

AS – ECONOMICS (9708)

MACRO

CHAPTER 4 Exchange Rates

Topics

1. Introduction of Exchange Rates
2. Determination of Exchange Rates
3. Causes and Consequences of Exchange Rates

TOPIC: INTRODUCTION TO EXCHANGE RATES

Definition | Nominal Exchange Rate: It is the price of domestic currency in terms of external currencies. OR An exchange rate is the rate at which one currency trades for another in the foreign exchange market. Example: In July, 2017, the Pakistan Rupee was trading at the following rates:

158 → \$ 1

U.S. Dollar	107.3
Euro	124
British Pound	139
UAE Dirham	29.05

Definition | Trade Weighted Exchange Rate: A trade weighted exchange rate is a measure, in index form, of the value of a currency against a basket of currencies. These are weighted according to the relative importance of the countries in the country's trade. For example, if India undertakes three times as much trade with China as it does with the US, the Chinese renminbi will be given three times as much weight in the calculation as the US dollar. A trade weighted exchange rate is also known as a multinational exchange rate.

Example: [O/N 2009/Q28]

Country X trades with only two countries, the USA and Japan.

90% of the country's trade is with the USA and 10% is with Japan.

The original value of the trade-weighted exchange rate index is 100.

The value of country X's currency against the US\$ rises by 10%. The value of country X's currency against the Japanese yen rises by 50%.

What will be the value of country X's new trade-weighted exchange rate index?

Note: This question is similar to the inflation question we did in Chapter 2.

STEP 1: Convert weights into % and take % change in currency as it is

STEP 2: Multiply the weight with the % change in currency

STEP 3: You will get the % increase in the value if the index

Answer: $(0.90 \times 10) + (0.10 \times 50) = 14\%$. Original index was 100 if increased by 14% it will become 114.

Formula

Definition | Real Exchange Rate: A real exchange rate takes price changes as well as exchange rate changes into account to assess changes in the competitiveness of a country's products in global markets. A fall in a country's foreign exchange rate would be expected to make its exports more price competitive. If, however, the country is experiencing a relatively high inflation rate, export prices may actually be increasing. A real exchange rate shows the price of domestic products in terms of foreign products.

$$\left\{ \begin{array}{l} \text{The real} \\ \text{exchange} \\ \text{rate} \end{array} = \frac{\text{nominal exchange rate} \times \text{domestic price index}}{\text{foreign exchange rate}} \right\}$$

TOPIC 2: DETERMINATION OF EXCHANGE RATES

Definition | Exchange Rate System: It is a system by which external value of domestic currency i.e. exchange rate is determined. The exchange rate can be determined by the following **THREE** system:

1. Free Floating exchange rate System¹ – Market forces of demand and supply only
2. Fixed Exchange rate system – The central bank using foreign reserves
3. Managed Float exchange rate system – Joint working of market forces and central bank

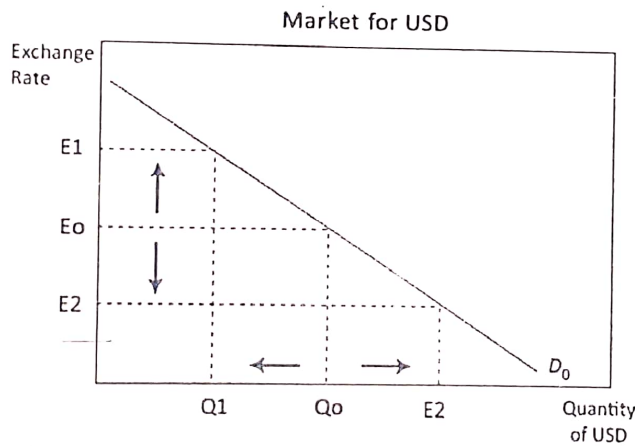
1. FREE FLOATING EXCHANGE RATE SYSTEM

Definition: The exchange rate like all other commodities are determined under the force of demand and supply in this system. The demand and supply of the currency in the foreign exchange market determines the equilibrium exchange rate of a currency. So, to understand the concept we look at the **THREE** variables:

