10

INTERNATIONAL FINANCIAL MARKET

Chapter Outline

10.1 INTRODUCTION

The International Financial Market is the place where financial wealth is traded between individuals (and between countries). It can be seen as a wide set of rules and institutions where assets are traded between agents in surplus and agents in deficit, for which the institutions lay down the rules. The financial market comprises the currency market, money market, commodity market, derivatives market, bond market and stock market). The institutions (Central Bank, Ministry of Economy and Finance) work with

different aims and functions as well as direct/indirect policies. The purpose is to make the market the place (not necessarily a physical place and not necessarily ruled, but regulated), where the exchange between surplus and deficit units is carried out as efficiently as possible. With regard to policies, consideration must be given to those connected with monetary, fiscal and more structural policies, besides those directly connected with the governance of the market itself.

Governance in the financial market can be defined as a set of rules useful in interconnecting the agents who operate within it and the institutions. These rules define the market. Governance rules in a financial market can be defined at both a microeconomic and macroeconomic level. Microeconomic rules deal not only with individuals (single money savers, professional agents and companies), but also with the market itself and its microstructure. Macroeconomic governance rules deal with the market as a whole. They are also strictly connected with policies regulating the market. At a macroeconomic level, governance is important for the financial market in order to define every single rule of the trading process: from those which regulate the *stock exchange* or the *Over The Counter (*OTC) trades to those which define who can join the market.

We broadly *classify* the international financial markets into the following:

1. Foreign Exchange Market
2. International Money Market
3. International Credit Market
4. International Bond Market
5. International Stock Market

10.2 FOREIGN EXCHANGE MARKETS

International transactions require the use of currencies other than the domestic currencies. Foreign exchange market provides the place where, parties involved in the international transactions can convert their currencies in other currencies as per the need of international transactions. The foreign exchange market has its main centre in major world's trading countries such as Tokyo, Singapore, New York, *etc*. All these centres are in constant contact with each other. They are connected through highly sophisticated networks. The parties involved in the network are banks, professional dealers and brokers. This communication network connecting to all centres, is very efficient.

The international financial transactions are regulated by a large network called society for worldwide interbank financial telecommunications (SWIFT). This is a non profit organisation. Society for worldwide interbank financial telecommunications has its centers around the world. This system links the banks and brokers in every financial centre.

10.2.1 Functioning of Foreign Exchange Market

The international trade involve parties living in countries with different national currencies.The main function of foreign exchange market is the transfer of funds from one nation to another and converting the one currency in to another. But, firms and banks need to exchange the one national currency for another. The demand for foreign currency arises, when tourists visit other country, the domestic firms import from other country or the domestic investors wants to invest abroad. The supply of foreign currency arises, when the foreign tourists incur expenditure in domestic country, domestic firms export goods or domestic firms receive foreign currency in terms of investment from the foreign investors.

For example, the US exporter will exchange rupee for dollars at a commercial bank. The commercial bank will then sell these rupees for dollars to US resident, who is going to visit India or to a US firm that wants to import something from India. This commercial bank acts as a clearing house for the foreign ezxchange. The commercial banks having surplus of rupees will sell these excess rupees to commercial banks, which fall short of rupees in satisfying their customers' demand for rupees.

If a country's total demand for foreign exchange exceeds its total earnings, the exchange rate will change in order to obtain equilibrium of the total demand and supply of that foreign currency. If the nation does not allow this adjustment in the exchange rate to settle the surplus or deficit in the demand and supply, the nation's commercial banks will borrow foreign currency from its Central Bank, in case the demand for foreign currency is more than its supply. The Central Bank has to satisfy this demand out of its foreign exchange reserves. If the supply is more than the demand for foreign currency, the commercial banks will exchange this excess supply for the national currency at the nation's Central Bank. The Central Bank will keep this excess supply of foreign currency in its foreign currency reserves.

There are four levels of participants in the foreign exchange market. At first level, we have tourists, exporters, importers and investors. At second level, we have commercial banks in the foreign exchange market. Thirdly, we have brokers with the help of which a nation's commercial banks balance the flow

of their currency. At fourth level, we have central bank, which is the lender or buyer of the last resort.

10.2.2 Foreign Exchange Rates

An exchange rate is the rate where a number of units of one currency that must be given to acquire one unit of a currency of other country. It is the prices paid in the home currency to purchase a certain amount of foreign currency. The foreign exchange market includes both the spot and forward exchange rates, discussed in the subsequent sections.

Here, we determine the foreign exchange rates under the flexible exchange rate system. Let us say that there are only two nations, India and UK, with rupee as the domestic currency and pound as the foreign currency. The exchange rate between rupee and pound is equal to the number of rupees needed to purchase one pound. If the exchange rate is ₹ 80 per pound, this means that 80 rupees are required to purchase one pound.

Fig. 10.1 shows the determination of the equilibrium exchange rate between India and UK under a flexible exchange rate system. The vertical axis measures the rupee price of pounds or the exchange rate, rupee per pound. The horizontal axis measures the quantity of pounds. The equilibrium exchange rate is determined by the intersection of the market demand and supply curves for pounds at point 'E' at exchange rate R=80. At this point, the quantity of pounds demanded and the quantity of pounds supplied are equal to pound 40 million per day. At an exchange rate lower than R=80 or at an exchange rate higher than R=80, the quantity of pounds demanded will not match with the quantity of pounds supplied and the tendency for the exchange rate will be to move towards R = 80.

The Indian demand for pounds is negatively inclined, indicating that the lower the exchange rate, the greater is the quantity of pounds demanded by the India. The reason is that the lower is the exchange rate (*i.e.*, the fewer the number of rupee required to purchase one pound, the cheaper it is for the India to import from and invest in the UK. Thus, the greater is the quantity of pounds demanded by Indian residents. On the other hand, the Indian supply of pounds is usually positively inclined, indicating that the higher is the exchange rate, the greater is the quantity of pounds earned by or supplied to the india. The reason is that at higher exchange rates, UK residents receive more dollars for each of their pounds. As a result, they find Indian goods and investments cheaper as well as more attractive. They spend more in India, thus supplying more pounds to the India.

