

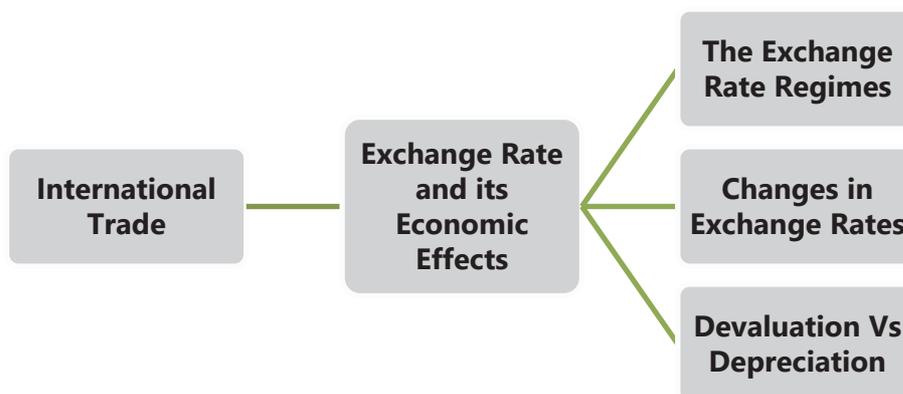
UNIT IV: EXCHANGE RATE AND ITS ECONOMIC EFFECTS

LEARNING OUTCOMES

At the end of this unit, you will be able to:

- ❑ Define exchange rate and describe how it is determined
- ❑ Appraise different types of exchange rate regimes
- ❑ Describe the functioning of the foreign exchange market
- ❑ Explain changes in exchange rates and their impact on the real economy

UNIT OVERVIEW



4.1 INTRODUCTION

Each day we get fascinating news about currency which fuel our curiosity, such as Rupee gains 12 paise against US dollar, Dollar Spot/Forward Rates plummet, Rupee down, Euro holds steady, Pound strengthens etc. Ever wondered what

these jargons mean? We shall try to understand a few fundamentals related to currency transactions in this unit.

In chapter 3, we examined the demand for and supply of domestic currency. It is not domestic currency alone that we need. Households, businesses and governments in India, for example, buy different types of goods and services produced in other countries. Similarly, residents of the rest of the world buy goods and services from residents in India. Foreign investors, businesses, and governments invest in our country, just as our nationals invest in other countries. In the same way, lending, and borrowing also take place internationally. These and similar other transactions give rise to an international dimension of money, which involves exchange of one currency for another. Obviously, this entails market transactions involving determination of price of one currency in terms of another.

4.2 THE EXCHANGE RATE

The term 'Foreign Exchange' refers to money denominated in a currency other than the domestic currency. Similar to any other commodity, foreign exchange has a price. The exchange rate, also known as a foreign exchange (FX) rate, is the price of one currency expressed in terms of units of another currency and represents the number of units of one currency that exchanges for a unit of another. In other words, exchange rate is the rate at which the currency of one country is exchanged for the currency of another country. It is the minimum number of units of one country's currency required to purchase one unit of the other country's currency. It is important to note that the value of a currency is relative as it is always given in terms of another currency.

There are two ways to express nominal exchange rate between two currencies (e.g. the US \$ and Indian Rupee) namely direct quote and indirect quote. The direct form of quotation is also called European Currency Quotation whereas indirect form is known as American Currency Quotation. A direct quote is the number of units of a local currency exchangeable for one unit of a foreign currency. The price of 1 dollar may be quoted in terms of how much rupees it takes to buy one dollar. For example, ₹76/US\$ means that an amount of ₹ 76 is needed to buy one US dollar or ₹76 will be received while selling one US dollar. An indirect quote is the number of units of a foreign currency exchangeable for one unit of local currency; for example: \$ 0.0151 per rupee. A quotation in direct form can easily be converted into a quotation in indirect form and vice-versa. This is done by taking the reciprocal of the given rate.

An exchange rate has two currency components; a 'base currency' and a 'counter currency'. In a direct quotation, the foreign currency is the base currency and the domestic currency is the counter currency. In an indirect quotation, the domestic currency is the base currency and the foreign currency is the counter currency. As the US dollar is the dominant currency in global foreign exchange markets, the general convention is to apply direct quotes that have the US dollar as the base currency and other currencies as the counter currency.

There may be two pairs of currencies with one currency being common between the two pairs. For instance, exchange rates may be given between a pair, X and Y and another pair, X and Z. The rate between Y and Z is derived from the given rates of the two pairs (X and Y, and, X and Z) and is called 'cross rate'. When there is no difference between the buying and the selling rate, the rate is said to be 'unique' or 'unified'. But it is rarely seen in practice. There are generally two rates – selling rate and buying rate – for any currency when one goes to exchange it in the market. Selling rate is generally higher than the buying rate for a currency. This is the commission of the money exchanger (dealer) to run its operations.



4.3 THE EXCHANGE RATE REGIMES

An exchange rate regime is the system by which a country manages its currency with respect to foreign currencies. It refers to the method by which the value of the domestic currency in terms of foreign currencies is determined. There are two major types of exchange rate regimes at the extreme ends; namely:

- (i) floating exchange rate regime (also called a flexible exchange rate), and
- (ii) fixed exchange rate regime

Under floating exchange rate regime, the equilibrium value of the exchange rate of a country's currency is market-determined i.e. the demand for and supply of currency relative to other currencies determine the exchange rate. There is no predetermined target rate and the exchange rates are likely to change at every moment in time depending on the changing demand for and supply of currency in the market. There is no interference on the part of the government or the central bank of the country in the determination of exchange rate. Any intervention by the central banks in the foreign exchange market (through purchases or sales of foreign currency in exchange for local currency) is intended for only moderating the rate of change and preventing undue fluctuations in the exchange rate, rather than for establishing a particular level for it (for example: India). Nevertheless, in a few countries (for example, New Zealand, Sweden, the

United States), the central banks almost never interfere to administer the exchange rates. Nearly all advanced economies follow floating exchange rate regimes. Some large emerging market economies also follow the system.

A fixed exchange rate, also referred to as pegged exchanged rate, is an exchange rate regime under which a country's Central Bank and/ or government announces or decrees what its currency will be worth in terms of either another country's currency or a basket of currencies or another measure of value, such as gold. For example: a certain amount of rupees per dollar. (When a government intervenes in the foreign exchange market so that the exchange rate of its currency is different from what the market forces of demand and supply would have decided, it is said to have established a "peg" for its currency). In order to sustain a fixed exchange rate, it is not enough that a country pronounces a fixed parity: it must also make concentrated efforts to defend that parity by being willing to buy (or sell) foreign reserves whenever the market demand for foreign currency is lesser (or greater) than the supply of foreign currency. In other words, in order to maintain the exchange rate at the predetermined level, the central bank intervenes in the foreign exchange market.

