

Foreign Exchange Market

6

Unit Highlights:

- ® Nature, Organisation and functions of the Foreign Exchange Market
- ® Exchange Rate Systems
- ® Foreign Exchange Transactions

® Eurodollar Market

Lesson-1: Nature, Organisation and Functions of the Foreign Exchange Market.

Lesson Objectives

After studying this lesson, you will be able to :

- ® understand the concept of exchange rate;
- ® understand the functions of foreign exchange market;
- ® see the transactions underlying demand and supply of foreign currency;
- ® how the foreign exchange market is organized;
- ® explain foreign exchange market's clearing function;
- ® how the exchange market functions as a supplier of credit and
- ® explain the concept of exchange risk.

Introduction

We have thus far concentrated on the real variables in the international economy such as quantities of goods produced, consumed and traded. Prices were no doubt there as equilibrating devices, but they were relative prices (or the terms of trade). It is time to take account of the monetary magnitudes: money price levels, financial assets that are traded internationally, and particularly the prices at which different national currencies exchange for one another. In this unit our focus will be on the foreign exchange market where the prices of foreign currencies are determined.

In trying to understand the behaviour of monetary magnitudes, we need to relax certain key assumptions underlying the market equilibrium positions in the earlier analysis:

1. The assumption of zero cash balance is abandoned in favour of allowing economic agents to save, hold, or run down cash balance. In other words, they can spend more or less than their current incomes.
2. In place of full price flexibility in the face of excess demands or supplies, we now explore the consequences of prices being sticky downwards (lower prices are resisted) when there are excess supplies. The exchange rate (defined below) assumes special importance in this scheme, being a key adjustment device for bringing country's international purchases and sales into equilibrium.

In this lesson we will discuss the nature, organisation and functions of the foreign exchange market. In next three lessons we will discuss exchange.

What is the Exchange Rate?

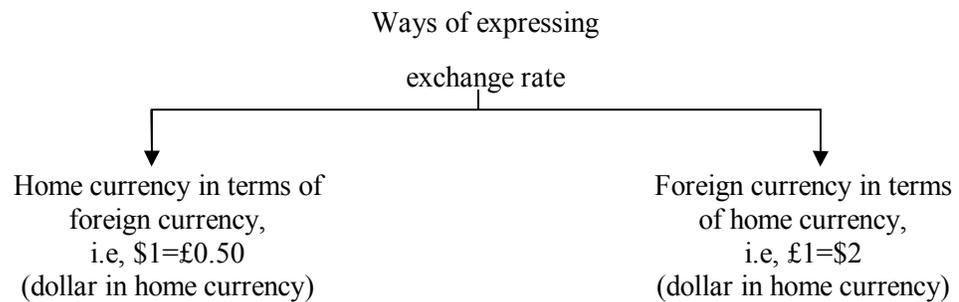
Different countries have different national currencies (dollar in US, pound sterling in UK, Yen in Japan, Lira in Italy and so on). Therefore, international transaction requires conversion of one currency into another. Imagine that an American consumer faces the option of buying a television set at home for \$100 (home currency) and a set of comparable quality in UK for £60. For simplicity, assume that the shipping cost is zero and that the import faces no tariffs or other taxes. Which option is cheaper? To answer this, he has to know how much he has to pay in terms of dollars to buy £60? If £60 is equivalent to \$ 90, then it is cheaper to buy abroad. On the other hand, if £60 costs him \$ 120, then buying home is the cheaper option. It is clear that even if prices in national currencies of a commodity

The previous analysis is modified here by abandoning the assumption of zero cash balance and of full price flexibility in response to excess demands and supplies.

remain unchanged, the rate at which one national currency can be converted into another partly determines whether profitable international transaction is possible, and if so, what the direction of trade is going to be (but note that the price level and the exchange rate may influence each other).

The profitability and the direction of trade also depend on the rate of exchange.

The rate at which one currency can be exchanged for another is called the exchange rate. In the example above if £60=\$90, then £1=\$1.5; or when £60=\$120, then £1=\$2. In other words, to buy £1 an American pays \$1.5 in one case and \$2 in the other. The price of foreign exchange (here £) is higher (in terms of the home currency, \$) in the latter case. We can say so, if we define the exchange rate as the price of a unit of foreign currency in terms of home currency. In the discussion that follows, we shall define exchange rate in this way. But note that we could have defined it in an alternative way. Instead of saying that £1=\$2, we could have said that \$1=£0.50 which is in fact the pound price of dollar (and hence the reciprocal of the dollar price of pound).



Both ways of expressing are equivalent, since they refer to the same exchange ratio. (The apparent difference is due to the use of different units of account, dollar in one case and pound sterling in the other). The way of expressing exchange rate varies from nation to nation. Even one nation can follow one way in exchanging her currency with one foreign currency and also can follow another way to exchange her currency with another foreign currency. In practice, there are national conventions about the way of expressing exchange rates, just as there is a convention in each country about which side of the road to drive on. For example, in the United States, the exchange rate is expressed as so many dollar per foreign currency. such as \$2 per pound. However, United States follows the alternative way of expressing exchange rate when she exchanges her currency with Japanese Yen, i.e, 125 Yen per dollar. In UK the exchange rate is expressed as so many units of foreign currency per pound, i.e., \$2 per pound.

Convention determines the way is which the exchange rate is defined or expressed by a country.

Functions of a Foreign Exchange Market

As in any other market, in the foreign exchange market too, we expect a demand for and a supply of what it deals in (i.e., the foreign currency). The demand and the supply arise in course of trades in goods (e.g. an American imports a TV from Britain), trades in services (e.g. an American importer buys British shipping services), transactions in financial assets (e.g. a British citizen buys a US stock) or in the case of other forms of investment (e.g. a British firm buys an office building in New York). In fact, these are only a few of a wide variety of occasions which may require a transaction (buying and selling) in foreign currency (or, foreign exchange) on the part of a government, a firm or a private citizen.

The foreign exchange market tries to ensure smooth and frictionless conduct of international transactions by performing the following functions:

- (a) It helps convert the purchasing power of one national currency into that of another and transfer it from one country to another.
- (b) It often finances foreign trade by supplying credit.
- (c) It provides mechanisms for dealing with risks associated with exchange rate fluctuations.

Naturally, the primary function is the transfer of purchasing power, because the very existence of the foreign exchange market depends on this. The other two functions derive from this primary function.

The foreign exchange market facilitates international transactions by performing the functions cited here.

Transactions Underlying Demand & Supply

As mentioned earlier, the demand for and the supply of a foreign currency may arise in a large variety of circumstances involving international transactions. For the simplicity of illustrations, we will here refer to trade in goods and services only.

A nation's exports of goods and services require the selling of foreign currency in order to buy that nation's currency. Assume that an American exporter sells computers to a British firm. This transaction leads to a supply of foreign currency (pound sterling) to the extent of the value of the computers and a corresponding demand for the home currency (US dollars). This is true no matter whether the US exporter accepts payment in pound sterling or insists on payment in dollars. Let us see why? In the first case, the American exporter enters the foreign exchange market and sells pounds in order to get dollars. In the latter case, it is the British importer who sells his pounds and buys dollars with which to pay the American exporter.

Imports are associated with demand for (and export with supply of) foreign currency.