If the Indian demand curve for pounds shifts upwards and intersects Indian supply curve for pounds at point 'F', the equilibrium exchange rate would be R=90. The equilibrium quantity of pounds in this case would be 60 million pound per day. The rupee would then be said to have depreciated, since it now requires 90 rupees to purchase one pound. Depreciation thus refers to an increase in te domestic price of the foreign currency. On the other hand, if the Indian demand curve for pounds shift down so as to intersect the Indian supply curve for pounds at point 'G', the equilibrium exchange rate would fall to R=70. The rupee would said to have appreciated. Appreciation of the domestic currency means a depreciation of foreign currency and *vice-versa*. Shifts in Indian supply curve for pounds would similarly affect the equilibrium exchange rate and equilibrium quantity of pounds.

This discussion was for only two currencies. However, in reality there are a number of exchange rates, one between any pair of currencies.

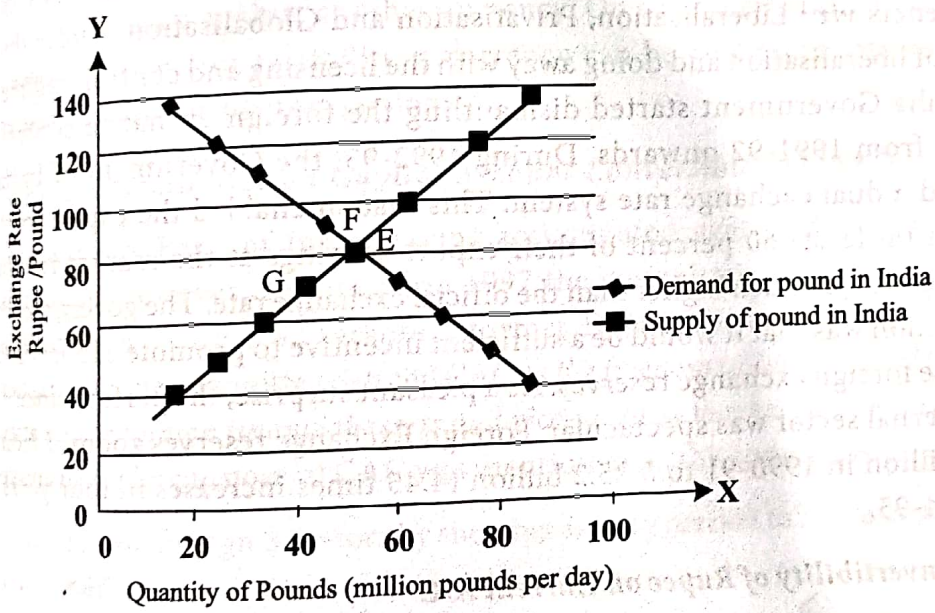

Fig. 10.1 : Exchange Rate

Besides the exchange rate between rupee and British pound, there is an exchange rate between the rupee and US dollar, between rupee and the French francs, between the British pound and French franc *etc.* Since a currency can depreciate with respect to some currencies and appreciate against other, an effective exchage rate is calculated. This is a weighted average of the exchange rates between the domestic currency. Nations mostly trade with parties, weights being assigned according to the relative importance of the nations trade with each of these trade partners.

Phase III (2009-11): The capital movement was again raised to a maximum of $ 2,00,000.

In the case of corporates, the remittance would rise from the present 200 percent of networth to 400 percent by 2011.

In the case of banks, overseas borrowings are made more liberal. In case of mutual funds, the overall ceilings should be raised from the current level of $ billion to $ 5 billion by 2011. According to Tarapore II, this road map is not rigid, but a broad path.

10.2.4 Spot Market

The spot rate is the rate which is paid for delivery within two business days after the day the transaction takes place. Business days are the working days excluding holidays. Forward rate is quoted for delivery of foreign currency at some future date. Forward rate is established at the time when the parties enter into contract, although the payment is to be made on some future date. The future date on which the payment is to be made, is generally for some fixed periods, such as after 30 days, 60 days, 90 days *etc.*

Spot market is a market in which the financial instrument or commodities are traded for immediate delivery. It is a market in which goods are sold for cash and the delivery is made immediately. It differs from futures market in which delivery and payment is made on some future date. For example, if we want to buy shares of some company listed on some organised exchange, we will go to the company and will exchange shares for cash.

Foreign exchange market is one of the biggest cash market. This is why, foreign exchange market is also called cash market. In this market, trading is conducted through an 'over-the-counter' network of traders from major commercial and investment banks linked by phone, computer terminal and other telecommunications devices.

1. Spot Rate Quotations

The most common way to quote foreign exchange is in terms of the number of units of foreign currency needed to buy one unit of home currency. If India rates its currency, it will express it as the amount of rupees that can be exchanged for one unit of foreign currency. For example, if Indian currency is the home currency and the foreign currency is the US dollar, India will express its exchange rate as 0.05US dollar for per rupee. This means that one Indian rupee can buy 0.05 US dollar.

This method of quoting the exchange rate in terms of number of units of foreign currency for one unit of domestic currency, is known as European quotations.

This method is called indirect method of quoting the exchange rate. When you express your price in terms of foreign currency, it is called American quotations. This is called direct method of quoting the exchange rate. For example when you express your exchange rate as ₹ 60 per US dollar.

An indirect quote is the inverse of the direct quote.

When the foreign exchange rate is expressed as a mid-quote, the following formula can be used to calculate the indirect quote:

$$\text{Indirect Quote} = \frac{1}{\text{Direct Quote}}$$

Hence, the relationship between Rupee and US dollar can be expressed in these two different ways. Both direct and indirect quotes are in use. For international business, banks generally use European quotations.

2. Bid-Ask Spreads

A bid price is the price (exchange rate) in terms of one currency, at which the dealer is willing to buy another currency. An ask price is the price (exchange rate) in terms of one currency, at which the dealer is willing to sell another currency. These dealers buy at one price and sell at a higher price, so that they can make profit from the spread. This difference between the buying and selling is known as *bid ask spread.*

The bid ask spreads in the exchanges between the leading currencies are generally small. Because of the low spread, it is possible to implement risk management strategies. Low spreads are also a boon for speculators and they have an important impact on trade and investment by making firms more willing to make or receive payments denominated in foreign currencies.

The cost of trading and the risk factor is the important concern if you are trading between freely convertible currencies. For freely convertible currencies, the size of transaction is big and these are traded very frequently. The transaction size affects the cost per unit of currency traded and frequency of transaction affects both transaction costs and risks. The high frequency of transactions lead to high turnover. High turnover reduces the risk, as less time is available for something unforeseen. High turnover rate spread the fixed costs of currency dealing over a larger volume of transactions. It permits a given volume of business to be effected with a smaller inventory of foreign currencies, lowering the opportunity cost of committing funds to foreign exchange dealings.

