appreciates beyond the upper limit to say $\$0.45$, the American firm will not get the full benefit of the DM's rise in value. Instead, the new exchange rate becomes $\$0.42$ ($0.40 + 0.04/2$).

8.3.5 Leading and Lagging

Leading and lagging is another internal hedging technique for managing transaction exposures. Leading refers to advancing and lagging to delaying receivables or payables as part of managing a firm's potential transaction exposure. This strategy is used particularly by multinational corporations. The general rule is lead, i.e., advance payables and lag, i.e., postpone receivables in strong currencies and, conversely, lead receivables and lag payables in weak currencies. However, shifting the exposure in time is not enough; it has to be combined with a borrowing/lending transaction or a forward transaction to complete the hedge. Essentially, leading and lagging are a response to market imperfections. Thus, suppose an American firm has a 3 month DM payable and the firm (and everyone else) is almost sure that the DM is going to sharply appreciate against the dollar. The firm can offer to settle the payment immediately, i.e., forgo the usual 90 day credit and demand a discount for cash payment. On the other hand, suppose it has a receivable in a weak currency such as the Mexican peso, it can offer a discount to the Mexican buyer for immediate payment.

Just like we saw in the case of the money market hedge, if the covered interest parity holds, a firm would be indifferent between a forward market hedge and using the leading/lagging technique. Let us take an example:

A French firm has a 180 day payable of SFr 3,50,000 to a Swiss supplier. The spot rate is FFfr 3.2500/SFr. The 180 dollar forward is 3.3312, i.e., the SFr is at a forward premium by 2.5%. The Swiss supplier is prepared to give a discount of 2.5% for cash payment. The French firm can borrow at 10% p.a. The net cost of leading the payment would, thus, be 2.5% [5% for 180 days minus 2.5% cash discount] which is equal to the 180 day premium on the SFr. The interest differential, as you can see, is exactly captured in the forward premium and, hence, leading and forward hedge are equivalent. If some imperfections drive a significant wedge between Euro interest rates and domestic interest rates, then leading or lagging an exposure may turn out to be cheaper than a forward hedge.

Let us illustrate with the help of an example:

Suppose, an American firm has a 180 day payable of A\$1,000,000 to an Australian supplier. The market rates are: A\$/US\$ Spot: 1.3475 180 day forward: 1.3347

Euro US\$ 180 day interest rate : 10% p.a

Euro A\$ 180 day interest rate : 8% p.a

Let us say, the Australian authorities have imposed a restriction on Australian firms which prevents them from borrowing in the Euro A\$ market. Similarly, non-residents cannot make money market investments in Australia. As a consequence, the domestic 180 day interest rate in Australia is 9.5% p.a. The American firm may consider the following four alternative hedging strategies:

- a) Buy A\$ 1,000,000 180 day forward. (Forward contract)
- b) Borrow US\$, convert spot to A\$, invest in a Euro A\$ deposit, settle the deposit with the deposit proceeds. (Money Market Hedge)
- c) Borrow US\$ for 180 days, convert spot to A\$, lead the payable, get a discount. (Leading)
- d) Borrow A\$ in the Euro market, settle the payable, buy A\$ 180 day forward to pay off the loan (Lead with a forward).

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

8.3.6 Currency Options

Let us recall forward contracts discussed under 8.3.1. A major limitation of forward contracts is their lack of flexibility. The contracted rate and period have to be adhered to; otherwise a cancellation fee is payable besides compensation for any loss suffered by the authorised dealer. Currency options are designed to overcome this rigidity of forward contracts. A currency option provides an option to the buyer of the contract to move out of the contract, in case the currency in question moves to his disadvantage. You can well imagine the risk that the option seller exposes himself to. That is why, he has to be compensated by a front-end payment, i.e., payment in advance, which is called the 'option premium'. The option premium is payable by the buyer of the option. As you have read in unit 7 there are essentially two kinds of options that a firm can purchase - an option to purchase a currency and an option to sell a currency. The former is called a call option and the latter a put option. The price specified in the option contract at which the option buyer can purchase or sell the currency is called the strike price or the exercise price.

When are options useful for currency hedging? Options are particularly useful for hedging uncertain cash flows, i.e., cash flows that are contingent on other events. Typical situations are:

1. **International Tenders:** Foreign exchange inflows will materialise only if the bid is successful. If execution of the contract also involves purchase of materials, equipment, etc. from third countries, there are contingent foreign currency outflows too.

2. **Foreign currency receivables with substantial default risk or political risk,** e.g., the host government of a foreign subsidiary might suddenly impose restrictions on dividend repatriation.
3. **Risky Portfolio Investment:** A funds manager, say in UK, might hold a portfolio of foreign stocks/bonds currently worth say DM 50 million which he is planning to liquidate in six months' time. If he sells DM 50 million forward, and the portfolio declines in value because of a falling German stock market and rising interest rates, he will find himself to be overinsured and short in DM.