We are often misled to think that it is common for countries to adopt the flexible exchange rate system. In the real world, there is a spectrum of 'intermediate exchange rate regimes' which are either inflexible or have varying degrees of flexibility that lie in between these two extremes (fixed and flexible). For example, a central bank can implement soft peg and hard peg policies. A soft peg refers to an exchange rate policy under which the exchange rate is generally determined by the market, but in case the exchange rate tends to be move speedily in one direction, the central bank will intervene in the market. With a hard peg exchange rate policy, the central bank sets a fixed and unchanging value for the exchange rate. Both soft peg and hard peg policy require that the central bank intervenes in the foreign exchange market. The tables 4.4.1 and 4.4.2 show respectively, the IMF classifications and definitions of prevalent exchange rate systems and the latest available data (as on April 30, 2018) on the distribution of the 189 IMF members based on their exchange rate regimes.

Table No: 4.4.1

IMF Classifications and Definitions of Exchange Rate Regimes

Exchange Rate Regimes	Description
Exchange arrangements with no	Currency of another country circulates as sole legal tender or

<p>separate legal tender (13 countries) E.g. Kosovo –Euro Ecuador, El Salvador - US Dollar</p>	<p>member belongs to a monetary or currency union in which same legal tender is shared by members of the union.</p>
<p>Currency Board Arrangements (11 Countries) Hong Kong, Dominica, Grenada etc.- Dollar Bosnia and Herzegovina, Bulgaria-Euro</p>	<p>Monetary regime based on implicit national commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate.</p>
<p>Other conventional fixed peg arrangement (43 Countries) E.g. Oman, Qatar, Saudi Arabia, United Arab Emirates etc. to -US Dollar Mali, Niger, Senegal, Cameroon etc. - Euro</p>	<p>Country pegs its currency (formal or de facto) at a fixed rate to a major currency or a basket of currencies where exchange rate fluctuates within a narrow margin or at most $\pm 1\%$ around central rate.</p>
<p>Pegged exchange rates within horizontal bands (1Country) Tonga</p>	<p>Value of the currency is maintained within margins of fluctuation around a formal or de facto fixed peg that are wider than $\pm 1\%$ around central rate.</p>
<p>Crawling Peg (3 countries) Honduras, Nicaragua, Botswana</p>	<p>Currency is adjusted periodically in small amounts at a fixed, preannounced rate in response to changes in certain quantitative indicators.</p>
<p>Crawl –like arrangement (15 Countries) E.g. Iran, Afghanistan, Costa Rica</p>	<p>Currency is maintained within certain fluctuation margins say ($\pm 1-2\%$) around a central rate that is adjusted periodically</p>
<p>Other Managed Arrangement (13 countries) E.g. Cambodia, Liberia, Zimbabwe</p>	
<p>Floating (35 Countries) E.g. India, Philippines, New Zealand, Malaysia</p>	<p>Monetary authority influences the movements of the exchange rate through intervention in foreign</p>

	exchange markets without specifying a pre-announced path for the exchange rate
Free floating (31 Countries) E.g. US, Canada, Japan, New Zealand, UK	Exchange rate is market determined, with foreign exchange intervention aimed at moderating the rate of change and preventing undue fluctuations in the exchange rate, rather than at establishing a level for it

Table No: 4.4.2**Distribution of IMF Members Based on Exchange Regime**

Exchange Rate Arrangement	% of IMF Members
Hard peg	12.5
No separate legal tender	6.8
Currency board	5.7
Soft peg	46.4
Conventional peg	22.4
Stabilized arrangement	14.1
Crawling peg	1.6
Crawl-like arrangement	7.8
Pegged exchange rate within horizontal bands	0.5
Floating	34.4
Floating	18.2
Free floating	16.1
Other managed Arrangements	6.8

Source: Annual Report on Exchange Arrangements and Exchange Restrictions, 2018 IMF

In an open economy, the main advantages of a fixed rate regime are:

- (i) A fixed exchange rate avoids currency fluctuations and eliminates exchange rate risks and transaction costs that can impede international flow of trade and investments. International trade and investment are less risky under fixed rate regime as profits are not affected by the exchange rate fluctuations.

- (ii) A fixed exchange rate can thus, greatly enhance international trade and investment.
- (iii) A reduction in speculation on exchange rate movements if everyone believes that exchange rates will not change.
- (iv) A fixed exchange rate system imposes discipline on a country's monetary authority and therefore is more likely to generate lower levels of inflation.
- (v) The government can encourage greater trade and investment as stability encourages investment.
- (vi) Exchange rate peg can also enhance the credibility of the country's monetary-policy.
- (vii) However, in the fixed or managed floating exchange rate regimes (where the market forces are allowed to determine the exchange rate within a band), the central bank is required to stand ready to intervene in the foreign exchange market and, also to maintain an adequate amount of foreign exchange reserves for this purpose.

Basically, the free floating or flexible exchange rate regime is argued to be efficient and highly transparent as the exchange rate is free to fluctuate in response to the supply of and demand for foreign exchange in the market and clears the imbalances in the foreign exchange market without any control of the central bank or the monetary authority. A floating exchange rate has many advantages:

- (i) A floating exchange rate has the greatest advantage of allowing a Central bank and /or government to pursue its own independent monetary policy.
- (ii) Floating exchange rate regime allows exchange rate to be used as a policy tool: for example, policy-makers can adjust the nominal exchange rate to influence the competitiveness of the tradable goods sector.
- (iii) As there is no obligation or necessity to intervene in the currency markets, the central bank is not required to maintain a huge foreign exchange reserves.

However, the greatest disadvantage of a flexible exchange rate regime is that volatile exchange rates generate a lot of uncertainties in relation to international transactions and add a risk premium to the costs of goods and assets traded across borders. In short, a fixed rate brings in more currency and monetary

stability and credibility; but it lacks flexibility. On the contrary, a floating rate has greater policy flexibility; but less stability.

4.4 NOMINAL VERSUS REAL EXCHANGE RATES

We have been discussing so far about nominal exchange rate which refers to the rate at which a person can trade the currency of one country for the currency of another country. For any country, there are many nominal exchange rates because its currency can be used to purchase many foreign currencies. While studying exchange rate changes, economists make use of indexes that average these many exchange rates. An exchange rate index turns these many exchange rates into a single measure of the international value of currency.

Nominal Exchange Rates can be used to find the domestic price of foreign goods. However, trade flows are affected not by nominal exchange rates, but instead, by real exchange rates. The person or firm buying another currency is interested in what can be bought with it.

The real exchange rate is the rate at which a person can trade the goods and services of one country for the goods and services of another. It describes 'how many' of a good or service in one country can be traded for 'one' of that good or service in a foreign country. A country's real exchange rate is a key determinant of its net exports of goods and services.