Let's assume you want to buy shares of XYZ Company. If the bid price is ₹ 50 and the ask price is ₹ 51.50, then the *bid-ask spread* is ₹ 1.50. Typically, a trader

or specialist on the floor of the New York Stock Exchange would quote the bid-ask spread as follows:

50-51-1/2, 100 × 50 = 100,000

The last number (1,00,000) denotes the number of Company XYZ shares traded since the market opened. Note that online trading systems might refer to the bid-ask spread as 'B×A'

There may be several bid prices and several ask prices for a security at any point in time. However, only the best bid (that is, the highest price offered for a security) and the best ask (that is, the lowest price asked for a security) are used to calculate the bid-ask spread.

Note that the number of shares wanted and the number of shares offered for sale may be different. This means that an investor may only be able to purchase 5,000 of a desired 10,000 XYZ Company shares at ₹ 51.50, if there are only 5,000 shares for sale at that price.

It is important to remember one key aspect of bid and ask prices Purchasers pay the ask price and sellers receive the bid price. This is how securities dealers make a profit on bid-ask spreads. Their job is to buy stocks at the ask price and sell at the bid price. Thus, the size of the bid-ask spread is proportional to the size of the dealer's profit (although not all of the spread constitutes profit for the dealer, other fees are part of the spread). Dealer profit is also one reason. Illiquid or lightly traded stocks tend to have larger spreads than frequently traded stocks.

Many traders and analysts scrutinize patterns in bid-ask spreads to understand what prices trigger demand for both sellers and buyers. Other traders and analysts feel that the bid-ask spread itself has little predictive value.

Factors Affecting Bid-Ask Spread

The Bid- Ask spread on currency quotations is indluenced by the order cost, inventory cost, competition, volume of transaction and the currency risk. Thus, Bid- Ask Spread = f (order cost, inventory cost, competition, volume, currency risk)

(1) **Order Costs:** Order costs are the cost of processing order, including clearing costs and costs of recording transactions.

(2) **Inventory Costs:** inventory cost are the cost of holding the inventory of a particular currency. Holding a currency involves the maintenance cost of currency and the opportunity cost as the funds could have been used for some other purposes. If the prevailing interest rates are relatively high, the opportunity cost of holding an inventory should be relatively high. On

the other hand, when there is high inventory cost, the difference between bid-ask rate will be more or spread will be larger to cover these costs.

(3) **Competition :** The intense competition in the foreign exchange market leads to smaller spread. Further, less competition gives rise to the spread. The widely trade currencies face intense competition in the foreign exchange market, as there is more business in these currencies. Therefore, there is smaller spread. On the other hand, the less traded currencies face less competition in the foreign exchange market, as there is less business in those currencies. Thus, there is larger spread.

(4) **Volume :** The currency which are largely traded in foreign exchange market are more liquid. The liquid currencies don't face sudden change in price. This means that the market has sufficient depth that few large transactions cannot change currency's price. Therefore, the bid-ask spread is less in case of such currencies and *vice-versa.*

(5) **Currency Risk :** Currency Risk is associated with economic and political conditions of the country. Some currencies exhibit more volatility than other currencies because of the political and economic conditions of their respective countries causing the demand and supply of the currency to change abruptly. For example, the currencies in countries that have frequent political crises, face abrupt price movements. The intermediaries are willing to buy or sell these currencies. This could result in losses due to the sudden change in the values of these currencies.

3. Trading in Spot Markets

In spot market, the goods are traded at spot rate. Spot rate differs from future rate. This difference in the spot and future is because of the time gap between their time periods when payment is made. The future rate is different from spot rate because it depends on the future expectations about the prices. It also depends on the storage costs of the asset you are planning to buy. It depends on the weather predictions of your product. It is guided by weather such as perishable goods *etc.* Everyday Reserve bank of India publishes reference rate for spot USD/INR and spot EUR/INR. RBI reference rate is an indicative rate - what is the average foreign exchange rate prevailing on a given date. This rate is also used by companies to convert their foreign currency import payment and export receipt to INR for financial reporting.

4. Cross Exchange Rates

Cross exchange rate is the exchange rate between two currencies, both of which are not the official currencies in which the exchange rates are given. This is

the rate derived from the exchange rates of two currencies with a third currency. Cross exchange rate is calculated by multiplying two exchange rates by each other to eliminate third currency, which is common to both exchange rates. For example, most of the currencies define its exchange rate in terms of US dollar. But, if two countries are trading whose exchange rates are defined in terms of US dollar, then by using common currency, they can calculate the exchange rate between each other or between their currencies. It is the exchange rate between any two non-dollar currencies.

The cross rate is the exchange rate between currency 'A' and currency 'C' derived from actual exchange rate between currency 'A' and currency 'B' and between currency 'B' and currency 'C'.

Sometimes cross rate is referred to as exchange rate between two currencies not involving the US dollar.

Currency vendor provides quotes for only the most liquid currencies such as the US dollar, Euro, Pound Sterling, Swiss Franc, *etc.* Exchange rates between other currencies are normally calculated as the cross rates using the quotes for major currencies.

Mathematically,

$$\frac{A}{C} = \frac{A}{B} \times \frac{B}{C}$$

Where,

A/C = units of currency 'A' per unit of currency 'C'

A/B = units of currency 'A' per unit of currency 'B'

B/C = units of currency 'B' per unit of currency 'C'

Illustration

Suppose, the exchange rate between Euro and US dollar is 0.75 € per US$. Exchange rate between US$ and Swiss Franc is 1.09 US$ per Swiss Franc. Find the exchange rate between € and Swiss Franc in € per Swiss Franc.

Solution

€ per Swiss Franc = 0.75 € per US$ × 1.09 US$ per Swiss Franc = 0.8175 € per Swiss Franc

Finding the same exchange rate in Swiss Franc per € would involve taking a reciprocal of the exchange rate calculated above. Swiss Franc per € exchange rate would be 1.223 Swiss Francs per € (1 ÷ (0.8175 € per Swiss Franc)).

10.2.5 Forward Market

In the spot market, the foreign exchange is traded within two business days of entering into contract or transaction. However, in the forward market, the transactions happen on one day, but payment is to be made on some future date. For example, an Indian exporter of textile cloth might sell it cloth to a US importer with immediate delivery, but payment is to be made on some future date (after one month). The US importer has an obligation to make payment within 30 days. So, the US importer may enter into a contract with a trader to deliver dollars for rupee in 30 days at a one month forward rate.