On the other hand, every import will lead to a demand for foreign currency and a corresponding supply of the domestic currency. Again for this conclusion to hold it does not matter whether an American importer pays in terms of dollars or pounds. If he pays in dollars to the British exporter, the latter goes to the foreign exchange market to sell (supply) dollars and buy (demand) pound sterling.

The basic points to remember then are:

- (a) Home country's exports of goods and services will create a supply of foreign currency.
- (b) Home country's imports of goods and services will give rise to a demand for foreign currency.

In short, imports are associated with demand for and export with supply of foreign currency.

Organization of the Foreign Exchange Market

The traders (exporters, importers, tourists, immigrants, investors) who enter the foreign exchange market seldom deal directly with one another. Each trader usually deals typically with a bank often in his own country. Many large banks around the world buy and sell foreign exchange among themselves and with

Traders in the foreign exchange market usually transact their business through brokers.

specialized foreign exchange brokers. The brokers on their part act as links between different banks and also between central bank and the commercial banks. Banks have their own inventory of foreign currencies to bridge the gap between demand and supply of a given currency. But often these balance prove insufficient to close the gaps between the inflows and outflows of a currency. In such cases a bank usually deals with a broker who supplies or buys a foreign currency depending on the situation. The central bank of a country may sometimes have to intervene in the foreign exchange market as a buyer or a seller if it wants to pursue a policy of fixed rate or a crawling peg (explained later). And again the brokers may act as an intermediary between the central bank and the commercial banks dealing with foreign currencies.

Foreign Exchange Market's Clearing Function

It should now be clear from the discussion above how the foreign exchange market performs its clearing function by coordinating the needs and claims of the buyers and sellers of a foreign currency. Here is an example. Suppose that a US exporter of computer to Britain gets a promise to pay in pounds sterling after three months (after he gets delivery of goods now in transit). The exporter goes to a US bank and sells the importer's IOU (I Owe YOU) to that bank receiving dollars in exchange. The bank in its turn can sell the IOU to another bank which is in need of pounds. In the financial jargon the process will be described as follows: The exporter 'draws bill on London' and 'discounts' it with a US bank which 'rediscounts' it, 'repatriating' the proceeds through the foreign exchange market mechanism.

Exchange Market as Supplier of Credit

Discounting the bill of exchange is an important way of financing international transactions.

Trading usually involves granting of credit by one party or another, or by an intermediary, because there is often a time-gap separating the sale and receipt of payments. International trade is no exception (in fact the need for credit is greater here). It takes time to ship goods from the seller to the buyer, and, therefore, someone must finance the transaction while the goods are in transit. Suppose the importer pays cash immediately after purchase (but before receiving delivery of the goods). Then it is the importer who finances the transaction. On the other hand, if the exporter holds the accepted bill of exchange (an IOU) until maturity (usually the date shipment is expected to reach the importer) or grants open book credit to the importer, then the exporter is financing the transaction.

But these are not the typical ways of financing an international transaction. More usually, and as mentioned a little earlier, the exporter discounts (i.e., on payment of a small commission) the bill of exchange with a home country bank and gets the domestic currency. The bank may then want to hold the bill until the date of its maturity to receive payment from the importer, or may rediscount it with another bank (which may again rediscount it).

Exchange Risk

Exchange rate can (and do) fluctuate from time to time. Shipment of goods to the foreign importers takes time, and when the payment falls due the exchange rate

may have changed in the mean time. If the price of foreign exchange falls, the exporter will be hurt (when the price is quoted in foreign currency).

Suppose that an American exporter is to get £10,000 from a British importer after three months. At the current rate of exchange of \$2.0 for a pound, he should expect to get \$20,000 after three months. But if the price of pound sterling drops to £1=\$1.60 in the mean time, he will get only \$16,000 (a loss of \$4,000 due to fall in the exchange rate).

Now consider the case of the British importer who is required to pay the exporter \$20,000 after three months. And suppose that he can now buy this amount for £10,000 at the current exchange rate of £1=\$2. But if at the end of the period the rate becomes £1=\$1.60 (a fall in the price of pound sterling) he has to spend \$£ 12,500 and so suffers a loss of £2,500 (=£12,500-£10,000).

In sum, there is a possibility that exchange rate fluctuations may land the exporter or the importer in a **loss which has nothing to do with their normal business**. This possibility of loss (which is unique to international trade) is known as the exchange risk.

Exchange risk is the possibility of loss from exchange rate fluctuations.

Review Questions

Multiple choice questions (tick the correct answer)

1. Exchange rate refers to the rate of exchange between
 - a. two goods
 - b. domestic and foreign currencies
 - c. gold and taka
 - d. none of the above
2. An important function of the foreign exchange market is:
 - a. buying dollars
 - b. buying dollars and pounds
 - c. the transfer of purchasing power
 - d. buying and selling foreign goods
3. Home country's supply of foreign currency is created by:
 - a. Home country's imports of goods and services
 - b. Home country's imports and exports of goods and services
 - c. Home country's exports of goods and services
 - d. None of the above
4. Exchange risk arises in international transactions because
 - a. payments and receipts take place instantly
 - b. payments and receipts are separated by sometime
 - c. exchange rate may change
 - d. of both (b) and (c)
5. IOU means:
 - a. I Obey You
 - b. I Owe You
 - c. Inter Office Understanding
 - d. None of the above

Short Questions

1. Distinguish between the internal and the external value of a country's currency. Which of the two is reflected in the exchange rate?
2. How the foreign exchange rate is expressed depends on convention. If so, why does it not lead to better confusion?
3. Explain why the transactors in the foreign exchange market usually take the help of an intermediary. Does his presence impair the efficiency of the market? Elaborate.
4. Briefly state and explain the transactions that give rise to the demand for foreign currencies.
5. How does the foreign exchange market supply credit to exporters and importers? Explain.

Essay-type Questions

1. What is a foreign exchange market? Discuss the nature and organisation of this market.
2. Discuss the functions of a foreign exchange market.
3. What is an exchange risk? When does it arise?
4. "Foreign exchange market is a supplier of credit"- Explain.

Answer: 1.b, 2.c, 3.a, 4.d, 5.b

Lesson 2 : Exchange Rate Systems

Lesson Objectives

After studying this lesson, you will be able to:

- ® describe different types of exchange rate system;
- ® define real and effective exchange rates;
- ® appreciate the international character of the foreign exchange market;
- ® explain the concept of arbitrage and
- ® understand what is meant by hedging and how it works.

Exchange Rate Systems

Exchange risks arise, as we have seen above, from possible fluctuations in the exchange rates. We have also mentioned earlier that central banks, on occasions, enter the foreign exchange market as buyers and sellers, if the prevailing circumstances so demand. It is, therefore, necessary to explain how the exchange rates are determined. This will enable us to see why exchange rates fluctuate (and therefore exchange risks arise) and why certain circumstances motivate the central banks to buy and sell foreign currency in the market.

Flexible Exchange Rate System

Foreign exchange rates are determined by different rules under different foreign exchange regimes (or systems). One is the flexible exchange rate system, also known as free or perfectly floating (clean floating) exchange rate system. The exchange rate here is determined in the foreign exchange market by the free interplay of demand and supply forces. In other words, the exchange rate is allowed to be fixed by the market mechanism without any systematic intervention by the government or the central bank. The operation of a foreign exchange market under this system is illustrated in fig. 6.1.