For calculating real exchange rate, in the case of trade in a single good, we must first use the nominal exchange rate to convert the prices into a common currency. The real exchange rate (RER) between two currencies is the product of the nominal exchange rate and the ratio of prices between the two countries. It is calculated as:

$$\text{Real exchange Rate} = \frac{(\text{Nominal exchange Rate}) \times \text{Domestic price}}{\text{Foreign price}}$$

Or

$$\text{Real exchange rate} = \text{Nominal exchange rate} \times \frac{\text{Domestic Price}}{\text{Foreign price}}$$

Thus, real exchange rate depends on the nominal exchange rate and the prices of the good in two countries measured in the local currencies.

When studying the economy as a whole, we use price indices which measure the price of a basket of goods and services. Real exchange rate will then be:

$$\text{Real exchange rate} = \text{Nominal exchange rate} \times \frac{\text{Domestic Price Index}}{\text{Foreign price Index}}$$

Another exchange rate concept, the Real Effective Exchange Rate (REER) is the nominal effective exchange rate (a measure of the value of a domestic currency against a weighted average of various foreign currencies) divided by a price deflator or index of costs. An increase in REER implies that exports become more expensive and imports become cheaper; therefore, an increase in REER indicates a loss in trade competitiveness.



4.5 THE FOREIGN EXCHANGE MARKET

The wide-reaching collection of markets and institutions that handle the exchange of foreign currencies is known as the foreign exchange market. In this market, the participants use one currency to purchase another currency. The foreign exchange market operates worldwide and is by far the largest market in the world in terms of cash value traded. Being an over-the-counter market, it is not a physical place; rather, it is an electronically linked network of big banks, dealers and foreign exchange brokers who bring buyers and sellers together.

With no central trading location and no set hours of trading, the foreign exchange market involves enormous volume of foreign exchange being traded worldwide. The participants such as firms, households, and investors who demand and supply currencies represent themselves through their banks and key foreign exchange dealers who respond to market signals transmitted instantly across the world. The foreign exchange markets operate on very narrow spreads between buying and selling prices. But since the volumes traded are very large, the traders in foreign exchange markets stand to make huge profits or losses.

The major participants in the exchange market are central banks, commercial banks, governments, foreign exchange Dealers, multinational corporations that engage in international trade and investments, non-bank financial institutions such as asset-management firms, insurance companies, brokers, arbitrageurs and speculators. The central banks participate in the foreign exchange markets, not to make profit, but essentially to contain the volatility of exchange rate to avoid sudden and large appreciation or depreciation of domestic currency and to maintain stability in exchange rate in keeping with the requirements of national economy. If the domestic currency fluctuates excessively, it causes panic and uncertainty in the business world.

The commercial banks participate in the foreign exchange market either on their own account or for their clients. When they trade on their own account, banks may operate either as speculators or arbitrageurs/or both. The bulk of currency transactions occur in the interbank market in which the banks trade with each other.

Foreign exchange brokers participate in the market as intermediaries between different dealers or banks. Arbitrageurs make profit by discovering price differences between pairs of currencies with different dealers or banks. Speculators, who are bulls or bears, are deliberate risk-takers who participate in the market to make gains which result from unanticipated changes in exchange rates. Other participants in the exchange market are individuals who form only a very insignificant fraction in terms of volume and value of transactions.

Regardless of physical location, and given that the markets are highly integrated, at any given moment, all markets tend to have the same exchange rate for a given currency. This phenomenon occurs because of arbitrage. Arbitrage refers to the practice of making risk-less profits by intelligently exploiting price differences of an asset at different dealing locations. There is potential for arbitrage in the forex market if exchange rates are not consistent between currencies. When price differences occur in different markets, participants purchase foreign exchange in a low-priced market for resale in a high-priced market and makes profit in this process. Due to the operation of price mechanism, the price is driven up in the low-priced market and pushed down in the high-priced market. This activity will continue until the prices in the two markets are equalized, or until they differ only by the amount of transaction costs involved in the operation. Since forex markets are efficient, any profit spread on a given currency is quickly arbitrated away.

In the foreign exchange market, there are two types of transactions:

- (i) current transactions which are carried out in the spot market and the exchange involves immediate delivery, and
- (ii) future transactions wherein contracts are agreed upon to buy or sell currencies for future delivery which are carried out in forward and/or futures markets

Exchange rates prevailing for spot trading (for which settlement by and large takes two days) are called spot exchange rates. The exchange rates quoted in foreign exchange transactions that specify a future date are called forward exchange rates. The currency forward contracts are quoted just like spot rate; however, the actual delivery of currencies takes place at the specified time in

future. When a party agrees to sell euro for dollars on a future date at a forward rate agreed upon, he has 'sold euros forward' and 'bought dollars forward'. A forward premium is said to occur when the forward exchange rate is more than a spot exchange rates. On the contrary, if the forward trade is quoted at a lower rate than the spot rate, then there is a forward discount. Currency futures, though conceptually similar to currency forward and perform the same function, they are distinct in their nature and details concerning settlement and delivery.

While a foreign exchange transaction can involve any two currencies, most transactions involve exchanges of foreign currencies for the U.S. dollars even when it is not the national currency of either the importer or the exporter. On account of its critical role in the forex markets, the dollar is often called a 'vehicle currency'.



4.6 DETERMINATION OF NOMINAL EXCHANGE RATE

As you already know, the key framework for analysing prices is the operation of forces of supply and demand in markets. Usually, the supply of and demand for foreign exchange in the domestic foreign exchange market determine the external value of the domestic currency, or in other words, a country's exchange rate.

Individuals, institutions and governments participate in the foreign exchange market for a number of reasons. On the demand side, people desire foreign currency to:

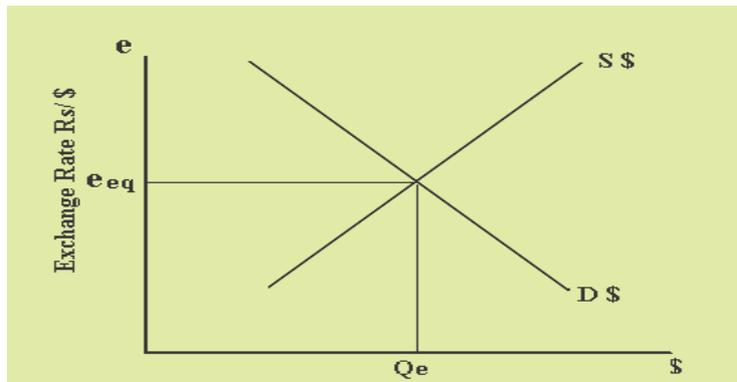
- purchase goods and services from another country
- for unilateral transfers such as gifts, awards, grants, donations or endowments
- to make investment income payments abroad
- to purchase financial assets, stocks or bonds abroad
- to open a foreign bank account
- to acquire direct ownership of real capital, and
- for speculation and hedging activities related to risk-taking or risk-avoidance activity

The participants on the supply side operate for similar reasons. Thus, the supply of foreign currency to the home country results from purchases of home exports, unilateral transfers to home country, investment income payments, foreign direct investments and portfolio investments, placement of bank deposits and speculation.