The need for forward market is for hedging not speculation. The people who use forward market for hedging and speculation, are exporters and importers. The exporters and importers buy forward the currency that they will have to pay and sell forward the currency that they will receive. This is how they try to reduce the unwanted fluctuations in the market. The traders also use the forward market to preserve the value and nature of their assets without speculating against future trend. These dealers use both the spot and forward market through swaps. A swap is a transaction in which one buys spot currency 'A' selling currency 'Y' and simultaneously sells forward currency 'X' buying currency 'Y'. Let us say an American investor has a future receipt in rupees. Also assume that he thinks that Indian bonds are presently a good investment. So he has dollar assets but does not hold cash in rupees. He needs rupees right now and cannot wait for the future receipt of rupee to come. One of the solutions is to sell dollars and buy rupees in the spot market. Suppose, he does not want to block money in a foreign exchange adventure. So, he cannot forecast the exchange value of the future receipt. In this case, he sells dollar against rupee spot getting his rupee and buying his bonds. Simultanewously he buys dollars forward against rupee matching the value date of the receipt. After the expiry of forward period, the investor cashes the receipt, pays back the rupees that he owes and gets his original dollars. This is how he was able to overcome the time lag problem.

We have to determine whether the quotes represent a premium or discount on the spot rate. If the forward quote (buying rate) is smaller than the second forward quote (asking rate), then there is a premium. In such a case, points are to be added to the spot rate. But, if the first quote is greater than the second, then it is a discount and points are to be subtracted from the spot rate.

1. Forward Rate

Forward rate is the rate quoted by foreign exchange traders for the purchase or sale of foreign currency in future. The difference between the spot rate and the

forward rate is known as the spread in the forward market. Suppose the spot Indian rupee on 1 January, 2014, sold at $0.05, while 90 day forward rupee was priced at $0.0592. Based on these rates, swap rate for the 90 days forward rupee has been quoted as a 92 point premium. Similarly, if 90 days British pound has been quoted at $1.6745, while the spot pound has been $1.7015, the 90 days British pound is being sold at a 2.70 point discount.

2. Long and Short Forward Positions

The buying of a security such as a stock, commodity or currency, with the expectation that the asset will rise in value, is long position in the forward market. In the context of options, the buying is an options contract, opposite of 'short' (or short position).

A short position is the sale of a borrowed security, commodity or currency with the expectation that the asset will fall in value. In the context of options, it is the sale (also known as 'writing') of an options contract.

Essentially, when speaking of stocks, long positions are those that are owned and short positions are those that are owed. An investor who owns 100 shares of XYZ stock is said to be long 100 shares. This investor has paid in full the cost of owning the shares. An investor who has sold 100 shares of XYZ stock without currently owning those shares is said to be short 100 shares. The short investor owes 100 shares at settlement and must fulfill the obligation by purchasing the shares in the market to deliver. Often, the short investor borrows the shares from a brokerage firm in a margin account to make the delivery. Then, with hopes the stock price will fall, the investor buys the shares at a lower price to pay back the dealer who loaned them.

When an investor uses option contracts in an account, long and short positions have slightly different meanings. Buying or holding a call or put option is a long position, because the investor owns the right to buy or sell the security to the writing investor at a specified price. Selling or writing a call or put option is just the opposite. It is a short position, because the investor owes the holder the right to buy the shares from or sell the shares to him at the holder's discretion.

Long and short positions are used by investors to achieve different results. Often both long and short positions are established simultaneously by an investor to leverage or produce income on a security. A simple long stock position is bullish and anticipates growth, while a short stock position is bearish. Long call option positions are bullish, as the investor expects the stock price to rise and buys calls with a lower strike price. An investor can hedge his long stock position,

by creating a long put option position, giving him the right to sell his stock at a guaranteed price. Short call option positions offer a similar strategy to short selling without the need to borrow the stock. This position allows the investor to collect the premium as income with the possibility of delivering his long stock position at a guaranteed, usually higher, price. Conversely, a short put position gives the investor the possibility of buying the stock at a specified price and he collects the premium while waiting.

These are just a few examples of how combining long and short positions with different securities can create leverage and hedge against losses in a portfolio. It is important to remember that short positions come with higher risks, due to the nature of certain positions. These may be limited in IRAs and other cash accounts. Margin accounts are generally needed for most short positions. Brokerage firm needs to agree that more risky positions are suitable for you.

3. Forward Premium and Discount

Transactions in foreign exchange market may be spot transactions or forward transactions. Spot transactions or exchange in foreign exchange require receipts and payments to be made immediately, to be more specific, within two business days after the transactions are agreed upon to allow for clearing of cheques. The rate of exchange at which such transactions are settled is known as the *spot rate* (SR). It is the rate at which the required foreign exchange is made available at a particular point of time.

On the other hard, forward transactions or exchange involve an agreement today to buy or sell a specified amount of foreign currency at a specified future date at a rate mutually agreed upon today. This rate is known as forward rate (FR).

The forward exchange rate may be quoted at a premium or at a discount on the spot rate. In the former case, the forward rate is above the present spot rate, while is the latter case, the forward rate is below the present spot rate, making the foreign currency expensive and cheap in the two cases respectively. Forward premium (FP) or forward discount (FD) can be computed from the following formula

$$\text{FP OR FD} = \frac{\text{FR} - \text{SR}}{\text{SR}} \times 100$$

It is possible to spot sell a currency and forward repurchase it as a part of single transaction, known as *currency swap*. The swap rate is the difference between the spot and forward rates in the currency swaps.

4. Arbitrage

The term arbitrage refers to the purchase of a currency by speculators in the monetary centre, where it is cheaper for immediate resale in the monetary ventre, where it is more exprensive so as to make a profit. The process of arbitrage helps in keeping the exchange rate between any two currencies the same in different monetary centres.

For example, if the dollar price of pounds were $1.98 in New York and $2.01 in London, an arbitragee, usually the commercial bank or a foreign exchange dealer, would purchase pounds at $1.98 in New York and immediately resell them in London for $2.01, realizing a profit of $0.03 per pound. If the transaction involved one million pound, the profit would be $30,000 for only few minutes work. The example did not deduct the transaction cost, telephone charges and other costs associated with conducting the deal from the profit. Since these costs are minimal, we ignore them here.