1. Demand for the currency in the foreign market
2. Supply of the currency in the foreign market
3. Equilibrium exchange rate

1. Demand for the currency

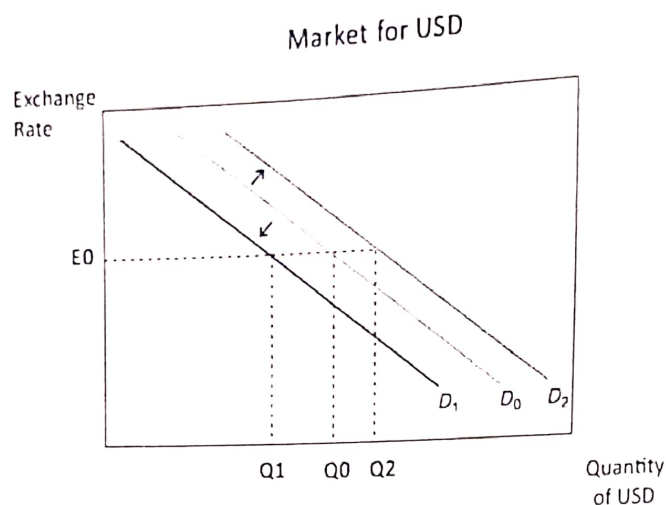
Definition: The demand for the currency have a negative relationship with its price (exchange rate). As we see the diagram below as the exchange rate falls, the demand for the currency increases as it is cheaper to buy that currency.



Shifts in the Demand curve

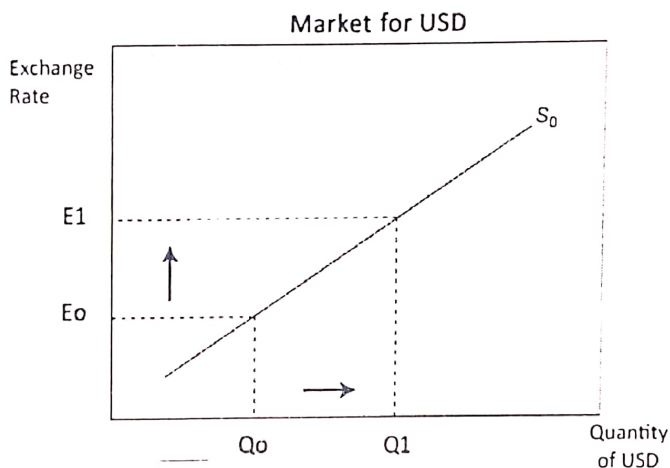
Factors other than exchange rate result in a shift in the supply curve:

Factor	Description
1. Demand for Exports	If the demand of the domestic goods is <u>increasing in the foreign market</u> this would increase the demand for the currency, hence shifting the demand curve outwards and vice versa.
2. Invest in home country	If the interest rates are higher in the domestic country more people from abroad want to invest in country, leading to a rightward shift in the demand curve.
3. Speculate an increase in the value of domestic currency	If the value of the domestic currency has a chance to go up in the future, more people would buy it. This shifts the demand curve outwards and vice versa.



2. Supply of the currency in the foreign market

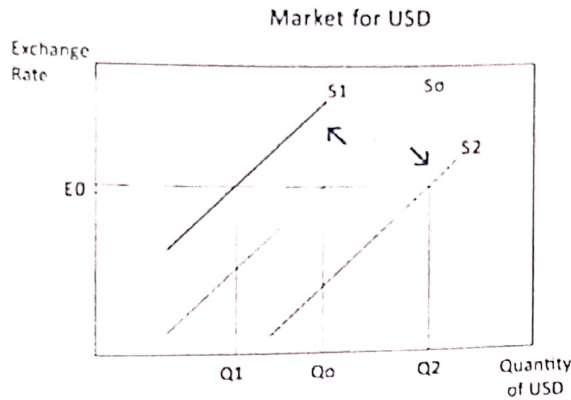
Definition: Domestic individuals supply more of their currency in the foreign exchange market when its price (exchange rate) is higher. As we see the diagram below as the exchange rate increases, the supply of the currency increases as it is cheaper to buy that currency.