We shall now look into how the foreign exchange markets work. Similar to any standard market, the exchange market also faces a downward-sloping demand curve and an upward-sloping supply curve.

Figure 4.4.1

Determination of Nominal Exchange Rate



The equilibrium rate of exchange is determined by the interaction of the supply and demand for a particular foreign currency. In figure 4.4.1, the demand curve (D\$) and supply curve (S\$) of dollars intersect to determine equilibrium exchange rate e_{eq} with Q_e as the equilibrium quantity of dollars exchanged.

4.7 CHANGES IN EXCHANGE RATES

Changes in exchange rates portray depreciation or appreciation of one currency. The terms, 'currency appreciation' and 'currency depreciation' describe the movements of the exchange rate. Currency appreciates when its value increases with respect to the value of another currency or a basket of other currencies. On the contrary, currency depreciates when its value falls with respect to the value of another currency or a basket of other currencies. We shall try to understand this with the help of an example.

For example, the Rupee dollar exchange rate in the month of January is \$1 = ₹70. And, we find that in the month of April it is \$1 = ₹75. What does this

indicate? In April, you will have to exchange a greater amount of Indian Rupees (₹75) to get the same 1 unit of US dollar. As such, the value of the Indian Rupee has gone down or Indian Rupee has depreciated in its value. Rupee depreciation here means that the rupee has become less valuable with respect to the U.S. dollar. Simultaneously, if you look at the value of dollar in terms of Rupees, you find that the value of the US dollar has increased in terms of the Indian Rupee. One dollar will now fetch ₹75 instead of ₹70 earlier. This is called appreciation of the US dollar. You might have observed that when one currency depreciates against another, the second currency must simultaneously appreciate against the first.

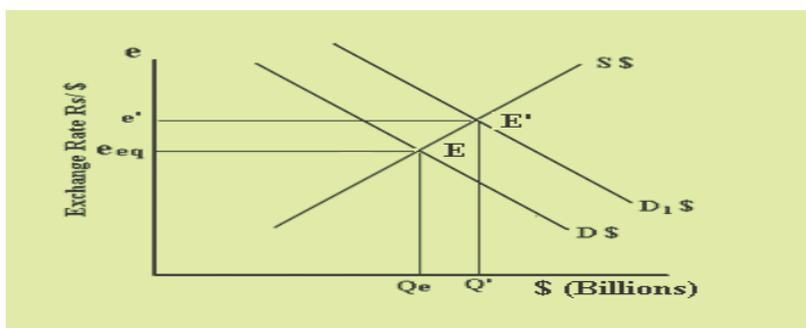
To put it more clearly:

- Home-currency depreciation (which is the same as foreign-currency appreciation) takes place when there is an increase in the home currency price of the foreign currency (or, alternatively, a decrease in the foreign currency price of the home currency). The home currency thus becomes relatively less valuable.
- Home-currency appreciation (or foreign-currency depreciation) takes place when there is a decrease in the home currency price of foreign currency (or alternatively, an increase in the foreign currency price of home currency). The home currency thus becomes relatively more valuable.

Under a floating rate system, if for any reason, the demand curve for foreign currency shifts to the right representing increased demand for foreign currency, and supply curve remains unchanged, then the exchange value of foreign currency rises and the domestic currency depreciates in value. This is illustrated in figure 4.4.2.

Figure 4.4.2

Home-Currency Depreciation under Floating Exchange Rates

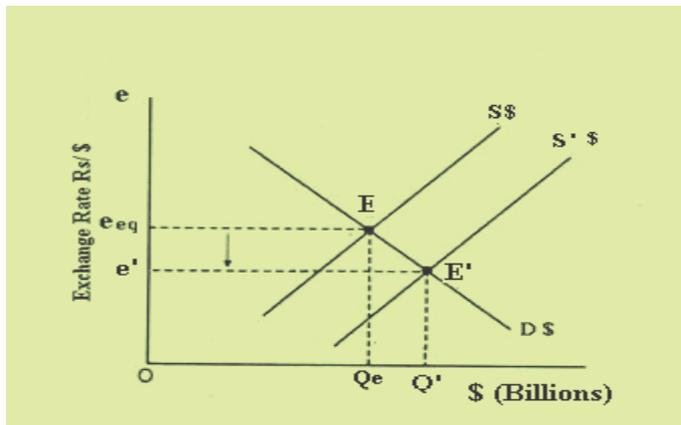


The market initially is in equilibrium at point E with equilibrium exchange rate e_{eq} . An increase in domestic demand for the foreign currency, with supply of dollars remaining constant, is represented by a rightward shift of the demand curve to $D_1\$$. The equilibrium exchange rate rises to e^1 . This indicates that more units of domestic currency (here Indian Rupees) are required to buy one unit of foreign currency (here dollar) and that the domestic currency (the Rupee) has depreciated.

We shall now examine what happens when there is an increase in the supply of dollars in the Indian market. This is illustrated in figure 4.4.3.

Figure 4.4.3

Home-Currency Appreciation under Floating Exchange Rates



An increase in the supply of foreign exchange shifts the supply curve to the right to $S^1 \$$ and as a consequence, the exchange rate declines to e^1 . It means, that lesser units of domestic currency (here Indian Rupees) are required to buy one unit of foreign currency (dollar), and that the domestic currency (the Rupee) has appreciated.

As we are aware, in an open economy, firms and households use exchange rates to translate foreign prices in terms of domestic currency. Exchange rates also permit us to compare the prices of goods and services produced in different countries. Furthermore, import or export prices could be expressed in terms of the same currency in the trading contract. This is the reason why exchange rate movements can affect intentional trade flows.

4.8 DEVALUATION (REVALUATION) VS DEPRECIATION (APPRECIATION)

Devaluation is a deliberate downward adjustment in the value of a country's currency relative to another country's currency or group of currencies or standard. It is a monetary policy tool used by countries that have a fixed exchange rate or nearly fixed exchange rate regime and involves a discrete official reduction in the otherwise fixed par value of a currency. The monetary authority formally sets a new fixed rate with respect to a foreign reference currency or currency basket. In contrast, depreciation is a decrease in a currency's value (relative to other major currency benchmarks) due to market forces of demand and supply under a floating exchange rate and not due to any government or central bank policy actions.