However, as the arbitrage continues, the exchange rate between the two currencies tends to get equalized in the two monetary centres. In the above example, the sale of pounds in London increases the supply of pounds there, thus resulting in a decrease in the dollar price of pounds in London. In New York, arbitrage increases the demand for pounds in New York thereby increasing the dollar price of pounds in New York. This process continues till the dollar prices become equal in the two countries so that arbitrage does not remain profitable.

In the above example only two currencies and two monetary centres are involved in the arbitrage analysis. When this is so, we have two point arbitrag. When these currencies and three monetary centres are involved, we have triangular or three point arbitrage. Triangular arbitrage also operates in the same manner as two point arbitrage, though it is not very popular. Triangular arbitrage operates so as to ensure consistent indirect or cross exchange rates between the three currencies in the three monetary centres.

Consider the following example

$2 = £1 in New York

£0.2 = 1 DM in London

2.3 DM = $1 in Frankfurt

These cross rates of New York with other exchange rates remaining the same, then it would pay to use $1.96 to purchase £1 in New York, use £1 to buy 5 DM in London and exchange the 5 DM in London for $2 in Frankfurt thus realizing a $0.04 profit on each pound transferred.

Thus, triangular arbitrage eliminates inconsistent cross rates and the profitability of further arbitrage by increasing the demand for the currency in the monetary centre, where the currency is more expensive. In effect, triangular arbitrage results in consistent cross rates among all pairs of currencies, thus helping to unify all international monetary centres into a single market.

Interest Arbitrage

To take the advantage of higher interest rates in foreign monetary centres, we require to convert the domestic currency into foreign currency, in order to make investment. At the time of maturity, the funds are reconverted from the foreign currency to the domestic currency. During this period of investment, a foreign currency may depreciate or appreciate, known as foreign exchange risk. If foreign exchange risk is covered, it is known as covered risk and when foreign exchange risk is uncovered, it is known as uncovered risk.

(1) **Uncovered Interest Arbitrage :** The uncovered interest arbitrage occurs when the risk of foreign exchange is not protected. For example, if the interest rate on three months treasury bill is 11% at an annual basis in india and 15 percent in London. The Indian investors would like to invest or buy treasury bill in London. They would like to exchange rupee for pounds at the current spot rate. It may then pay for an Indian investor to exchange rupee for pounds at the current spot rate and purchase British treasury bills to earn the extra one percent for the three months. When the British treasury bills mature, the Indian investor may want to exchange the pounds they invested plus the interest earned back into rupees. If during this period of investment, the pound depreciates, the investor will get fewer rupees per pound than what he paid. If the pound depreciates by half of one percent from his foreign investment, the Indian investor will have only half of the one percent from his foreign investment. If pound depreciates by one percent during this period, the Indian investor will gain nothing. If the pound depreciates by more than one percent, the Indian investor will have loss. But, if the pound appreciates, the Indian investors will gain both from the extra interest he earns and from the appreciation of the pound.

(2) **Covered Interest Arbitrage :** We can also cover the interest arbitrage as investors of short term funds abroad generally want to avoid foreign exchange risk. To cover foreign exchange risk, the investors exchange domestic currency for the foreign currency at the current spot rate so as to purchase foreign treasury bill and at the same time he sells forward the amount of the foreign currency he is investing plus the interest he

will earn so as to coincide with the maturity of his foreign investment. Thus, covered interest arbitrage refers to the spot purchase of the foreign currency to make the investment and offsetting the simultaneous forward sale to cover the foreign exchange risk. When treasury bill matures, the investor can then get the domestic currency equivalent of the foreign investment plus interest earned without foreign exchange risk. Since the currency with the higher interest rate is usually at a forward discount, the net return on the investment is roughly equal to the positive interest differential earned abroad minus the forward discount on the foreign currency. This reduction in earning is the cost of insurance against the foreign exchange risk.

If we continue with the same example, where the interest rate on three months treasury bill is 11 percent per year in India and 15 percent in London. Also assume that the pound is at a three month forward discount of one percent per year. To cover the interest arbitrage, the Indian investor must exchange rupees for pounds at the current exchange rate. At the same time, he sells forward a quantity of pounds equal to the amount invested plus the interest he will earn at the prevailing forward rate. Since the pound is at a forward discount of one percent per year, Indian investor loses one percent on the foreign exchange transaction to cover his foreign exchange risk for the three month period. His net gain is thus extra one percent interest he earns for the three months minus one fourth of the one percent he loses on the foreign exchange transaction.

If the covered interest arbitrage continues, the possibility of gain reduces until it is completely wiped out. This takes place due to two reasons. *First*, as funds are transferred from India to UK, the interest rate rises in India due to the increase of supply of funds in UK. Therefore, the positive interest differential in favour of UK reduces. *Second*, the sale of pounds in the forward market reduces the foreward rate, while the purchase of pounds in the spot market increases the spot rate. Thus, the forward discount on the pound rises.

With the posi interest differential in favour of UK diminishing and the forward discount on the pound rising, the net gain falls for both reasons until it becomes zero. In this situation, the pound is said to be at interest parity. Here, the positive interest differential in favour of the foreign monetary centre is equal to the forward discount on the foreign currency. In the real world, a net gain of at least one fourth percent per year is normally required to induce funds to move internationally under covered interest arbitrage.

If, instead the pound is at a forward premium, the net gain to the Indian investor will be equal to the extra interest earned for the three months plus the forward premium on the pound for the three months. However, as covered interest arbitrage continues, the positive interest differential in favour of London diminishes and so does the forward premium on the pound until it becomes a forward discount and all of the gains are once again wiped out. In covered interest arbitrage, the rule is that if the interest rate differential is greater than the premium or discount, the money should be placed in the currency that has a higher rate of interest or *vice-versa*.

Covered Interest Arbitrage and Interest Parity Theory

The covered interest arbitrage between the interest rate differential for the two nations and the forward premium or discount on the foreign currency has been shown in Fig. 10.2.