The demand curve for foreign exchange (DD) as drawn is normally negatively sloped. In our example, it implies that as the price of pounds falls (in terms of dollar), more pounds are demanded. The reason for this kind of inverse relationship is briefly this. Remember from our earlier discussion that American imports lead to the demand for foreign currency (£). If a British motorcycle costs £200 and the central exchange rate is \$2 per pound, the dollar-price of a British motorcycle is \$400. Suppose that an American importer will buy 100 units in this situation, giving rise to a total demand for £20,000. Assume now that the price of motorcycles in terms of pounds does not change, but the exchange rate drops to-

Foreign exchange rates are determined by different rules under different foreign exchange systems.

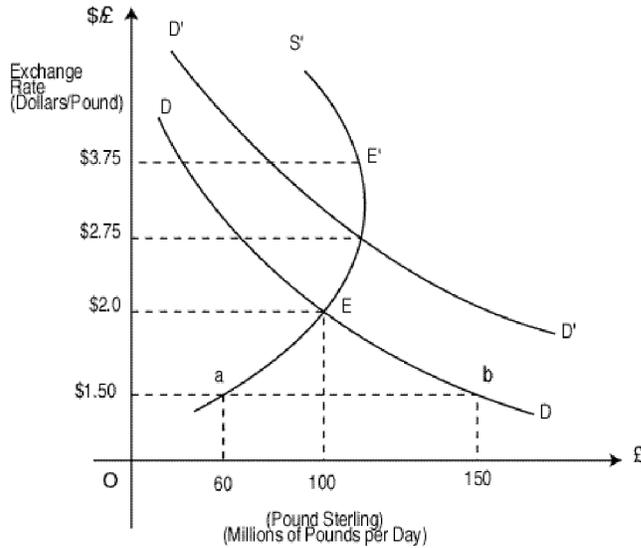


Fig. 6.1 : Free Market Determination of the Exchange Rate

\$1.50 per pound. This drop lowers the dollar-price of a motorcycle to \$300 (= \$1.50*200). The motorcycle being now cheaper in America the importer raises his demand to 150 units. This will cause demand for pounds to rise to \$30,000 (up from £20,000 before the drop in the exchange rate). Therefore, we should normally expect an increase in the amount demanded of a foreign exchange following a fall in the exchange rate (and vice versa).

The supply curve of foreign exchange need not always be positively sloped.

The supply curve of foreign exchange (SS) has been drawn in Fig 6.1 with a positive slope for lower exchange rates. When the price of pound sterling goes up, the American goods become cheaper (in terms of pounds) to the British consumers who will buy more than before, thus raising American exports and hence the amount of pound sterling supplied (we know that supply of foreign currency results from domestic exports). This imparts a positive slope to the supply curve. But note that at higher exchange rates (above \$ 3.75/ £ in Fig. 6.1) the supply curve may **bend backwards**, implying that as the price of pounds go up beyond a certain level (such as E') the amount of foreign exchange supplied may fall instead of rising. This possibility arises when the foreign country's (Britain) demand for home country's (America) exports is inelastic in the relevant exchange rate range.

The equilibrium exchange rate is determined by forces of demand and supply like any other price.

We now return to the determination of equilibrium exchange rate. Graphically the equilibrium occurs at the point of intersection of the demand and supply curves of foreign exchange (Point E in Fig 6.1). The exchange rate corresponding to this equilibrium is \$2.00 per pound at which 100 million pounds are traded. At a higher exchange rate the supply exceeds demand, causing the rate to fall. On the other hand, if the exchange rate is lower than \$2.0 per pound, the demand exceeds the available supply, exerting upward pressure on the exchange rate. Therefore, the equilibrium exchange rate is stable in the situation depicted in Fig 6.1 (but this is not guaranteed in all cases).

The equilibrium exchange rate will change if there are shifts in the demand and/or supply schedules. For instance, when the demand schedule shifts to the right (D'D') in fig. 6-1, the exchange rate will go up to \$ 2.75 per pounds. This increase

is called appreciation of the pound (in terms of dollars). On the other hand, when the price of pounds falls (e.g. because of rightward shift of the supply schedule), we say that the pound has depreciated (in terms of dollars). Note that (because of two equivalent ways of looking at the exchange rate) an appreciation of the foreign currency must imply a corresponding depreciation of the domestic currency, while a depreciation of the foreign currency implies appreciation of the domestic currency.

In short, shifts in demand and supply of foreign exchange are causes of fluctuations in the exchange rates under the freely floating exchange rate system. Since 1973 most western nations have abandoned the free floating system in favour of what is known as 'dirty' or 'managed' floating. Free floating, by causing large swings in the exchange rates within short periods, is believed to create uncertainty and consequent disruption in international trade. Therefore, the central banks of these countries buy or sell foreign exchange to iron out unintended fluctuations in the exchange rates. Floating is allowed, but the outcome is managed in desired ways (hence the name).

Under the freely floating system, the exchange rate fluctuations are caused by shifts in demand and supply.

The Fixed Exchange Rate System

Governments do not always allow the market to fix the exchange rate freely. Instead they like to fix or 'peg' the rate at an official value (or within a certain band). This rate is called the par value (or peg) of the currency. The market determined exchange rate will only accidentally be equal to the official rate. How can the government make the exchange rate stay at or near the official rate? Obviously the government or the central bank must be ready to intervene in the foreign exchange market to deal with the imbalance that may arise between the supply and demand for foreign exchange at the official rate. This is illustrated in Fig 6-1.

Let us suppose that the authority intends to peg the exchange rate at £1=\$1.50. There is an excess demand for pounds at this rate represented by 'ab' (90 million pounds). To keep the rate pegged at the official level, the central bank must sell 90 million pounds per day in the foreign exchange market. In the opposite case (i.e. when the par value is above the market clearing rate) there will be an excess supply of pounds. In order to make the official rate stick, the Federal Reserve (the US central bank) must now buy up the excess supply of pounds.

Under the fixed exchange rate system, the central bank has to stand ready to intervene in the foreign exchange market.

It is clear that in either case, the necessary intervention by the central bank cannot go on indefinitely. Eventually the authority faces the prospect of running out of international reserves (or their unnecessary and potentially harmful accumulation) and must initiate policies that shift the supply and demand curves so that their intersection takes place at the official exchange rate. If it fails to do so, it will be forced to change the par value appropriately.

When the par value is increased (i.e. the price of foreign currency is raised) it is called devaluation (e.g. more dollars are needed to buy a unit of foreign currency than before). We know that this is called depreciation under the freely floating exchange rate system. The opposite step (of lowering the par value) is called revaluation under the fixed exchange rate system (which is appreciation under the

flexible exchange rate system). In brief, the difference in terminology reflects only the difference in the exchange rate regime.

Exchange Rate System	Change in Par Value	Terminology	How determined
Freely Floating/ Perfectly Floating/ Flexible exchange rate	increase	Depreciation	- By exchange market - No govt. intervention
	decrease	Appreciation	- By exchange market - No govt. intervention
Managed Floating/ Fixed exchange rate	increase	Devaluation	- by govt. or central bank
	decrease	Revaluation	- by govt. or central bank

Under the Bretton Woods system, US dollar was pegged to gold and the US committed itself to freely buy and sell gold at the official rate.