Revaluation is the opposite of devaluation and the term refers to a discrete official increase of the otherwise fixed par value of a nation's currency. Appreciation, on the other hand, is an increase in a currency's value (relative to other major currencies) due to market forces of demand and supply under a floating exchange rate and not due to any government or central bank policy interventions.

4.9 IMPACTS OF EXCHANGE RATE FLUCTUATIONS ON DOMESTIC ECONOMY

The fact that among the macroeconomic variables, exchange rates are perhaps the most closely monitored, analysed and manipulated economic measure, highlights the overwhelming importance of exchange rates in an economy. The unpredictability of the markets caused by exchange rate fluctuations can profoundly determine a country's economic performance. Knowledge about the possible effects of exchange rate fluctuations enables us to have an understanding of the appropriateness of exchange rate policy, especially in developing countries. In the discussion that follows, we shall examine the impact of exchange rate fluctuations on the real economy.

The developments in the foreign exchange markets affect the domestic economy both directly and indirectly. The direct impact of fluctuations in rates is initially felt by economic agents who are directly involved in international trade or international finance. In judging the impacts of exchange rate fluctuations, it

becomes, therefore, necessary to evaluate their effects on trade, investments, consumption output, economic growth and inflation.

- (i) Exchange rates have a very significant role in determining the nature and extent of a country's trade. Changes in import and export prices will lead to changes in import and export volumes, causing changes in import spending and export revenue.
- (ii) Fluctuations in the exchange rate affect the economy by changing the relative prices of domestically-produced and foreign-produced goods and services. All else equal (or other things remaining the same), an appreciation of a country's currency raises the relative price of its exports and lowers the relative price of its imports. Conversely, depreciation lowers the relative price of a country's exports and raises the relative price of its imports. When a country's currency depreciates, foreigners find that its exports are cheaper and domestic residents find that imports from abroad are more expensive. An appreciation has opposite effects i.e foreigners pay more for the country's products and domestic consumers pay less for foreign products. For example; assume that there is devaluation or depreciation of Indian Rupee from $\$1 = ₹ 65/$ to $\$1 = ₹ 70/$. A foreigner who spends ten dollars on buying Indian goods will, post devaluation, get goods worth $₹ 700/$ instead of $₹ 650/$ prior to depreciation. An importer has to pay for his purchases in foreign currency, and, therefore, a resident of India, who wants to import goods worth $\$1$ will have to pay $₹ 70/$ instead of $₹ 65/$ prior to depreciation. Importers will be affected most as they will have to pay more rupees on importing products. On the contrary, exporters will be benefitted as goods exported abroad will fetch dollars which can now be converted to more rupees.
- (iii) Exchange rate changes affect economic activity in the domestic economy. A depreciation of domestic currency primarily increases the price of foreign goods relative to goods produced in the home country and diverts spending from foreign goods to domestic goods. Increased demand, both for domestic import-competing goods and for exports, encourages economic activity and creates output expansion. Overall, the outcome of exchange rate depreciation is an expansionary impact on the economy at an aggregate level. The positive effect of currency depreciation, however, largely depends on whether the switching of demand has taken place in the right direction and in the right amount, as well as on the capacity of the home economy to meet that increased demand by supplying more goods.

- (iv) By lowering export prices, currency depreciation increase the international competitiveness of domestic industries, the volume of exports and promotes trade balance. However, a point to be noted is that the price changes in exports and imports may counterbalance or offset each other only if trade is in balance and terms of trade are not changed. In case the country's imports exceed exports, the net result is a reduction in real income within the country.
- (v) We have seen above that by changing the relative prices, depreciation may increase windfall profits in export and import-competing industries. However, depreciation may also cause contractionary effects. We shall see how it may happen. In an under developed or semi industrialized country, where -inputs (such as oil) and components for manufacturing are mostly imported and cannot be domestically produced, increased import prices will increase firms' cost of production , push domestic prices up and decrease real output.
- (vi) For an economy where exports are significantly high, a depreciated currency would mean a lot of gain. In addition, if exports originate from labour-intensive industries, increased export prices will have positive effect on employment and potentially on wages.
- (vii) Depreciation is also likely to add to consumer price inflation in the short run, directly through its effect on prices of imported consumer goods and also due to increased demand for domestic goods. The impact will be greater if the composition of domestic consumption baskets consists more of imported goods. Indirectly, cost push inflation may result through possible escalation in the cost of imported inputs. In such an inflationary situation, the central bank of the country will have no incentive to cut policy rates as this is likely to increase the burden of all types of borrowers including businesses.
- (viii) When a country's currency depreciates, production for exports and of import substitutes become more profitable. Therefore, factors of production will be induced to move into the tradable goods sectors and out of the non-tradable goods sectors. The reverse will be true when the currency appreciates. These types of resource movements involve economic wastes.
- (ix) A depreciation or devaluation is also likely to affect a country's terms of trade (Terms of trade is the ratio of the price of a country's export commodity to the price of its import commodity). Since the prices of both

exports and imports rise in terms of the domestic currency as a result of depreciation or devaluation, the terms of trade of the nation can rise, fall or remain unchanged, depending on whether price of exports rises by more than, less than or same percentage as the price of imports.

- (x) The fiscal health of a country whose currency depreciates is likely to be affected with rising export earnings and import payments and consequent impact on current account balance. A widening current account deficit is a danger signal as far as growth prospects of the overall economy is concerned. If export earnings rise faster than the imports spending then current account balance will improve.
- (xi) Companies that have borrowed in foreign exchange through external commercial borrowings (ECBs) but have been careless and did not sufficiently hedge these loans against foreign exchange risks, would also be negatively impacted as they would require more domestic currency to repay their loans. A depreciated domestic currency would also increase their debt burden and lower their profits and impact their balance sheets adversely. These would signal investors who will be discouraged from investing in such companies.
- (xii) Countries with foreign currency denominated government debts, currency depreciation will increase the interest burden and cause strain to the exchequer for repaying and servicing foreign debt. Fortunately, India's has small proportion of public debt in foreign currency.
- (xiii) Exchange rate fluctuations make financial forecasting more difficult for firms and larger amounts will have to be earmarked for insuring against exchange rate risks through hedging.
- (xiv) With growth of investments across international boundaries, exchange rates have assumed special significance. Investors who have purchased a foreign asset, or the corporation which floats a foreign debt, will find themselves facing foreign exchange risk. Exchange rate movements have become the single most important factor affecting the value of investments at international level. They are critical to business volumes, profit forecasts, investment plans and investment outcomes. Depreciating currency hits investor sentiments and has radical impact on patterns of international capital flows.
- (xv) Foreign investors are likely to be indecisive or highly cautious before investing in a country which has high exchange rate volatility. Foreign

capital inflows are characteristically vulnerable when local currency weakens. Therefore, foreign portfolio investment flows into debt and equity as well as foreign direct investment flows are likely to shrink. This shoots up capital account deficits affecting the country's fiscal health. If investor sentiments are such that they anticipate further depreciation, there may be large scale withdrawal of portfolio investments and huge redemptions through global exchange traded funds leading to further depreciation of domestic currency. This may result in a highly volatile domestic equity market affecting the confidence of domestic investors. Reduced foreign investments also widen the gap between investments required for growth and actual investments. Over a period of time, unemployment is likely to mount in the economy.