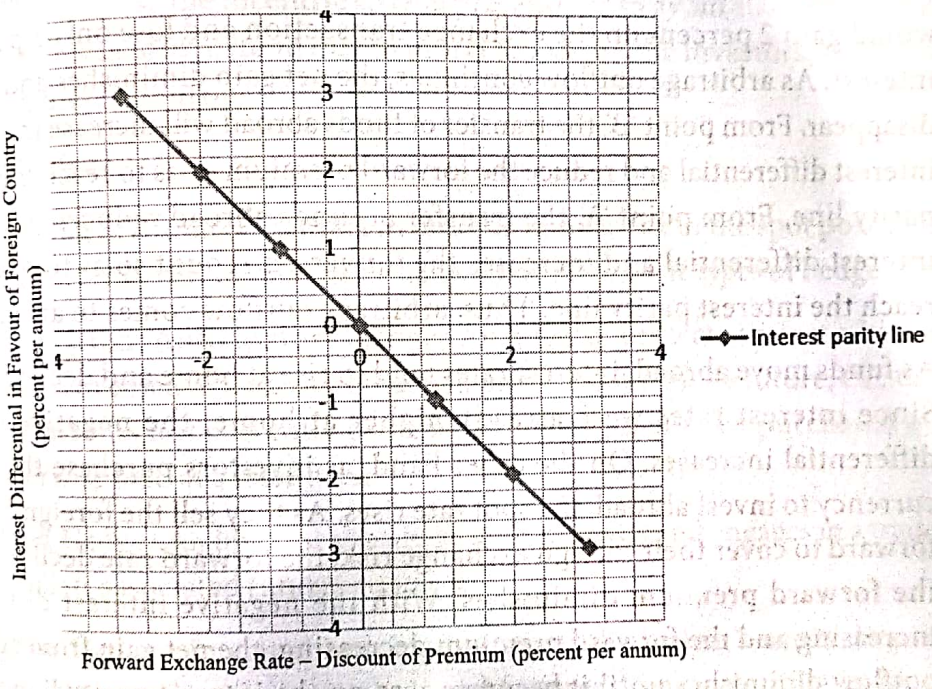

Fig. 10.2 : Covered interest Arbitrage and Interest Parity Theory

The horizontal axis in Fig. 10.2 in shows the forward premium (+) or forward discount (-) on the foreign currency expressed in percentages per year. The vertical axis measures the interest differential in favour of the foreign country in percent per annum. The line in the figure depicts interest parity. Positive values indicate that interest rates are higher abroad. Negative values indicate that interest rates are higher domestically. When the interest differential is zero, the foreign currency is neither at a forward discount not at a forward premium.

For example, when the positive interest differential is 1.5 percent per year in favour of the foreign nation, the foreign currency is at a forward discount of 1.5 percent per year. Similarly, a negative interest differential of 2 percent is associated with a forward premium of 2 percent.

Fig. 10.2 shows that for all points above the interest parity line, there will be a net gain from an arbitrage outflow due to two reasons. *First*, the positive interst differential exceeds the forward discount. *Second*, the forward premium exceed the negative interest differential.

For example, at a point 'A', the positive interest differential is 2 percentage points per year in favour of the foreign nation. While the foreign currency is at a forward discount of 0.5 percent per year. Thus, there is a covered interest arbitrage margin of 1.5 percent per year, in favour of the foreign nation leading to a capital outflow. On the other hand, point 'b' involves a forward premium of 2 percent on the foreign currency and a negative interest differential of only 1 percent. Thus, investors have an incentive to invest abroad, because they would gain 2 percent on the exchange transaction and lose only 1 percent in interest. As arbitrage outflow continues, the net gain diminishes and tends to disappear. From point 'B', the transfer of funds abroad will increase the negative interest differential and reduce the forward premium so as to reach the interest parity line. From point 'A', the transfer of funds abroad reduces the positive interest differential and increases the forward discount so as to once again reach the interest parity line. Thus, arbitrage outflow comes to an end.

As funds move abroad, interest rates tend to rise at home and decline abroad. Since interest rates were already higher at home, the negative interest differential increases. On the other hand, as investors purchase the foreign currency to invest abroad, the spot rate rises. As they sell the foreign currency forward to cover their foreign exchange risk, the forward rate declines. Thus, the forward premium diminishes. With the negative interest differential increasing and the forward premium decreasing, the net gain from arbitrage outflow diminishes until it becomes zero on the interest parity line and the arbitrage outflow comes to an end.

The points below the interest parity line depict a situation of arbitrage inflow. It is in the interest of foreigners to invest in their own country. Below the interest parity line, either the forward discount exceeds the positive interest differential or the negative interest differential exceeds the forward premium. As arbitrage inflow continues, the net gain diminishes and then disappears, when the interest parity line is reached.

5. Hedging

If exchange rates are fixed and exchange controls are imposed, there is no risk involved in foreign exchange dealings. However, when rates of exchange are allowed to fluctuate freely, foreign exchange transactions involve risks. Such risks can be avoided by availing hedging facilities provided by the foreign exchange market. Hedging means covering an exchange risk by settling the exchange rate for future transactions to avoid possible loss due to exchange rate fluctuations. In other words, hedging secures present contracts like forward trading in share markets and helps in avoiding uncertainty arising out of risk.

Moral Hazard Effect of Hedging

In global business, international partners find to reduce risk by spreading the business internationally through portfolio diversification. However, such covering of rise to moral hazard. Here, investors know that if the investment fails, they will get back the fild amount back. On account of complete insurance of risk, investors lose the incentrie to lake precautions to avoid risk. The Asian Crisis of 1997 was to an extend due to moral hazard by the investors, who had invested in these countries.

Types of Hedge

When engaging in a futures contract in order to reduce risk in the spot position, the futures trader is said to establish a hedge. The *three basic types* of hedge are:

(1) **Long Hedge/Anticipatory Hedge :** An investor protects against adverse price movements of an asset that will be purchased in the future, *i.e.*, the spot asset is not currently owned but is scheduled to be purchased or otherwise held at a later date.

(2) **Short Hedge :** An investor already owns a spot asset and engages in a trade to sell its associated futures contract.

(3) **Cross Hedge :** In actual hedging positions, the hedger's needs do not perfectly match with the institutional features. They may differ in time span covered, the amount of the commodity and the particular characteristics of the particular goods. Thus, when a trader writes a futures contract on another underlying asset, he is said to establish a cross hedge.

6. Speculation

Speculative business is picking up these days. It ranges from grain market to foreign currency market. A speculator is not interested in the product in any way. His business is to buy the commodity at a low price and sell at a higher price at a different place or at a different time (future market).

Since, this simple activity has turned into a risky business, lot of speculation will go into the wheat market.