Before world War I, the fixed exchange rate system took the form of gold standard. All currencies were tied to gold and its unrestricted export and import were allowed. These features made the exchange rate fixed. The same advantage was sought to be derived under the so called Bretton Woods System (also known as the adjustable peg) later (particularly between 1944 and 1971). Under this arrangement, the US dollar was pegged to gold and the US committed itself to buy and sell any amount of gold at the official rate. Each of all other countries declared the parity of its currency in terms of gold (or US dollar) and stood ready to defend the declared parity by buying and selling dollars. All these made each country's currency stable in terms of dollar and, by implication, in terms of each other.

There is other varieties of exchange rates between the two extremes described above. For example, sometimes fluctuations of exchange rates in the market are tolerated within a wide band and if central bank intervention does at all take place, it is only to prevent the exchange rate from straying beyond the limits in either direction. Besides, there is also the crawling peg system in which the peg is allowed to change slowly (and hence to crawl along).

The Effective Exchange Rate

The exchange rates which we have thus far talked about are called bilateral (nominal) exchange rates. The reason is that they show how much of the home currency (say, dollar) must be paid to buy a unit of a given foreign currency (e.g. British pound, French franc, Japanese yen and so on). So there can be any number of bilateral exchange rates depending on which foreign currency is being traded for the home currency.

The effective exchange rate is a weighted index of all relevant bilateral exchange rates.

But often we want to capture the changes in the (external) value of the home currency (e.g. dollars) relative to all other currencies in a single number rather than looking at separate exchange rates for different currencies (such as DM, pounds or yen). That is, we want to know what is happening to the (external) value of the home currency vis-a-vis all other currencies. For this purpose, what we need is obviously some index number of all relevant bilateral exchange rates. For the construction of such an index number, appropriate weights must be attached to the bilateral rates. The weights should reflect the importance of the currency concerned in the foreign trade of the home country. Usually the weights are proportions of a given foreign country's trade in the total trade of the home country. Such index numbers are called effective exchange rates, and are

calculated and published by the International Monetary Fund and other organizations.

The Real Exchange Rates

The effective exchange rate index measures the average nominal (in monetary terms) exchange rate. But it does not tell us whether the goods of the home country is becoming relatively cheaper or dearer than foreign goods over time. To keep watch over the international competitiveness of our goods abroad, we need this sort of information. Such information can be supplied by the real effective exchange rate or simply the real exchange rate which is in fact, a ratio of foreign to domestic prices, expressed in the same currency. It is defined as :

$$\text{Real Exchange Rate (R)} = \frac{ep_f}{p} = \frac{\text{foreign price in domestic currency}}{\text{domestic price}}$$

Where p and p_f are domestic and foreign prices respectively and e the price of foreign currency (in terms of domestic currency). To take an example, suppose that $e = \$2/\pounds$, $P_f = \pounds 100$ and $P = \$50$. Then

$$R = \frac{\$200}{\$50} = 4$$

This says that the foreign price is four times as high as the domestic price. If it goes down to say, 2 (e.g. because P rises to $\$100$), it will indicate that the home country's (US's) international competitiveness has been substantially eroded.

International Character of the Foreign Exchange Market

A market is an institution which helps buyers and sellers to be in close touch with one another for transacting their business. The size or scope of the market depends to a large extent on the ease with which such interactions are possible. The participants of a market need not be physically present in a building or a locality, because successful business transactions do not always require face-to-face dealings. One spectacular instance of this is the foreign exchange market. Different national currencies are traded in many parts of the world- New York, Tokyo, London, Zurich. But they are not separate markets because buyers, seller, brokers and financial institutions in all these locations can remain in constant touch with one another by telephone, telegraph, teletype, fax and computer network. In fact, the dramatic improvement in information technology has revolutionized the ways currencies are traded in major financial centres.

The Foreign exchange market is indeed truly international in character and the market in different locations remain open round the clock. The market is highly integrated which is evidenced by the fact that price of a given foreign currency at a particular time across various locations exhibit only minor variations. This is made possible by arbitrage (discussed below).

Arbitrage

This is a general term used in economics for the act of buying something where it is cheap and selling where it is dear. Arbitrage tends to keep the prices of an identical commodity in different locations of the market nearly identical (ignoring transportation and transaction costs). Obviously profit is the motive for being

The international competitiveness of home country goods can be inferred from its real exchange rate.

The foreign exchange market is truly international in character.

engaged in arbitrage. Ironically the very act of arbitrage tends to eliminate (or reduce to the essential minimum) the price differentials (which trigger the arbitrage in the first place). When the commodity traded in foreign currency, we call the act foreign exchange arbitrage. For example, if the price of pound sterling is £1=\$2 in New York and £1=\$2.50 in Frankfurt, then you can buy £1,00,000 in New York for \$2,00,000 and sell the same in Frankfurt for \$ 2,50,000, making a profit of \$50,000. Since many people will try to do the same thing, the two prices of pound sterling will eventually come so close to each other that arbitrage would become unprofitable (and hence would cease).

Prices of different currencies are kept in line by arbitrage operations.

Arbitrage performs a closely related function : it tends to keep prices of different currencies in consistent relationship with one another. For example, suppose that a person buys \$10,000 worth of sterling in New York, sell it for German Mark (DM) in Paris and then sells the DM for dollars in Tokyo. Such transactions are called triangular (or, three-point) arbitrage. If he gets more or less than \$10,000 in the Tokyo transaction, one could say that the exchange, rates among currencies in different centres are inconsistent (and hence unsustainable). If he makes a profit, he (and other arbitrageurs) will continue to do the buying and selling in the same sequence, finally changing the inter-currency rates in such a way that the profitability or arbitrage will disappear. On the other hand, if he has lost money, he would clearly see that he followed a wrong sequence in trading and that reversing the sequence could bring him profit. In either case, arbitrage will drive the inter-currency rates into consistency. In this way, arbitrage helps in eliminating inconsistency of the various 'cross rates' among internationally traded currencies. You can now easily see why the market for the foreign currency is truly worldwide and closely integrated.

Foreign Exchange Market & Risk Management

We shall now come back to the third function of the foreign exchange market, namely dealing with exchange risks. While exchange rates change, people's views and expectations about the directions of change may vary. Some may think that they are going to face an unfavorable change, and they want to avoid it if they can. The foreign exchange market offer them this opportunity through what is called hedging.

Hedging

Hedging is a method of eliminating exchange risks.

What is hedging? A person (or an organization) is said to be hedging against an asset (here a foreign currency) if he holds neither a net asset nor a net liability position in that asset. Hedging eliminates his exchange risk (from exchange rate fluctuations) because (whatever the exchange rate) his foreign assets will exactly offset his liabilities, keeping his net wealth unchanged. In financial jargon, hedgers avoid both kinds of 'open' positions, i.e. 'long' positions (holding net assets in foreign currency) and 'short' positions (owning more foreign currency than one holds).