Shifts in the Supply curve

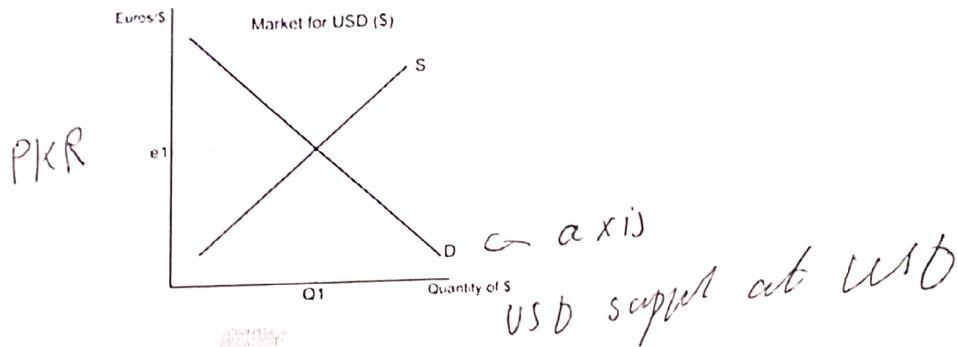
Factors other than exchange rate result in a shift in the supply curve:

Factor	Description
1. Imported Goods	If the domestic people demand more imported goods, the supply curve will shift to the right and vice versa. This is because now more of the domestic currency is being floated in the market.
2. Interest rates in other countries	If the interest rates are higher abroad more individuals would want to shift their money to the foreign country to earn a high rate of interest hence increasing the supply.
3. Speculate a fall in the value of the domestic currency.	If the local currency is about to depreciate more people would want to buy more of the foreign currency, hence increasing the supply and vice versa.



3. Equilibrium exchange rate

Definition: In a floating exchange rate system, the forces of demand and supply determine the equilibrium. Exchange rate equilibrium is established where demand equals supply.



As we see from the diagram above the exchange rate is at E_0 where Demand = Supply. Let's suppose the exchange rate is set above the equilibrium price, at E_1 . It will create excess supply of currency in the foreign exchange market, putting pressure on the value of the currency and bringing it back to the equilibrium.

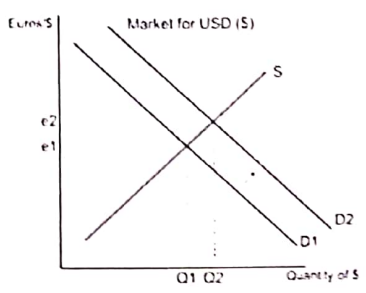
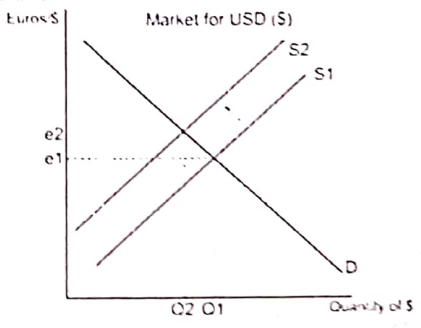
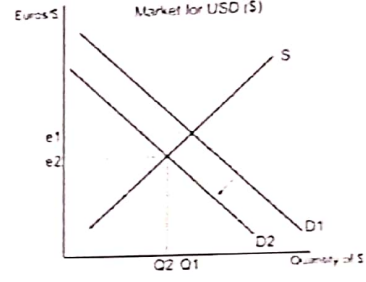
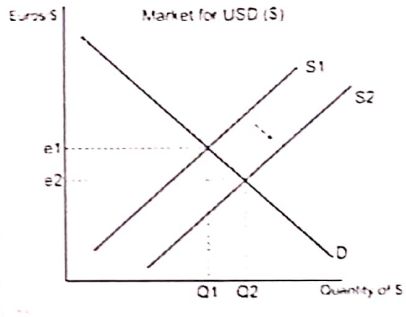
Similarly, if the exchange rate is below the equilibrium i.e. E_1 , the quantity demand for currency exceeds the quantity supplied of the currency creating a shortage. The shortage will push the value of the currency up until and unless the equilibrium is restored.