With increasing dependence on imports, Indian economy has always felt the brunt of higher international prices of fuel impacting domestic transportation and overall cost of production which often triggered inflation, increase in oil and fertilizer subsidy bills, costly foreign travel, escalated foreign debt service payments and higher outstanding external commercial borrowings (or ECB) and government's foreign debt.

The other impacts of currency depreciation are:

- (i) Windfall gains for export-oriented sectors (such as IT sector, textile, pharmaceuticals, gems and jewellery in the case of India) because depreciating currency fetches more domestic currency per unit of foreign currency.
- (ii) Remittances to homeland by non-residents and businesses abroad fetches more in terms of domestic currency
- (iii) Depreciation would enhance government revenues from import related taxes, especially if the country imports more of essential goods
- (iv) Depreciation would result in higher amount of local currency for a given amount of foreign currency borrowings of government.
- (v) Depreciation also can have a positive impact on country's trade deficit as it makes imports more expensive for domestic consumers and exports cheaper for foreigners.
- (vi) Depreciation also can have a positive impact on controlling spiralling gold imports (mostly wasteful) and thereby improve trade balance.

An appreciation of currency or a strong currency (or possibly an overvalued currency) makes the domestic currency more valuable and, therefore, can be exchanged for a larger amount of foreign currency. An appreciation will have the following consequences on real economy:

- (i) An appreciation of currency raises the price of exports and, therefore, the quantity of exports would fall. Since imports become cheaper, we may expect an increase in the quantity of imports. Combining these two effects together, the domestic aggregate demand falls and, therefore, economic growth is likely to be negatively impacted.
- (ii) The outcome of appreciation also depends on the stage of the business cycle as well. If appreciation sets in during the recessionary phase, the result would be a further fall in aggregate demand and higher levels of unemployment. If the economy is facing a boom, an appreciation of domestic currency would trim down inflationary pressures and soften the rate of growth of the economy.
- (iii) An appreciation may cause reduction in the levels of inflation because imports are cheaper. Lower price of imported capital goods, components and raw materials lead to decrease in cost of production which reflects on decrease in prices. Additionally, decrease in aggregate demand tends to lower demand pull inflation. Living standards of people are likely to improve due to availability of cheaper consumer goods.
- (iv) With increasing export prices, the competitiveness of domestic industry is adversely affected and therefore, firms have greater incentives to introduce technological innovations and capital-intensive production to cut costs to remain competitive.
- (v) Increasing imports and declining exports are liable to cause larger deficits and worsen the current account. However, the impact of appreciation on current account depends upon the elasticity of demand for exports and imports. Relatively inelastic demand for imports and exports may lead to an improvement in the current account position. Higher the price elasticity of demand for exports, greater would be the fall in demand and higher will be the fall in the aggregate value of exports. This will adversely affect the current account balance.
- (vi) Loss of competitiveness will be insignificant if currency appreciation is because of strong fundamentals of the economy.

From the discussions in this unit, we understand that all countries would desire to have steady exchange rates to eliminate the risks and uncertainties associated with international trade and investments. However, nations may sometimes go for trade-offs with weaker exchange rate to stimulate exports and aggregate demand, or a stronger exchange rate to fight inflation. Learners may keep themselves well-informed on contemporary exchange rate developments and their implications on the economic welfare of countries.

SUMMARY

- Exchange rate is the rate at which the currency of one country exchanges for the currency of another country.
- A direct quote (European Currency Quotation) is the number of units of a local currency exchangeable for one unit of a foreign currency. For example, ₹ 65/US\$.
- An indirect quote (American Currency Quotation) is the number of units of a foreign currency exchangeable for one unit of local currency; for example: \$ 0.0151 per rupee.
- In a direct quotation, the foreign currency is the base currency and the domestic currency is the counter currency. In an indirect quotation, the domestic currency is the base currency and the foreign currency is the counter currency.
- The rate between Y and Z which is derived from the given rates of another set of two pairs of currency (say, X and Y, and, X and Z) is called cross rate.
- An exchange rate regime is the system by which a country manages its currency with respect to foreign currencies.
- There are two major types of exchange rate regimes at the extreme ends; namely floating exchange rate regime, (also called a flexible exchange rate) and fixed exchange rate regime.
- Under floating exchange rate regime, the equilibrium value of the exchange rate of a country's currency is market determined i.e. the demand for and supply of currency relative to other currencies determines the exchange rate.
- A fixed exchange rate, also referred to as pegged exchange rate, is an exchange rate regime under which a country's government announces, or decrees, what its currency will be worth in terms of either another

country's currency or a basket of currencies or another measure of value, such as gold.

- A central bank may implement soft peg policy under which the exchange rate is generally determined by the market or a hard peg where the central bank sets a fixed and unchanging value for the exchange rate.
- A fixed exchange rate avoids currency fluctuations and eliminates exchange rate risks and transaction costs, enhances international trade and investment and lowers the levels of inflation. But the central bank has to maintain an adequate amount of reserves and be always ready to intervene in the foreign exchange market.
- A floating exchange rate allows a government to pursue its own independent monetary policy and there is no need for market intervention or maintenance of reserves. However, volatile exchange rates generate a lot of uncertainties with regard to international transactions.
- The 'real exchange rate' incorporates changes in prices and describes 'how many' of a good or service in one country can be traded for 'one' of that good or service in a foreign country.

$\text{Real exchange rate} = \text{Nominal exchange rate} \times \frac{\text{Domestic price Index}}{\text{Foreign price Index}}$
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- Real Effective Exchange Rate (REER) is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of various foreign currencies) divided by a price deflator or index of costs.
- The wide-reaching collection of markets and institutions that handle the exchange of foreign currencies is known as the foreign exchange market. Being an over-the-counter market, it is not a physical place; rather, it is an electronically linked network bringing buyers and sellers together and has only very narrow spreads.
- On account of arbitrage, regardless of physical location, at any given moment, all markets tend to have the same exchange rate for a given currency. Arbitrage refers to the practice of making risk-less profits by intelligently exploiting price differences of an asset at different dealing places.
- There are two types of transactions in a forex market: current transactions which are carried out in the spot market and future transactions involving

contracts to buy or sell currencies for future delivery which are carried out in forward and futures markets.