Assume that an American exporter expects to receive £10,000 in three months and that he is unwilling to face the possible depreciation of the pound. He cannot sell the pounds now at the spot rate (current exchange rate) of £0.50 per dollar since they are not in his hands. But he can borrow £10,000 in London for three months

and then sell this amount at the spot rate, getting \$20,000 now. By doing this he has incurred a liability of £20,000 which is completely offset by an asset of the same amount (the promise to pay by the British importer). So whatever the exchange rate between dollars and pounds at the end of three months, the exporter can pay off his loans (ignoring the cost of borrowing funds for the sake of simplicity). Hedging has eliminated the exporter's exchange risks.

To take another example, imagine an American importer who has to pay £10,000 to the British supplier at the end of three months. This means he has a short term liability which may increase (in terms of dollar) in three months time if the price of pound sterling increases. He can again hedge against the risk. He will buy the necessary amount of pound sterling today at the spot rate and deposit the amount with a London bank for three months. As in the previous case, on maturity the value of his asset (the deposit with the bank) in pounds exactly matches the value of his liability in the same currency (his promise to pay the exporter).

Note that for hedging of the type mentioned above to materialize the hedgers must have credit facilities in London or idle cash. This drawback usually encourages them to turn to the forward market (to be discussed).

Review Questions

Multiple choice questions(tick the correct answer)

1. In the flexible exchange rate system government intervention:
 - a. is partial
 - b. is total
 - c. is absent
 - d. none of the above.
2. The supply curve of foreign exchange is:
 - a. positively sloped at all exchange rates
 - b. negatively sloped at all exchange rates
 - c. is both (a) & (b) depending on the level of the exchange rate
 - d. none of the above.
3. In the Fixed exchange system:
 - a. government intervention is absent
 - b. government intervention exists
 - c. market determines the exchange rate
 - d. none of the above.
4. Effective exchange rate is:
 - a. nominal exchange rate
 - b. an index of nominal exchange rate
 - c. both a & b
 - d. none of the above.
5. Arbitrage is the act of:
 - a. buying something where it is cheap and selling where it is dear in different time periods.
 - b. buying and selling something at the same place
 - c. buying something where it is cheap and selling where it is dear at the same time.
 - d. none of the above.
6. Hedgers avoid:
 - a. only open positions
 - b. only short positions
 - c. both 'open' and 'short' positions
 - d. none of the above.

Short Questions

1. Distinguish between
 - (i) devaluation and depreciation
 - (ii) revaluation and appreciation
2. Explain why the supply curve of foreign exchange may bend backwards if the exchange rate is sufficiently high.
3. Managed or Dirty Floating contains features of both the fixed and the floating exchange rate systems. In what sense?
4. "There can be no fixed exchange rate system without occasional interaction by the central bank in the foreign exchange market." Examine the statement and say whether such a system can survive without central bank intervention.

5. What does the effective exchange rate measure? Why is such a measure necessary?
6. "If is the real exchange rate, not the nominal exchange rate, which reflects the international competitiveness of the home country's goods." Do you agree? Explain.
7. Is there any essential difference between commodity arbitrage and foreign exchange arbitrage? Give reasons for your views.
8. Arbitrage tends to keep prices of different currencies in consistent relationship with one another. How? Explain with examples.

Essay-type questions

1. What is an exchange rate? How are exchange rates determined in different exchange rate regimes?
2. What is a flexible exchange rate system? How is it different from the fixed exchange rate system?
3. Explain the concepts of depreciation, devaluation appreciation and revaluation and state with which of them the government or the central bank is involved.
4. Explain why the foreign exchange market has become truly international

Answer: 1.c, 2.c, 3.b, 4.b, 5.a, 6.a

Lesson-3 : Foreign Exchange Transactions

Lesson Objectives

After studying this lesson, you will be able to:

- ® define the concept of speculation;
- ® explain the concept of forward exchange;
- ® describe international interest arbitrages and
- ® understand covered interest arbitrage.

Speculation

Speculation is the deliberate acceptance of risk involved in exchange rate fluctuations, and, as such, is the opposite of hedging. The speculator tries to take advantage of exchange rate changes by adjusting his assets portfolio. He buys a foreign currency when it is cheap and sells when it is dear. If his assessment of the direction of change in exchange rates proves correct, he makes a profit; if not, he takes a loss.

Speculation involves deliberate acceptance of risks of exchange rate fluctuations with the aim of making profits.

Speculation is not the same thing as arbitrage, through both involve buying cheap and selling dear. The arbitrageur buys and sells practically at the same moment when all prices are known. He, therefore, assumes no risk. The speculator, on the other hand, gambles on the basis of unknown future prices of foreign currencies and so assumes a great deal of risk.

When the speculator thinks the price of a foreign exchange is going to rise, he is called a bull, and in the case of opposite expectation, he is a bear. In financial jargon, a bull will take a long position (foreign exchange assets exceeding foreign exchange liabilities), while the bear will take a short position (foreign exchange liabilities exceeding foreign exchange assets). Both positions are clearly consistent with his intention of making profits.

Despite the general impression to the contrary, the speculators may perform a useful function by ironing out exchange rate fluctuations over time, at least theoretically. It may be true that they have sometimes added subversive chaos to the economic system; but it is an open empirical question whether they do so more frequently. After all anybody is a speculator who takes a net position in a foreign currency, irrespective of his motives!

Forward exchange transactions involve arrangements for future delivery of foreign exchange at the currently agreed upon rate, theory covering a part of the foreign exchange risk.

Forward Exchange

Covering exchange risk on the basis of the spot rate through hedging has the drawback that the transactor must have idle cash or access to credit facilities, as we have seen. But he has an easier option that is often preferred. He can cover the same risk by arranging for future delivery of the required foreign currency at a rate of exchange agreed upon now (which may not be the current spot rate). This is known as a forward transaction because, although the agreement is concluded at present, the actual settlement is done in the future.

To see how it operates, imagine an American importer who has to pay £10,000 to the British seller in three months' time. If he wants to avoid the exchange risk arising from the appreciation of the pound (price of the pound being higher), he can sign a forward contract with a bank. The bank agrees to deliver him £10,000

at the end of three months at a rate (called the forward rate) which will usually be different from the current (spot) rate. The bank may of course set a margin requirement in which he is asked to put up as collateral a certain percentage of the value of the forward contract. The spot rate at the end of the period may be higher or lower, but the importer gets £10,000 by paying the bank in dollars at the rate agreed upon three months ago. The importer has thus eliminated his risk (and also forgoes any potential gain from the depreciation of the pound).

Elimination of risk comes at the cost of some potential gain.

Similarly, an American exporter who is to receive £10,000 from the British importer in three months can avoid the exchange risk from depreciating pound by forward sale of his foreign exchange earnings. He signs a contract with his bank promising to deliver £10,000 to the bank at the end of three months in exchange for the promise by the bank that it will buy this amount at that time at a rate of exchange mutually agreed upon now. It may happen that the price of foreign exchange will be higher at the end of three months and so he forgoes a potential gain by forward sale. But then this is the price the exporter has to pay if he wants to secure his position against possible depreciation of the pound. In fact, he can act like a foreign exchange speculator by holding his asset (the importer's promise) till maturity and make profit or loss, depending on the direction of movement of the exchange rate in the mean time.