Currency options can also be used to hedge exposure to shifts in a competitor's currency. Companies competing with firms from other nations may find their products at a price disadvantage if a major competitor's currency weakens, allowing the competitor to reduce its prices. Thus, the company will be exposed to fluctuations in the competitor's currency even if it has no sales in that currency. For example, a Swiss engine manufacturer selling in Germany will be placed at a competitive disadvantage if dollar depreciation allows its principal competitor located in the United States, to sell at a lower price in Germany. The Swiss firm can purchase options on the dollar to reduce its disadvantage. Let us illustrate how:

The Swiss firm can purchase put options - why? Because it is expecting depreciation of the dollar vis-a-vis the DM. Further, if the firm purchases out of the money put option - strike price less favourable than the market price - the firm may make a neat profit. After the depreciation of the dollar, the out of the money put option contract is likely to become in the money put option contract - strike price more favourable than the market price. The Swiss firm can then profitably sell these options at a profit enabling it to partly compensate for its lost competitiveness.

8.3.7 Currency Futures

Currency futures are yet another technique to remove the rigidity associated with forward contracts. In principle, the idea is very simple. If a corporation has an asset, e.g., a receivable in a currency, let us say, US\$ which it would like to hedge, it should take a futures position such that futures generate a positive cash flow whenever the asset declines in value. In this case, since the firm is long in the underlying asset, it should go short in futures, i.e., it should sell futures contract in US dollars. A direct hedge is available for most of the convertible currencies; otherwise, a firm must choose a futures contract on an underlying currency that is highly positively correlated with the currency exposure being hedged. Even when a direct hedge is available, it is almost always impossible to achieve a perfect hedge. This is due to two reasons. One is the fact that futures contracts are for standardised amounts and only rarely will the exposure to be hedged equal the value of an integral number of futures. For example, an American firm with a receivable of DM 5,50,000 cannot hedge this amount exactly by selling DM futures. Four DM futures will cover DM 5,00,000 while five contracts will be worth DM 6,25,000. The second and more important reason is that the correlation between spot and futures prices is less than perfect. Essentially, the difficulty is that the change in spot price does not, in general, equal the change in futures price. This is known as the basis risk. On March 1, the dollar/Pound spot rate is 1.6750 while June futures are trading at 1.6680. The basis is 0.0070 or 70 ticks. Suppose, an American firm has a three month sterling receivable of 1,00,000 Pounds and hedges it by selling two sterling futures. By June 1, the spot sterling has depreciated to 1.6620 while June futures are trading at 1.6590. The basis has, thus, shrunk to 30 basis ticks. The loss on the receivable is :

$$\$100,000 (1.6750 - 1.6620) = \$ 1,300$$

while the gain on futures is : $\$(1,25,000(1.6680 - 1.6590)) = \$ 1,125$. Hence, even the two sterling futures do not give a perfect hedge to the sterling receivable.

8.3.8 Currency Swaps

Currency swaps are increasingly becoming popular as a transaction exposure management technique. In a currency swap, the two payment streams being exchanged are denominated in two different currencies. There are essentially three kinds of swaps:

fixed to fixed currency swap, a floating to floating currency swap, and a fixed to floating currency swap. Let us first understand how a fixed to fixed currency swap works.

In fixed to fixed currency swap, one party raises a fixed rate liability in say US dollars and the other party raises fixed rate funding in another currency, say DM. The principal amounts are equivalent at the current market rate of exchange. At the initiation of the swap contract, the principal amounts are exchanged, the first party getting DM and the second party getting US dollars. Subsequently, the first party makes periodic DM payments to the second, computed as interest at a fixed rate on the DM principal while it receives from the second party payments in dollars again computed as interest on the dollar principal. On the maturity date, the principal amounts are once again exchanged. It may be noted, however, that the exchange of principals, both at the beginning and at the end is notional - not real. What is real is the cash flows resulting from interest payments. Whether or not the parties to the swap contract benefit from the swaps will depend on how the underlying currencies and interest rates move during the contract period, which is normally for three to five years.

A floating to floating currency swap will have both payments at floating rate but in different currencies. In most cases, an intermediary - a swap bank structures the deal and routes the payment from one party to another.

A fixed to floating currency swap is a combination of a fixed to fixed currency swap and a fixed to floating interest rate swap, i.e., one payment stream is at a fixed rate, while the other is at a floating rate.

There is a growing market for swaps for which many explanations have been advanced. Most of these hypotheses rely either on a capital market imperfection or factors like differences in investor attitudes, informational asymmetries, differing financial norms, peculiarities of national regulatory and tax structures, etc. You will agree that borrowers and investors differ in their preferences and market access. For instance, a manufacturing firm or a utility might prefer fixed rate funding to finance long gestation physical investment projects but finds that fixed rate investors do not view it very kindly while it is able to borrow relatively easily in the floating market. On the other side, is a large international financial institution such as a money centre bank which can borrow on excellent terms in the fixed market but prefers floating rate funding because it has a large portfolio of floating rate loans.