Φ Interest rate is the only factor that shifts both supply and demand simultaneously.

4. Depreciation/Appreciation

Definition | Depreciation: A fall in the exchange rate within a floating exchange rate system.

Definition | Appreciation: A rise in the exchange rate within a floating exchange rate system.

Currency Appreciation	Currency Depreciation
<p>1. Demand Increases</p>  <p>2. Supply Decreases</p> 	<p>1. Demand Decreases</p>  <p>2. Supply Increases</p> 

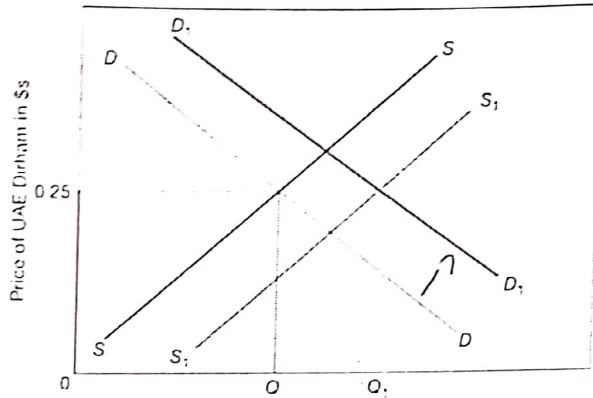
Advantages and Disadvantages of Free Floating Exchange Rate (demand and supply)

Advantages	Disadvantages
<p>1. Automatic correction of BOP: Since there is not govt. intervention the demand and supply forces clear out the surpluses and deficits.</p> <p>2. No need to keep too much foreign reserves: Since the govt. doesn't plan to intervene in the foreign exchange market the local currency automatically gets converted into the market current exchange market.</p> <p>3. Free to choose domestic policy: The govt. can focus on just the domestic demand and leave the BOP correction to the market forces as compared to fixed change rate.</p>	<p>1. Unstable Exchange Rate: Due to changes in demand and supply of currency a country experiences rapid fluctuations.</p> <p>2. Uncertainty for Business and Investment: Exporters and importers will be uncertain about prices of goods and raw material. This will lead to lower business activity and lower investment.</p> <p>3. Speculation: This leads to hot money flows. Hot money is ragged as the transfer of funds around the globe in search for best return.</p>

*o mark
debit
as power*

2. FIXED EXCHANGE RATE SYSTEM

Definition: It is a system in which exchange rate is kept fixed by the constant intervention of the central bank in the foreign exchange market. The rate which the central bank keeps fixed is called the official rate. The diagram below shows how the UAE dirham is fixed at \$0.25 by the government. There is equilibrium in the market at the official rate.