Forward Premium and Forward Discount

As mentioned, the forward rate and the spot rate of exchange will usually differ. If a pound sterling buys more dollars in the forward market than in the spot market, we say that the pound is at a premium. If the opposite is true, the pound is said to be at a discount. The forward premium or the forward discount is usually expressed as a percentage deviation from the spot rate on an annual basis. For instance, suppose that the spot rate is \$2 per pound and the three month forward rate is \$2.25 per pound. Then the pound sterling is at a 12.5% forward premium, because

$$\frac{\$2.25 - \$2}{\$2} * \frac{12(\text{months})}{3(\text{months})} * 100 = 12.5$$

Obviously, if the pound is at a forward premium, the dollar is necessarily at a forward discount (and vice versa).

Unlike spot speculation, forward speculation needs no idle cash or access to credit facilities.

Forward Speculation

Forward transactions are also convenient for speculators. Unlike spot speculations, forward speculations need no idle cash or access to credit facilities. Suppose you think that the pound sterling will appreciate (price of £ will go up in terms of dollar). If you are right, you can make money by buying sterling forward. Assume that the spot rate is \$2 per pound and your expected forward rate (for three months) is \$2.02. If you buy £100,000 forward, it will cost you \$200,000 at the end of three months. But if you are right you can sell £100,000 for \$202,000 (= \$2.02 * 100,000), making a profit of \$2,000. Since banks usually combine both the transactions, you can walk into the bank and pick the difference (= \$2,000). Suppose you are wrong and the rate settles of \$1.95 per pound. Then you lose \$5,000 (= \$200,000 - \$195,000). Now you can see why the bank may insist on the margin requirement. If you lose money, you may not be willing or able to honour your commitment to the bank!

International Interest Arbitrage

Interest arbitrage involves borrowing where the interest rate is low and lending where it is high all with a view to making money.

The spot rate and the forward rate (of a currency) are not independent of each other; they are, in fact, simultaneously determined and tied together by a form of arbitrage known as covered interest arbitrage. Interest rate arbitrage simply means borrowing where the interest rate is low and lending where it is high so as to make a profit. In a closed economy with a single national currency, interest rate arbitrage will tend to equalize interest rates everywhere. The situation is not so simple when the borrowing is done in one country and investing in another. The complication, as can be easily imagined, is due to the exchange rate fluctuations. A direct consequence of this possibility is that one cannot judge whether one should move short term funds to a foreign country where the interest rate is higher than at home. Put differently, the interest rate differentials between nations are not sufficient and reliable indicators of relative profitability of investment. It is easy to explain why.

Suppose that an American faces an interest rate of 8% per annum at home and 12% in London. He has to decide where to invest his \$ 20,000 which he has. If the spot rate of exchange is \$2 per pound, he can invest £10,000 in London and earn £300 as interest for a quarter, which is equivalent to \$600 at the going spot rate. He has also the option of investing \$20,000 in US and earn an interest of \$400 for the same period. Apparently, investing abroad is a better option (since \$600 > \$400). But this may be deceptive, for he has to reckon with the possibility of exchange rate changes during this period. If the exchange rate remains unchanged at \$2 per pound, the London option is undoubtedly superior. If one pound buys more than two dollars, the foreign option is still more attractive. But if the pound depreciates (buys fewer than \$2 per pound) in the mean time, it is not immediately clear whether investing abroad is a superior option (just because interest rate is higher abroad).

Suppose that the rate at the end of the period settles at \$1.79 per pound so that his principal plus interest (£10,300) becomes equivalent to \$20,548.50. This means he earns a return of nearly 6% on his original investment of \$20,000 which is, as it should be, actually the difference between the prevailing interest rate in London (12 percent) and the depreciation of the pound per annum (6 percent). Note that the depreciation of the pound is 6% per annum, because

$$\frac{2.0 - 1.97}{2.0} \times 100 \times 4 = 6$$

Rate of return on funds invested abroad depends not only on the interest rate there, but also on any appreciation or depreciation of the foreign currency.

Next let us ask : By how much will his rate of return abroad be higher if the pound appreciates during this period (with other things equal)? Suppose the new exchange rate is \$2.03 per pound which translates into a 6% increase per annum. At this rate, his principal plus interest (£10,300) will bring \$20,109, indicating a return of about 18 percent per annum. In this case, the actual rate of return on foreign investment (18%) is the foreign rate of interest (12%) plus the percentage appreciation of the pound (6%).

The illustrations above are nothing but special instances of the following general proposition :

The domestic investor's rate of return on funds invested abroad is approximately equal to the prevailing interest rate abroad minus any depreciation (or plus any appreciation) of the foreign currency).

It is now easy to see why the actual rate of return on foreign investment is not equal to the prevailing interest rate abroad.

Covered Interest Arbitrage

A higher interest rate in London than in US is likely to tempt an American investor to move his funds to London, but he is wary of the possible depreciation of the pound when his total returns (principal plus interest) are due. This is an obstacle in the way of unimpeded interest arbitrage. But the forward market can offer him a way out. The investor can insure himself against the foreign exchange risk by selling his pounds forward (hence the name 'covered' interest arbitrage). This kind of arbitrage with forward cover tends to put a cap on the possible spread between the spot and the forward rate of a currency- the rates themselves are affected by covered arbitrage. The logic of this assertion is contained in the proposition stated in the earlier section.

The covered interest arbitrage ties together the spot rate and the forward rate of exchange.

In the presence of an active forward market, the possibility of a depreciation (appreciation) is reflected in the forward discount (premium) on the pound. When the forward discount is equal to the difference between the (higher) London interest rate and the (lower) US interest rate, the return at home and abroad (London) will be equalized and arbitrage will cease. If the forward discount is larger than this difference, the rate of return on investment will be higher than in London, and covered interest arbitrage will take funds from London to US. (Recall that pounds being on a forward discount necessarily implies dollars being on a forward premium). This reverse flow will cause the exchange rates (or the interest rates) to change until the gap between the two interest rates equals the forward discount on pounds. On the other hand, if the pound is on a premium, people will compete to take funds to London, thereby causing the premium (or interest rates) to change so as to equal the difference between the interest rates at home and abroad. Reasoning of the kind noted above has led to the following result, known as interest parity (see also unit 10).

The interest parity requirement keeps the gap between spot and forward rates within limits.

Interest Parity : The forward exchange rate of a currency will tend to be higher than its spot rate by as much as its interest rate is lower than the foreign interest rates (in percentage terms).

Thus, for example, if the London interest rate is 5% higher than US interest rate, the forward rate for pounds will be lower than the spot rate by 5 percent. The relationship between the spot and forward rates is dictated by the interest rate gap. As long as the interest differentials do not change, the spot and forward rate gap too will stay unchanged.

Interest rate parity's policy implication is that the authority can support a currency with equal effects in either the spot or the forward market.

Review Questions

Multiple choice questions [Tick the correct answer(s)]

1. Speculation and arbitrage are different in terms of :
 - a. taking risk
 - b. time of transaction
 - c. both a & b
 - d. none of the above
2. If the speculator thinks the price of foreign exchange is going to rise, he is called:
 - a. a bull
 - b. a bear
 - c. a wrong predictor
 - d. none of the above.
3. If the forward rate is greater than the spot rate of exchange, the foreign currency is:
 - a. at a discount
 - b. at a premium
 - c. devaluated
 - d. none of the above.
4. Foreign exchange risk is associated with
 - a. the flexible exchange rate system
 - b. the fixed exchange rate system
 - c. the crawling peg system
 - d. both (a) & (b)
 - c. all- (a), (b) & (c)
5. A domestic investors rate of return on funds invested abroad depends
 - a. on the interest rate prevailing abroad
 - b. on depreciation or appreciation of the foreign currency
 - c. on both (a) and (b)
 - d. on one of the above.
6. In the presence of an active forward market, the possibility of a depreciation is reflected
 - a. in the forward premium
 - b. in the forward discount
 - c. in the difference between interest rates
 - d. none of the above.