- Generally, the supply of and demand for foreign exchange in the domestic foreign exchange market determine the external value of the domestic currency, or in other words, a country's exchange rate.
- Changes in exchange rates portray depreciation or appreciation of one currency. The terms, 'currency appreciation' and 'currency depreciation' describe the movements of the exchange rate.
- Currency appreciates when its value increases with respect to the value of another currency or a basket of other currencies. On the contrary, currency depreciates when its value falls with respect to the value of another currency or a basket of other currencies.
- Devaluation is a deliberate downward adjustment by central bank in the value of a country's currency relative to another currency, group of currencies or standard.
- An appreciation of a country's currency cause changes in import and export prices will lead to changes in import and export volumes, causing resulting in import spending and export earnings.
- Exchange rate depreciation lowers the relative price of a country's exports, raises the relative price of its imports, increases demand both for domestic import-competing goods and for exports, leads to output expansion, encourages economic activity, increases the international competitiveness of domestic industries, increases the volume of exports and improves trade balance.
- Currency appreciation raises the price of exports, decrease exports; increase imports, adversely affect the competitiveness of domestic industry, cause larger deficits and worsens the trade balance.

TEST YOUR KNOWLEDGE

I Multiple Choice Type Questions

1. Based on the supply and demand model of determination of exchange rate, which of the following ought to cause the domestic currency of Country X to appreciate against dollar?
 - (a) The US decides not to import from Country X

- (b) An increase in remittances from the employees who are employed abroad to their families in the home country
- (c) Increased imports by consumers of Country X
- (d) Repayment of foreign debts by Country X
2. All else equal, which of the following is true if consumers of India develop taste for imported commodities and decide to buy more from the US?
- (a) The demand curve for dollars shifts to the right and Indian Rupee appreciates
- (b) The supply of US dollars shrinks and, therefore, import prices decrease
- (c) The demand curve for dollars shifts to the right and Indian Rupee depreciates
- (d) The demand curve for dollars shifts to the left and leads to an increase in exchange rate
3. *'The nominal exchange rate is expressed in units of one currency per unit of the other currency. A real exchange rate adjusts this for changes in price levels'.* The statements are
- (a) wholly correct
- (b) partially correct
- (c) wholly incorrect
- (d) None of the above
4. Match the following by choosing the term which has the same meaning

i) floating exchange rate	ii) fixed exchange rate
iii) pegged exchange rate	a. depreciation
iv) devaluation	b. revaluation
v) appreciation	c. flexible exchange rate

- (a) (i c) ; (ii d) ; (iii b); (iv a)
- (b) (i b) ; (ii a) ; (iii d); (iv c)

(c) (i a) ; (ii d) ;(iii b); (iv c)

(d) (i d) ; (ii a) ;(iii b); (iv c)

5. Choose the correct statement

(a) An indirect quote is the number of units of a local currency exchangeable for one unit of a foreign currency

(b) the fixed exchange rate regime is said to be efficient and highly transparent.

(c) A direct quote is the number of units of a local currency exchangeable for one unit of a foreign currency

(d) Exchange rates are generally fixed by the central bank of the country

6. Which of the following statements is true?

(a) Home-currency appreciation or foreign-currency depreciation takes place when there is a decrease in the home currency price of foreign currency

(b) Home-currency depreciation takes place when there is an increase in the home currency price of the foreign currency

(c) Home-currency depreciation is the same as foreign-currency appreciation and implies that the home currency has become relatively less valuable.

(d) All the above

7. An increase in the supply of foreign exchange

(a) shifts the supply curve to the right and as a consequence, the exchange rate declines

(b) shifts the supply curve to the right and as a consequence, the exchange rate increases

(c) more units of domestic currency are required to buy a unit of foreign exchange

(d) the domestic currency depreciates and the foreign currency appreciates

8. Currency devaluation
 - (a) may increase the price of imported commodities and, therefore, reduce the international competitiveness of domestic industries
 - (b) may reduce export prices and increase the international competitiveness of domestic industries
 - (c) may cause a fall in the volume of exports and promote consumer welfare through increased availability of goods and services
 - (d) (a) and (c) above
9. At any point of time, all markets tend to have the same exchange rate for a given currency due to
 - (a) Hedging
 - (b) Speculation
 - (c) Arbitrage
 - (d) Currency futures
10. 'Vehicle Currency' refers to
 - (a) a currency that is widely used to denominate international contracts made by parties because it is the national *currency* of either of the parties
 - (b) a currency that is traded internationally and, therefore, is in high demand
 - (c) a type of currency used in euro area for synchronization of exchange rates
 - (d) a currency that is widely used to denominate international contracts made by parties even when it is not the national *currency* of either of the parties

II Short Answer Type Questions

1. Define exchange rate?
2. Distinguish between direct quote and indirect quote?
3. What do you understand by the term 'cross rate'?
4. What is an 'exchange rate regime'?

5. Which are the major types of exchange rate regimes?
6. How is exchange rate determined under floating exchange rate regime?
7. Define fixed exchange rate?
8. What are the major merits of floating exchange rate?
9. Mention the main demerit of floating exchange rate?
10. Explain the term 'real exchange rate'?
11. Define Real Effective Exchange Rate (REER)?
12. Describe the chief characteristics of foreign exchange market?
13. What is Arbitrage? What is the outcome of Arbitrage?
14. Mention the types of transactions in the forex market?
15. Describe the term currency appreciation?
16. What is meant by devaluation?

III Long Answer Type Questions

1. Distinguish between fixed exchange rate and floating exchange rate? What are the merits and demerits of each?
2. Describe how exchange rate is determined under different exchange rate regimes?
3. Evaluate the relative merits and demerits of different types of exchange rate regimes?
4. What are the characteristic features of foreign exchange market? Who are the participants in the foreign exchange market?
5. Describe the functioning of the foreign exchange market? What are the different roles played by the participants in the foreign exchange market?
6. What do you understand by appreciation and depreciation of currency? How do they affect real economy?
7. Explain the effects of currency depreciation? Do you consider a weak currency is advantageous to a country?
8. Explain the nature of changes in exchange rates and their impact on real economy?

9. *'An overvalued currency is a bane for an economy'*. Do you agree with the statement? Give examples.
10. *'Flexible exchange rates reflect the true fiscal health of the economy'* Elucidate.