One kind of speculation is arbitrage. This occurs, when the trader simultaneously buys in a low price area and sells in a high price area. For example, price of wheat in Madhya Pradesh is ₹ 0.50 higher per kg. than in Punjab, assuming cost of transportation and insurance is 10 percent per kg. An arbitrager of wheat will purchase wheat in Punjab and transport it to Madhya Pradesh and still can earn a 40 percent profit. In the process, the price differential will slowly disappear except the transportation and insurance cost.

Since, every crop is seasonal, to keep a price homogeneity through the year, crop has to be stored. A person who wants to sell the crop in future, has to know the efficient pattern of pricing and efficient use over the year.

A speculator of wheat knows that if all the wheat comes out in the market, price will crash. So, he buys at a low-price, stores it and sells it at a higher price during off season. Generally, this market has free entry and there are many players in the market. This wipes off any super normal profit. This does not mean that prices accross the month will remain identical, but, competitive speculative price pattern will produce lowest price during harvesting period and price will increase from month to month to compensate for the storage and interest cost. It will reach a peak till the next harvest comes to the market.

This is just the way in inter regional arbitrage. Here, original price may become identical in various regions convered by the arbitrager but actual price rises (Becuase, transportion cost is an increasing function of distance). Speculation thus, increases economic efficiency by removing interregional and inter-temporal price differentials.

Speculation is a spillover of futures trading that can provide comparatively less risk averse investors with the ability to enhance their percentage returns.

Speculators are categorized by the length of time they plan to hold a position. The traditional *classification* includes

(1) **Scalpers :** They have the shortest holding horizon, typically closing a position within a few minutes of initiation. They attempt to profit on short – term pressure to buy and sell by reading other traders an transacting in the futures pits. Thus, scalpers have to be exchange members. They offer a valuable market service, because their frequent trading enhance market liquidity.

(2) **Day Trader :** They hold a futures position for a few hours but never longer than one trading session. Thus, they open and close to futures

position within the same trading day. Most often, they attempt to profit from scheduled announcements related to money supply, trade deficit, *etc.*

(3) **Position Trader :** They have longer horizons holding positions overnight and often as long as a few months. These are of two types:

(a) **Outright Position Holder :** He takes his position in the futures market relying on his belief in the future of the market. The danger in this trader's position is that, it offers a chance for very large gains of the hunch is correct. But, it carries with it the risk of very large losses as well.

(b) **Spread Position Jolder :** Unlike an outright position holder who requires a belief about the price movement of one commodity, a spread position holder focuses on the relative price movements between two or more commodities. The spread positions can be of two types.

(c) **Intra-Commodity Spread :** This involves price difference between two or more contracts written on different, but related underlying goods. Wheat and corn being close substitutes their prices are positively related. This makes the spread positions less risky than an outright position. Thus the trader's strategy relies on the widening of the spread. The trader compares the prices of the different maturities and takes advantage of any price discrepancy among the different maturity dates.

Generally, the producer of the commodity transfers the risk to the speculative seller by selling the product immediately after it is ready for sale in the market. This process is called hedging. If one waits for the off season, the price may shoot up and one can make lot of windfall gain. But, if the price is below the expected price, the producer has to incur heavy losses. In India, where agricultural production depends on the vagaries of nature, agricultural supply is really unpredictable and there is lot of scope for speculation, arbitrage and hedging. Hedging is very important in Indian market to insulate farmers from fluctuating prices and is done by the government.

10.3 INTERNATIONAL MONEY MARKET

The local corporations need to borrow short term funds to support their operations. Country's government may also need to borrow short term funds from the local money market where many individuals and local institutional investors provide funds through investing in commercial banks. Therefore, the domestic money market provide short term funds denominated in local currency from local surplus units to local deficit units.

In the same manner, due to the growth of international business, the corporations or government of a particular country need short term funds denominated in a currency that is different from their local currency. They need to borrow short term funds denominated in a currency that is different from their local currency due to the following *factors*:

(i) They may need to borrow funds denominated in foreign currency, so that it can be paid for their imports denominated in that foreign currency.

(ii) They may borrow funds denominated in foreign currency in which interest rate is lower relatively. The cheap interest rates in foreign countries also increase the demand for their currencies in the local countries. It also gives rise to international financial markets.

(iii) They may borrow funds denominated in foreign currency keeping in mind that foreign currency will depreciate against their local currency. Further, they may repay their loan at more favourable exchange rate overtime.

10.3.1 Origin and Development of International Money Market

The corporations and institutional investors prefer to invest in a foreign currency rather than local currency. These corporations invest in foreign currencies because the interest rate that the would receive in foreign market, would be more than that they would receive in their local market. They may also prefer to invest in foreign currencies keeping in mind that the currency in which they are investing, will appreciate against their local currency. They will be able to convert that currency intro their local currency at a more favourable exchange rate at the end of investment period. These preferences of corporations and government to borrow short term funds denominated in foreign currency has given rise to *international money market.*

International Money Market has two other *components*, the Europeon Money market and Asian Money Market.

(1) **Europeon Money Market** : Europeon Money Market emerged during 1960s and 1970s. Europeon Money Market emerged to accommodate the need of MNCs who expanded their operations during that period. The demand for US dollar was high as it was used by foreign countries as medium for international trade. The corporations in United States deposited US dollars in Europeon banks, so that they can trade with Europeon countries. The Europeon banks also accepted the deposits so as to further lend US dollar to Europeon corporates based in Europe. These dollar deposits in Europeon banks are known as 'Eurodollars'

and the market for Euro dollars came to be known as 'Eurocurrency Market'.

The Euro currency market grew because of some regulatory changes in United States. For example, when United States limited the foreign lending by US banks in 1968. Many of the foreign MNCs based in US could obtain funds from Europeon banks. This has given a great rise to 'Eurocurrency Market'. Further, when US government imposed ceiling on the interest rates to be paid on dollar deposits, many MNCs transferred their deposits denominated in dollar to Europeon banks. This has again given rise to Eurocurrency Market.

Petroleum Exporting Countries have also contributed to the growth of Eurocurrency Market. These countries began to use the Eurocurrency Market to deposit a portion of their revenues. These dollar denominated revenues are sometimes known as 'Petrodollars'.

Today the Eurocurrency market is not used as often as in the past, because several other financial markets have been developed. But, Europeon Money Market is still an important part of international Money Market.