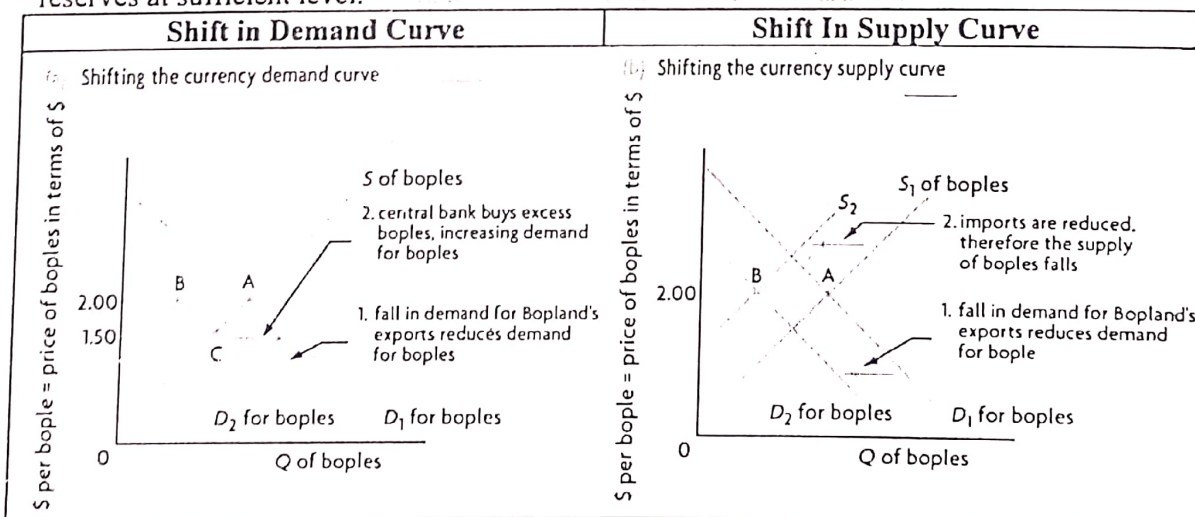


Any shift in the demand and supply of currency can create shortage or surplus of currency in the foreign exchange market however the central bank prevents the change in value by using reserves.

In a shortage in order to restore the exchange rate at the point back to where it was the central bank increases the supply of domestic currency to buy foreign reserves. This action will shift the supply curve to the right.

In a surplus in order to restore the exchange rate at the point back to where it was the central bank will prevent any fall in the value of currency by buying surpluses of domestic currency in the foreign exchange market by selling foreign reserves.

Note: To keep the exchange rates fixed the central bank has to maintain foreign exchange reserves at sufficient level.



Freely floating \rightarrow Appreciation/Depreciation
 Fixed \rightarrow Devalued/Revalued

2. Devaluation/Revaluation

Definition | Devaluation: A process where by a country in a fixed change rate system reduces the price of its currency relative to an agreed rate in terms of a foreign currency.

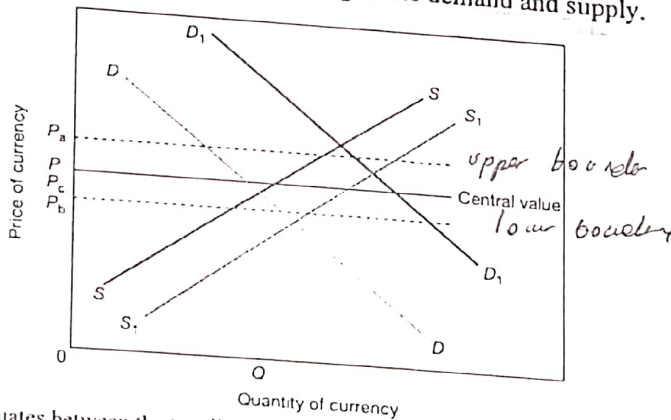
Definition | Revaluation: A process whereby a country in a fixed exchange rate system raises the price of the domestic currency in term sofa foreign currency.

Advantages and Disadvantages of Fixed Exchange Rate

Advantages	Disadvantages
<p>1. Certainty: International trade and investments become less risky as the prices of raw materials and profits won't be affected by the movements in the exchange rate.</p> <p>2. No Speculation: Since the rate is absolutely fixed people believe that there is no point in speculating which results in stability and ease of purchasing goods and services.</p> <p>3. Prevents irresponsible policies: If the government tries to increase AD just to gain popularity by reducing taxes or interest rates it will be forced to fix it which helps to control inflation.</p>	<p>1. Central bank needs to keep too much reserves: This results in lower standard of living in the country since the govt. spends money on keeping reserves rather than spending on people.</p> <p>2. Govt. not free to choose domestic macroeconomic policies independently: The government can't choose whatever fiscal, monetary and supply sides polices since they want to use because it might lead to high rates of inflation or deflation.</p> <p>3. Deliberate efforts to restore BOP equilibrium: The govt. needs to modify the exchange rate to ensure the BOP equilibrium.</p>