IV Application Oriented Questions

- I. Explain the implications of the following on the demand and supply of foreign exchange and the exchange rate in spot foreign exchange market.
 - (i) Merry Land's exports remained more or less stagnant in the years 2005-06 to 2016-17. However, due to heavy thrust on industrialization, import of machinery, raw materials and components as well as associated services of different types increased.
 - (ii) The investors of Merry Land find investments in financial assets in UK highly attractive and the government of Merry Land which has a liberal attitude on foreign investments permits such investments.
 - (iii) Many foreign investors who had previously acquired Roseland's financial assets sell them.
 - (iv) Effect on Country Y if Country X borrows \$ 100 billion from country Y
- II. Explain how the exchange rate value of Indian Rupee will be affected in each of the following cases. What are the possible consequences on exports and imports?
 - (i) The spot exchange rate changes from ₹ 61/ 1\$ to ₹ 64/1\$
 - (ii) The spot exchange rate changes from ₹ 66/ 1\$ to ₹ 63/1\$
- III. In 1983 Australia decided to float its dollar. Assuming free trade, explain the effects of each of the following on the spot exchange rate between AUD and USD.
 - (i) There is a substantial increase demand in Australia for US exports of services. Since Australia manufactures were favoured over others, there is a proportionate increase in exports of Australian products to the US.
 - (ii) Investors in Australia perceive that the returns on investments in the US would be much more lucrative than elsewhere. As a result there is a huge increase in demand for investments in US dollar denominated financial investments

- (iii) Political uncertainties in the US due to presidential elections caused large scale shift of Australian financial investments back in to Australia
- (iv) An epidemic in some parts of Australia made the US evoke SPS measures and ban the entry of a number of food items to the US

ANSWERS/HINTS

I Multiple Choice Type Questions

1. (b) 2. (c) 3. (a) 4. (d) 5. (c) 6. (d)
7. (a) 8. (b) 9. (c) 10. (d)

II Short Answer Type Questions

1. The price of one currency expressed in terms of units of another currency-represents the number of units of one currency that exchanges for a unit of another
2. A direct quote (European Currency Quotation) is the number of units of a local currency exchangeable for one unit of a foreign currency. For example, ₹ 66/US\$. An indirect quote (American Currency Quotation) is the number of units of a foreign currency exchangeable for one unit of local currency; for example: \$ 0.0151 per rupee.
3. The rate between Y and Z which is derived from the given rates of another set of two pairs of currency (say, X and Y, and, X and Z) is called "cross rate".
4. An exchange rate regime is the system by which a country manages its currency with respect to foreign currencies.
5. There are two major types of exchange rate regimes at the extreme ends; namely floating exchange rate regime, (also called a flexible exchange rate) and fixed exchange rate regime.
6. Under floating exchange rate regime, the equilibrium value of the exchange rate of a country's currency is market determined i.e. the demand for and supply of currency relative to other currencies determines the exchange rate.
7. A fixed exchange rate, also referred to as pegged exchange rate, is an exchange rate regime under which a country's government or central bank announces, or decrees, what its currency will be worth in terms of

either another country's currency or a basket of currencies or another measure of value, such as gold.

8. A floating exchange rate allows a government to pursue its own independent monetary policy and there is no need of market intervention or maintenance of reserves.
9. The volatile exchange rates generate a lot of uncertainties in relation to international transactions.
10. The 'real exchange rate' incorporates changes in prices and describes 'how many' of a good or service in one country can be traded for 'one' of that good or service in a foreign country.

$$\text{Real exchange rate} = \text{Nominal exchange rate} \times \frac{\text{Domestic price Index}}{\text{Foreign price Index}}$$

11. Real Effective Exchange Rate (REER) is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of various foreign currencies) divided by a price deflator or index of costs.
12. The wide-reaching collection of markets and institutions that handle the exchange of foreign currencies is known as the foreign exchange market. Being an over-the-counter market, it is not a physical place; rather, it is an electronically linked network bringing buyers and sellers together and has only very narrow spreads.
13. Arbitrage refers to the practice of making risk-less profits by intelligently exploiting price differences of an asset at different dealing places. On account of arbitrage, regardless of physical location, at any given moment, all markets tend to have the same exchange rate for a given currency.
14. There are two types of transactions in a forex market; current transactions which are carried out in the spot market and future transactions involving contracts to buy or sell currencies for future delivery which are carried out in forward and futures markets.
15. Currency appreciates when its value increases with respect to the value of another currency or a basket of other currencies. On the contrary, currency depreciates when its value falls with respect to the value of another currency or a basket of other currencies.
16. Devaluation is a deliberate downward adjustment in the value of a country's currency relative to another currency or group of currencies or standard.

III Hints to Long Answer Type Questions

- I. The length of the answer should relate to the marks allotted.
- II. The answer should be structured in three parts in the following style.
 - (a) Explain the economic fundamentals underlying the action/issue by integrating the course material in innovative ways; not necessarily confined to one unit. This part provides an opportunity for students to explain their understanding of the underlying theory. The examiner may easily discern the level of cognition of the student. This should be a compulsory component with a reasonably high proportion of marks earmarked.
 - (b) Analyse the issue at hand (given the framework and tools) and explain the policy position by applying the fundamentals as explained in (a) above.
 - (c) Substantiate with illustrations from current economic scenario

IV Application Oriented Questions

- I.
 - (i) Higher demand in Merry Land for foreign exchange (say \$) to make development imports for industrialization ; coupled with no proportionate increase in supply on account of meagre inflow of foreign exchange consequent on stagnant exports for more than a decade, lead to rise in exchange rate and depreciation in the value of domestic currency.
 - (ii) Increased demand for foreign exchange in Australia; the domestic currency depreciates.
 - (iii) Increased demand for foreign exchange; Roseland's domestic currency depreciates
 - (iv) International capital outflow: demand for foreign currency-outflow of foreign exchange, depreciation of domestic currency
- II.
 - (i) The spot exchange rate changes from ₹ 61/ 1\$ to ₹ 64/1\$. It implies depreciation of Rupee and appreciation of Dollar. Exports become cheaper and more attractive to foreigners; imports will be discouraged as they become costlier to import.
 - (ii) The spot exchange rate changes from ₹ 66/ 1\$ to ₹ 63/1\$. This means that Rupee has appreciated in value and dollar has depreciated.

Exports become costlier and so demand for Indian exports may fall; imports become cheaper.

- III. (i) The spot exchange rate between AUD and USD will not be affected as increased demand for foreign currency in each country will be matched by a proportionate increase in the supply of foreign exchange.
- (ii) Investors in Australia would demand more USD for making dollar denominated financial investments in the US. Supply of US dollars remaining the same, being in floating rate, AUD will depreciate and USD will appreciate.
- (iii) Large scale shift of Australian financial investments back to home due to political uncertainties in the US would result in large scale sale of financial assets and capital outflow from the US. This will lead to more inflow of US dollars to Australia and demand remaining the same, depreciation in the value of USD viz a viz AUD.
- (iv) Ban of exports to the US reduces USD inflows to Australia; Supply of USD decreases and demand for USD remaining the same, AUD may depreciate.