(2) **Asian Money Market:** LikeEuropeon Money Market, the Asian Money Market originated as market involving dollar-denominated deposits. Asian Money Market emerged to accommodate the needs of businesses that were using US dollars as a medium of exchange for international trade. The Asian Money Market grew, because these businesses could not rely on banks in Europe because of the distance and different time zones. The major source of deposits in Asian Money Market are MNCs with excess cash. Manufacturers are the major borrowers in this market. The Asian Money Market is centered in Hongkong and Singapore, where large banks accept deposits and make loan in various foreign currencies.

10.4 INTERNATIONAL CREDIT MARKET

The medium term funds are borrowed by the MNCs from local financial institutions or through the issuance of notes in their local markets. Loans of one year or more extended by the banks to MNCs in Europe are commonly called *Eurocredit Loans*. This market is called *Eurocredit Market*. The loan can be denominated in dollars or many other currencies, commonly having a majority period of 5 years. To avoid the risk, banks in Europe use floating rate loans. The loan rate floats in accordance with the movement of LIBOR

(London Interbank Offer Rate), which is the rate commonly charged for loans between the banks. For example, Eurocredit loan may have a loan rate that adjust every 6 months and is set at LIBOR plus 3%. International credit market is well developed in Asia and is developing in south America.

10.5 INTERNATIONAL BOND MARKET

The way MNCs obtain long term funds by issuing bonds in their local markets, MNCs can also access long term funds in foreign markets. MNCs can issue bonds in international bond market. They issue bonds in international market three due to *three reasons.*

(i) MNCs (the issuer) recognise that they may be able to raise more funds in a particular foreign country rather than in their home country.

(ii) MNCs issue bonds in international bond market because they prefer to finance a specific foreign project in a particular currency.

(iii) MNCs raise funds from a foreign country because they find that financing in a foreign currency with a lower interest rate may enable MNCs to reduce its costs of financing although they are exposed to exchange rate risk.

Institutional investors such as commercial banks, mutual funds, insurance companies and pension funds from many countries are major participants in international bond market. Some institutional investor, prefer to invest in international bond market rather than their respective local markets when they can earn higher return on bonds denominated in foreign currencies. These international bonds are also known as *foreign bonds* or *Euro Bonds.* A foreign bond is issued by the borrower foreign to the country, where bond is placed. For example, a US corporation may issue a bond denominated in Janapanese Yen, which is sold to investors in Japan.

Eurobonds also have secondary market. The market makers are generally the same underwriters who sell the primary issues. A technological advance called 'Euro Clear' helps to inform all traders about the outstanding issues for sale, thus allowing more active secondary market. The bond markets have been developed in Asia and South America.

10.6 INTERNATIONAL STOCK MARKET

Markets can also obtain funds from foreign investors by issuing stock in international markets. Issuing stock in a foreign country can enhance the firms' image and funds can be raised from across the world. Firms get good choice

for raising funds in various markets for new issues. This competition among various new issues markets should invrease the efficiency of new issues. The location of MNCs operations can also influence the decision about where to place its stock as the MNS may desire a country where it is likely to generate enough future cash flows to cover dividend payments. MNCs need to have their stock listed on the stock exchange of the country, where they want to issue their shares. Investors will purchase these shares if they can sell them locally in the secondary market. The stock is denominated in the currency of the country, where it is placed. For example, Coca-Cola shares were issued to investors in Germany denominated in Euro. The investors can further sell these shares easily in the local stock exchange (secondary market) of Germany.

Many non-US Corporations that need large amount of funds, issue these shares in United States due to the liquidity of the newissue market in US. These shares are called 'Yankee Stock Offerings'. Most of the non US corporations raise their funds by issuing the shares in US new issue market, as the US market has a large market base. These non-US corporations are able to sell the entire issue in this market. In smaller markets, the entire issue may not necessarily sell. When a non US corporation issues its shares in its own country, its shareholders' base is in the hands of few large institutional investors. By issuing shares in US markets, these non-US corporations can diversify its shareholder base and can reduce the risk of price volatility by these few large institutional investors.

In US, investment banks commonly serve as underwriters of the stocks of non US corporations. They also charge for it. Many of the recent stock offerings by non US corporations have resulted from privatisation programs in US. Thus the businesses that were initially in the control of government, is now sold to US shareholders. The non US corporations that are willing to issue their stocks in US market are required to satisfy stringent rules on their financial condition. They are exempt from some of these rules and regulations, when they qualify for 'Securities and Exchange Commission' guidelines through a direct placement of stock to institutional investors.

The non-US firms can also use 'American Depository Receipts' (ADRs) (certificate representing the bundles of stock). It is a negotiable certificate issued by a US bank representing a specified number of shares in a foreign company traded on a US exchange. It is negotiable security that represent securities of non US company that trades in US financial markets. With the introduction of ADRs, it has become easy for the US investors to invest in foreign companies, because now they don't have to comply with the hardship rules and regulations .The Regulatory body of 'Securities and Exchange Commission', has introduced the concept of ADRs. For example, Volkswagen,

a German company trades on New York stock exchange. The investors in America can easily invest into German company, through the stock exchange. Volkwagen is listed on the American stock exchange after complying the required laws. On the other hand, if the shares of Volkwagen are listed in stock market of countries other than US, then, it is termed as GDRs.

The non-US firms can also use GDRs (Global Depository Receipts) to raise funds from outside the country. GDR is a bank certificate issued in more than on country for shares in a foreign company. The shares are held by foreign branch of an international bank. The shares trade as domestic shares, but are offered for sale globally through the various bank branches.

CHECK YOUR PROGRESS

1. Why do companies involved in international trade have to hedge their foreign exchange exposure ?
2. Explain the factors affecting Bid Ask Spread.
3. Distinguish between spot market and forward market.
4. Should an exporter use spot rate or forward rate for quotations.
5. Is devaluation good for exports and imports? Why is the impact of devaluation usually not immediate?
6. What problem do you think you would face as a business trying to operate in two foreign exchange markets?
7. What risks confront dealers in the foreign exchange markets?
8. What are foreign exchange markets? Explain their most important functions.
9. What are the four different levels of participants in foreign exchange markets? Explain the other functions of foreign exchange markets.
10. Define interest arbitrage, uncovered interest arbitrage and covered interest arbitrage. How is interest arbitrage covered in the forward market?
11. Why does the net gain from covered interest arbitrage tend to diminish as covered interest arbitrage continues?
12. What is meant by foreign currency being at interest parity? Why is this often not the case in the real world?
13. How do hedgers, speculators and interest arbitrageurs, as well as government actions affect exchange rates?
14. Differentiate between hedging and speculation. Also discuss the appropriate role for each in equity market.