3. MANAGED FLOAT EXCHANGE RATE SYSTEM

Definition: Managed floating system combines the fixed exchange rate and floating exchange rate. The managed floating system neither allows the exchange rate to float freely nor it keeps it fixed. Instead the central bank sets a maximum and minimum exchange rate limit within which the currency is allowed to fluctuate according to the demand and supply.



If the exchange rate fluctuates between the two limits, central bank does not intervene. However if the it goes outside the limits there are TWO possibilities:

- If the exchange rate falls below the minimum limit: Central bank will sell the foreign reserves and buy domestic currency to bring it back within the band
- If the exchange rate crosses the maximum limit: Central bank will buy foreign reserves and inject domestic currency into the foreign exchange market. Exchange rate will be pulled back into the allowed fluctuation band.

TOPIC 3: CAUSES & CONSEQUENCES OF EXCHANGE RATE

1. Causes of Exchange Rate Depreciation/Devaluation

Cause	Description
1. Relative Interest Rate	If interest rates abroad are higher this will lead to more outflow of money which will increase supply for local currency plus less foreigners would want to invest in your country which will lead to less demand for local currency, bringing the interest rate down.
2. Relative Inflation Rate	If domestic rate of inflation is high local goods would be more expensive less foreigner would buy them hence less demand for local currency, plus more people would try to import cheaper goods from abroad increasing the supply of currency.
3. Domestic Economic Growth	When the economy grows, individuals have more money at their disposal, this increases demand for exports leading to higher supply of currency in the foreign market.
4. Recession in Trading Partner	If there is a recession in a trading partner this will lead to less demand for our exports hence less demand for our currency, leading to depreciation.
5. Speculation of fall in the value of domestic currency	If people speculate that the local currency will depreciate this will lead to people selling local currency to buy foreign currency. This will increase the supply of local currency and decrease its demand, leading to a lower exchange rate.
6. Political instability	If there is political instability in a country demand for its currency would decrease and individuals would try to transfer money out of that country leading to a depreciation of foreign currency.

*Deficit → Currency demand
↓ supply ↓*

2. Consequences of Exchange Rate Depreciation/Devaluation

The effects of exchange rate depreciation would be different for short-run and long-run.

- Short-Run

Effect	Description
1. Effect on Balance of Trade	The BOT worsens because the demand of goods are inelastic hence a depreciation would lead to expensive imports and cheaper exports leading to a deficit.
2. Effect on AD	Export earnings fall and import payments increase ($X \downarrow M \uparrow$) this leads to a lower AD
3. Effect on Demand-pull inflation	This will slow down demand pull inflation because AD will decrease.
4. Effect on National Income and Employment	Since the AD is low it will reduce the increase and hence cause unemployment in the economy.
5. Effect on Cost-push Inflation	If the country was exporting raw materials it will increase cost-push inflation because now imports and more expensive.
6. Effect on Standard of Living	The SOL will fall since fewer imports would be available, leading to less choice and higher prices.