Short Questions

1. "Speculation is not the same thing as arbitrage, though both involve buying cheap and selling dear." Briefly explain.
2. There are many who do not believe that speculator play a useful function by ironing out exchange rate fluctuations. What do you think and why?
3. "The spot rate and the forward rate of a currency are not independent of each other." Do you agree? Why?
4. "The domestic investor rate of return on funds invested abroad is approximately equal to the prevailing interest rate abroad means any depreciation (or plan any appreciation) of the foreign currency." Illustrate the validity of this proportion with numerical examples.

5. "The examples difference between the spot rate and the forward rate is related to interest rate differentials between the home and the foreign country." How? Explain.
6. What is the policy implication of interest parity? Explain.

Essay type questions:

1. What is speculation? How is it different from hedging?
2. Define 'Forward Exchange'. If the forward rate differs from the spot rate what happens to the foreign currency?
3. Explain the concepts of international Interest Arbitrage and Covered Interest Arbitrage'.

Answer: 1.c, 2.a, 3.b, 4.c, 5.c, 6.b

Lesson-4 : The Eurodollar Market and the Effect of Devaluation

Lesson Objectives

After studying this lesson, you will be able to:

- ® describe the Eurodollar market;
- ® explain the reasons for the growth of the Eurodollar market;
- ® state how Eurodollar is created;
- ® see the threats to the Eurodollar market and
- ® explain the effects of devaluation.

The Euro-dollar market

Short-term capital movements internationally have grown considerably over the past few decades, which have important implications for the conduct of macroeconomic policy and for national welfare. An institution that has greatly facilitated this capital mobility is the Eurodollar market.

What is the nature of this market ? It is a market that deals in time deposits denominated in US dollars but placed in banks outside the United States. These banks need not be of foreign origin, although many are European branches of large US commercial banks. They accept deposits from European central banks. European and non-European firms and individuals and employ them to make short term loans to borrowers (again of any nationality).

Dollars, however, are no longer the only currency used for borrowing and lending transactions : Euro-yen, Euro-mark and Euro-sterling markets have also sprung up and are of significant sizes. Nor is the location confined to Europe. Similar operations are taking place, for example, in Hongkong, Singapore, and some Caribbean countries where deposits are taken and loans made in a currency which is not the home currency. Some commentators prefer to call them off-shore markets. The hallmark of these markets is the same : the transaction is not denominated in the currency of the country in which it takes place. In our discussion, we shall adhere to the familiar name (the Euro-dollar market) for the sake of convenience, although the market is neither all-Euro or all-dollar.

Reasons for Its Growth

The rise and rapid growth of the Euro-dollar market can be attributed to several factors in different periods of its existence.

The earliest impetus came from the Soviet government in the late fifties of the twentieth century. It wanted to hang on to its dollar balances by depositing them in special accounts with European banks. In Soviet perception, these balances were unsafe in US banks, because they ran the risk of being frozen or confiscated by the US government. Subsequently evasion of government controls and financial regulations of the home country became a more important factor. Take the example of Regulation Q which empowered the Federal Reserve to put a ceiling on the interest rate that US banks could offer. Frustrated US investors, especially US corporations with large liquid balances, transferred their funds to the Euro-dollar market attracted by higher interest rates. At other times US borrowers depended

The Euro-dollar market deals in time deposits denominated in US dollars, but placed in banks outside the USA.

Evasion of government controls and financial regulations in the home country has been an important motivating factor in the growth of the Euro-dollar market.

heavily on the Eurodollar market when the Federal Reserve tightened credit conditions in the US. But the most important reason for its success and popularity is perhaps its efficiency. The Euro-banks can pay interest rates that attract lenders, yet charge rates that lure borrowers. How can they do it?

Firstly, they face no significant exchange risks, because they can match assets and liabilities maturing at any date. By the same technique, they can reduce the reserves against deposit to the absolute minimum. Secondly, they are more competitive because they are largely free from many restrictions (such as ceiling on the rate of interest offered, minimum reserve requirements) under which the national banking system has to operate. And finally they sometimes enjoy tax advantages, particularly in the Caribbean and Asian tax havens where interest earning from dealing in non-resident currencies are taxed lightly, or not at all.

How Are Euro-dollars Created?

Being a market in time deposits, the Euro-dollar market operates like any market for bank deposits and loans. Suppose that Britain sells oil to Japan with \$100 million and is paid for in dollar bank deposits with an American bank. For some reasons Britain wants to keep the dollar in a Swiss bank. To that end, the British government officials write a cheque on the American bank and deposit it with a Swiss bank. Britain's deposit remains at \$100 million, but now it is with a bank outside the United States. These are, by definition, Euro-dollars (being dollar claims on a non-resident of the US). The money supply in the US is unaffected by these transactions. But the Swiss bank experiences an increase in dollar assets (demand deposits with a US bank) and a corresponding deposit liabilities in dollars. As a result of this, \$100 million Euro-dollars have been created which sets the stage for further increase in world money supply through the creation of fresh Euro-dollars. Equipped with an access to dollar deposits in America, the Swiss bank can use these reserves for fractional banking. The market also leads to a general increase in liquidity. The bulk of the Euro-dollar deposits represent claims of one bank on another, and so these do not qualify as increases in money supply (because money is defined as deposit claims of non-banks on banks).

The Euro-dollar market operates like any market for bank deposits and loan, the basic principle being the same.

Why Worry about the Euro-market?

Many observers have been worried about the consequences of the money creating capacity of the Euro-banks. Some compared the banks as Mad Machines which could go out of control. What are the reasons for these concerns? Firstly, there is the fear that over expansion of the world money supply could lead to worldwide inflation. Secondly, Euro-dollar loans or deposits compete closely with those from US or other national banks. If the national interest rates go out of line with Euro-rates, large capital flows are triggered in order to take advantage of the interest rate differentials. This complicates the task of manipulating the national interest rates by the monetary authorities. Let us see how valid these concerns are.

Opinions differ on the value of the Euro-dollar money multiplier, the ratio of additional international money created to the extra unit of Euro-dollar deposit received. Data needed for its computation are difficult to come by and harder to interpret ; but most studies seem to suggest that the size of the multiplier is only slightly above unity. Moreover, as mentioned before, the bilateral swaps of claims among Euro-banks do not represent additions to world money supply, which is another reason why the money multiplier is likely to be small. Therefore, it is

The Euro-dollar market tends to diminish the capacity of the national monetary authority to manipulate the domestic interest rate in the national interest.

doubtful whether there is much room for concern about large increases in world money supply because of the operations of the Euro-banks.

The erosion of autonomy of the national monetary authorities deserves a closer look. Private borrowers in smaller countries can use other currencies as easily as their domestic one. But if the country's currency is among the key currencies, then regulatory powers of its monetary authority are not weakened by the Euro-dollar market. The reason is that it can (as before) control the access to domestic deposits which are the ultimate reserves of Euro-banking. For instance, the Federal Reserve can control the world supply of dollars, not just the dollars held in the USA.