Swaps help borrowers and investors overcome the difficulties posed by market access and/or provide opportunities for arbitraging some market imperfection. Swaps, thus, become a good way of managing transaction exposures in any particular currency.

Check Your Progress A

1. What is transaction exposure?

.....

.....

.....

2. List the various techniques of hedging?

.....

.....

.....

3. When should a firm consider purchasing a call option/put option.

.....

.....

.....

8.4 LET US SUM UP

Transaction exposure occurs whenever a company is committed to a foreign currency denominated transaction. Since the transaction will result in a future foreign currency cash inflow or outflow, any change in the exchange rate between the time the transaction is entered into and the time it is settled in cash will lead to a change in the amount of cash inflow or outflow in local currency. Protective measures to guard against transaction exposure involve entering into foreign currency transactions whose cash flows exactly offset the cash flows of the business transaction. These protective measures include using forward market hedge, money market hedge, exposure netting, currency risk sharing, leading and lagging, currency options, futures and swaps. It may be noted that if interest parity holds, the firm would be indifferent between a forward market hedge and money market hedge as well as between a forward market hedge and leading/lagging. Alternatively, a firm could try to invoice all transactions in local currency to avoid transaction exposure entirely. However, it may have to compromise on price front. It may be mentioned that eliminating transaction exposure doesn't eliminate all foreign exchange risk. The firm is still subject to economic exposure or exchange risk on its future revenues and costs - i.e., its operating cash flows. We will discuss translation and economic exposure management in the next unit.

8.5 KEY WORDS

Transaction Exposure: Transaction exposure arises when a company is committed to a foreign currency denominated transaction. In other words, on transactions that a firm has already entered into and that are denominated in a foreign currency, the firm could incur future gains or losses owing to unanticipated exchange rate fluctuations.

Forward Market Hedge: A forward market hedge involves a company that is long in a foreign currency selling the foreign currency forward and a company that is short in a foreign currency buying the foreign currency forward.

Roll-Over Contracts: Roll-over forward contract is one that can be rolled over at the initial forward rate agreed upon subject to a roll-over charge. This is particularly useful for large importers in countries with constantly depreciating currencies.

Option Forward Contract: Option forwards are contracts in which the rate of exchange between two currencies is fixed at the time the contract is entered into as in a standard forward (outright forward contract) but the delivery date is not a fixed date. One of the parties (usually a corporate customer) can, at its option, take or make delivery on any day between two fixed dates. The interval between these two dates is the option period.

Money Market Hedge: A money market hedge involves simultaneous borrowing and lending activities in two different currencies to lock in the local currency value of a future foreign currency cash flow.

Covered Interest Arbitrage: According to the covered interest arbitrage theory, the currency of the country with a lower interest rate should be at a forward premium in terms of the currency of the country with the higher interest rate. More specifically, in an efficient market with no transaction costs, the interest differential should be equal to the forward differential. When this condition is met, the forward rate is said to be at interest parity, and equilibrium prevails in the money markets.

Exposure Netting: Exposure netting is a method used mainly by MNCs to reduce the number of foreign exchange transactions needed to settle inter-unit transactions. The basic idea is to chart out all the payments that units have to make to one another and work out a solution that minimises the number of transactions needed.

Currency Risk Sharing: Currency risk sharing is different from a traditional hedge in the sense that the parties agree to share the risks associated with currency rate fluctuations. Typically, a hedge contract, in the form of a price adjustment clause, is

imbedded in the underlying trade transaction. Exchange rate changes are reflected in adjustments to base price. The base price represents the currency range in which risk is not shared.

Leading and Lagging: Leading and lagging shift the timing of transaction exposures. The general rule followed is lead, i.e., advance payables and lag, i.e., postpone receivables in strong currencies and, conversely, lead receivables and lag payables in weak currencies.

Out of the money option: An option contract wherein the strike price is less favourable than the market price.

In the money option: An option contract wherein the strike price is more favourable than the market price.

Tick Value: Tick value is a measure commonly used by traders in currency futures. In futures parlance, the tick value is 0.01 cents per unit of foreign currency.

Swaps : Swaps involve exchange of a series of periodic payments between two parties, usually through an intermediary which is a large financial institution. The two payment streams are estimated to have identical present values at the outset when discounted at the respective cost of funds in the relevant primary financial markets. The two major types are interest rate swaps and currency swaps. The two are combined to give a cross-currency interest rate swap. A number of variations are possible within each type. Swaps also refer to the simultaneous purchase (sale) of a currency in the spot or the forward market coupled with forward sale (purchase) of that currency. In case both transactions are in the forward market, the forward periods differ with respect to their maturities.

8.6 TERMINAL QUESTIONS/EXERCISES

1. What you do mean by transaction exposure? Describe various techniques available to manage transaction exposure both in the short term as well as the long term.
2. "Interest rate parity and leading/lagging are related to forward contracts" Discuss and illustrate.
3. Illustrate with the help of an example how futures may be a good hedging technique. Also explain why futures may not be a perfect hedge sometimes.
4. Contrast the forward market hedge and money market hedge.