- Long Run

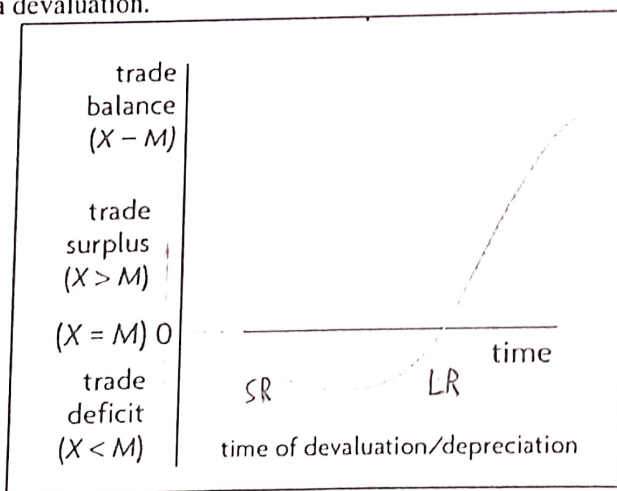
Effect	Description
1. Effect on Balance of Trade	Since in the long run the elasticity of demand for imports and exports is elastic a depreciation will improve BOT because demand for exports will increase and demand for imports will fall.
2. Effect on AD	AD will improve because ($X \uparrow M \downarrow$) shifting the AD outwards.
3. Effect on Demand Pull-Inflation	This will increase due to an increase in AD.
4. Effect on National Income and Employment	The national income will go up along with employment in the economy.
5. Effect on Cost-Push inflation	Usually imported raw material and fuel is usually inelastic in the long run and therefore there is a less chance of reduction in cost-push inflation.
6. Effect on Standard of living	SOL might improve since national income and employment goes up however can't be sure as SOL is not only dependent on national income, several variables like health care, education determine SOL.

Note: There are TWO separate effects of depreciation, which are independent of short-run or long-run:

- TOT:** TOT worsens because export prices go down and import prices increase.
- Investments:** This will lead to more foreign investment in our country since it is cheaper to invest in our economy and less investments abroad because it is more expensive to send money abroad.

3. Combining short-run and long-run effects | J-Curve Effect

If we plot time on x-axis and balance of trade (Current Account position) on y-axis we can see the impact of a devaluation.



*inelastic
↓
deval*

- **Short Run:** Initially in the short-run when demand for imports and exports are inelastic exchange rate depreciation will worsen the balance of trade of a country because the imports would be even more expensive and the exports wouldn't have gone up by a large proportion. It takes time to recognize that prices have changed and then to search for alternative products. Which means in the short run the deficit increase.

- **Long Run:** Later on in the long run when the demand for imports and exports are elastic it causes an improvement in the BOT because individuals know about the prices, the country might have shifted to other alternatives rather than importing hence the balance of trade starts to go up.

4. Marshal-Lerner Condition

According to Marshal-Lerner condition for depreciation of currency policy to be effective (i.e. to generate long-run outcomes) it is not necessary for exports demand and imports demand to be elastic individually. It is combined price elasticity of demand of exports and imports that will play a decisive role in effectivity of exchange of depreciation policy. According to Marshal-Lerner condition, exchange rate depreciation will produce desirable outcomes:

$$PED \text{ of Exports} + PED \text{ of Imports} > 1$$

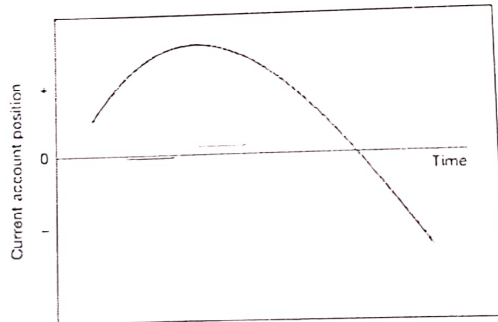
Note: Higher the combined PED for exports and imports, more effective the depreciate or devaluation policy would be.

4. CAUSES AND CONSEQUENCES | APPRECIATION / REVALUATION

1. Causes of Exchange Rate Appreciation/Revaluation
(Vice versa of exchange rate depreciation)

2. Consequences of Exchange Rate Appreciation/Revaluation
- Short-Run: (Vice versa of exchange rate depreciation)
- Long-run: (Vice versa of exchange rate depreciation)

3. Combining short-run and long-run effects | J-Curve Effect



elastic
↓
revalue

4. Marshal-Lerner Condition
Same as the of depreciation.