The Effects of Devaluation

Exchange rate changes can profoundly affect the international economy.

The international economy is profoundly affected by adjustments in the price of foreign currency. A devaluation (or depreciation), for example, jolts all commodity markets out of equilibrium. As they slowly adjust to the new equilibria, they exact a price in terms of disturbances in domestic output, employment, exports, imports, foreign exchange demanded and supplied, trade balance, terms of trade, income distribution and so on. It may be noted that the effects of a given change in the exchange rate are the same irrespective of whether it is the result of a government policy (e.g. a devaluation) or of market adjustment (e.g. a depreciation).

In general terms, a devaluation or depreciation is expected to have the following effects :

1. Effects on Balance of Trade

The effect of a devaluation on trade balance is uncertain.

A country devalues its currency to correct a deficit in the balance of trade (in the balance of payments generally). Unfortunately the effect of a devaluation on trade balance is uncertain. Why is this so? A devaluation raises the price of importables in the home currency and so leads to a lower volume of imports than before. Lower imports from the home country may lower the price of importables (foreign country's exportables) in terms of foreign currency. Lower import volume (of the home country) combined with lower price of imports (in foreign currency) should therefore reduce the home country's expenditures on imports in terms of foreign currency. This, by itself, is expected to work towards reducing the trade deficit by lowering the demand for foreign exchange.

But this is not the whole story. We must also find out the effect of devaluation on the home country's export revenue in terms of foreign exchange. The foreign currency price of home exportables is likely to fall after the devaluation. As a result, foreigners will buy more of home country's exports, if their demand curve for home exports is negatively sloped (Note that the domestic currency price of home exportables will usually go up. We know this from the fact that home exporters will sell more only if assuming rising marginal cost of production - they get higher prices in domestic currency). Now if the volume of export rises while the price of exportables falls in foreign currency, the total export revenue earned in foreign currency may be higher or lower than before, or it can remain the same. The final outcome will depend on the elasticity of demand. Only if the foreign country's elasticity of demand for home exports is greater than unity, will the export revenue rise following a devaluation, and in that case, we can unambiguously say that the trade deficit will fall. If, on the other hand, the export

revenue falls (because of the elasticity of foreign demand) we cannot say whether devaluation will help reduce the trade deficit.

There is an important result, known as the Marshall-Lerner condition which predicts when devaluation will work. Let $|d_H^M|$ and $|d_F^M|$ represent respectively the absolute values of import demand elasticities of the home and the foreign country. Then the Marshall-Lerner condition says that if $|d_H^M| + |d_F^M| > 1$, devaluation will reduce trade deficit. So while the import demand elasticities are crucial, supply elasticities have no clear general effect on the response in trade balance. Also the validity of the formula is independent of whether the trade balance is expressed in the home or the foreign currency. Finally, it should be noted that in the short run, the balance of trade may worsen before it improves, a phenomenon known as the J-curve because the trade balance traces a J-shaped curve through time. This is likely to happen because the short-run import and export elasticities are smaller (in absolute value) than their longrun counterparts.

2. Effects on Consumption and Production

Devaluation, by raising the prices of home country's importables and exportables (in domestic currency) can generate inflationary pressures, perhaps depressing domestic consumption. On the other hand, spurred by increase in prices, the production of import-competing goods as well as domestic exportables will tend to rise.

3. Effect on the Terms of Trade

Devaluation may or may not improve the terms of trade (the ratio of export price to import price) for the home country. Since devaluation causes the prices of both importable and exportable to rise simultaneously (in domestic currency), it is difficult to say definitely which way the terms of trade will move following a devaluation. The direction of change will depend on the relationship between elasticities of import demand and export supply. In particular, the home country's terms of trade will improve (worsen) if the product of supply elasticities of exports is smaller (larger) than the product of demand elasticities for imports. The terms of trade will remain unchanged if the two products are equal. For a small country, the devaluation is unlikely to have any effect on its terms of trade.

The balance of trade may worsen before it improves following a devaluation.

4. Effects on Income Distribution

Devaluation affects different groups differently in the short run. It is likely to benefit those groups which derive their income from producing and selling goods that enter the international trade, because for both exporters and import-competing producers, devaluation brings a chance to compete more favourably with their foreign counterparts. Devaluation, even when it does not worsen the terms of trade, may hurt groups which receive their incomes by selling non-traded goods and services (civil servants, teachers, construction workers, mechanics, landlords). Faced with declining real income, they will possibly try to have their money wages raised through agitation and lobbying. And if they succeed, the resulting cost-push inflation may nullify the effects of (nominal) devaluation, even if the Marshall - Lerner condition is satisfied, because what is needed for trade balance improvement is real (no nominal) devaluation.

Reading List (Unit-6)

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2. R. N. Cooper, International Finance (Baltimore : Penguin, 1969)
3. J. N. Bhagwati, Anatomy and Consequences of Exchange Control Regimes (Cambridge, Mass. Ballinger, 1978).
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5. Y. S. Park and J. Zwick, International Banking in Theory and Practice (Reading : Mass., Addison-Wesly, 1985).

Questions for Review

Multiple Choice Questions

1. In the Euro-dollar market, borrowing and lending trade place
 - a. only in Euro
 - b. only in US dollars
 - c. in many currencies including US dollars
 - d. in pound sterlings only.
2. Which of the following is (are) affected by devaluation
 - a. Balance of trade
 - b. Consumption and production
 - c. Terms of trade
 - d. All of the above.
3. Devaluation is likely to depress:
 - a. Domestic production
 - b. Domestic consumption
 - c. Export volume
 - d. None of the above.
4. The Euro-dollar market is a market for
 - A. the exchange of goods
 - B. the exchange of scholars
 - C. receiving and giving loans in US dollars only

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- D. receiving and giving loans in many major currencies including the US dollar.
5. The most important reason for the success of the Eurodollar market is-
- A. its efficiency i.e. its ability to offer attractive rates to its depositor as well as its borrowers.
 - B. its ability to move capital rapidly
 - C. its ability to charge very high interest rates from borrowers.
 - D. none of the above.
6. Bilateral swaps of claims among Euro-banks
- A. do represent additions to world money supply
 - B. do not represent additions to world money supply
 - C. are fictitious transactions only
 - D. None of the above.

Short Questions

1. "Euro-dollar market deals in US dollars only." Is that correct? If not, will you call it a misnomer? Give reasons.
2. What was regulation Q? What was its purpose? How has it helped in the growth of the Euro-dollar market?
3. Briefly describe the process through which Euro-dollar are created.
4. If the national interest rates go out of line with the Euro-rates, what happens to international capital flows and why?
5. "A devaluation jolts all commodity markets out of equilibrium." Explain why this may happen.
6. "The effect of devaluation on trade balance is ambiguous." In what sense?
7. Examine the effect of devaluation on the home country's export revenue in terms of foreign exchange.

Essay-type Questions

1. What is Eurodollar market? What are the reasons for its growth?
2. How are Eurodollars created? What are the worries about the Euro-market? How far are they justified?
3. Describe the various effects of devaluation.

Answer: 1.c, 2.d, 3.b, 4.d, 5.a, 6.b