M.A (ECONOMICS)

MA FINALSEMESTER

SUBJECT CODE: MAECO502

INTERNATIONAL ECONOMICS

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SYLLABI-BOOK MAPPING TABLE

PAPER NO: MAECO502
INTERNATIONAL ECONOMICS

SYLLABI	Mapping in Book
UNIT- I: COMPARATIVE COST AND OPPORTUNITY COST MODELS Ricardo's Model of Comparative Advantages - Modified Ricardian Theory (Elaboration and Refinement) - Haberler's Opportunity Cost Theory - Trade under Increasing, Decreasing And Constant Cost Conditions	
UNIT-II: TRADE, FACTOR ENDOWMENTS AND FACTOR PRICE Leontief Paradox - Stolper-Samuelson Theorem: Factor Price Equalization Theorem - International Trade and Imperfect Competition	
UNIT- III: TERMS OF TRADE Meaning of Terms of Trade	
UNIT-IV: TARIFF Arguments in favour of tariff - Arguments against tariff - Impact of tariff (partial equilibrium analysis) - Impact of tariff(General Equilibrium Analysis) - Concepts in Game Theory - Types of Games and Strategy - Free Trade and Protection - Tariff and Trade Policies - Strategic Game Theoritic approach to Tariff: Brenda Spencer Model	
UNIT-V: TRADE AND ECONOMIC GROWTH Growth in factor endowments and international trade - Rybzynski Theorem - Stolper-Samuelson Theroam - Bhagwati's view on immiserizing growth - Technical changes and international trade	
UNIT VI: BALANCE OF PAYMENT Meaning of Balance of Payment (BOP) - Components of Balance of Payments - Relative Importance of Current account and Capital Account - Balance of Payments adjustments: Absorption and Monetary Approaches	
UNIT VII: FOREIGN EXCHANGE MARKET Fixed and Floating exchange rate - Purchasing Power Parity - Interest Rate Parity Theory	
UNIT VIII: THEORY OF REGIONAL BLOCKS Stages of Economic Integration - Trade Creation and Trade Diversion - Theory of custom Union - Common market	
UNIT- IX: INTERNATIONAL TRADE AND MONETARY ORDER Trade and Gold standard - Collapse of the Gold Standard in the Inter-war Period - Bretton Woods System - IMF and World Bank - Fixed Exchange Rate and its Working - Collapse of the Bretton- Woods System and emergence of the floating exchange rate system - Multilateralism - GATT and WTO regime	
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INTRODUCTION OF BOOK

International economics relates to study of economics inclusive of the foreign sector. The domestic conditions of an economy are shaped by the economic interrelationship between countries. In other words, we can say that international economics deals with the economic activities of various countries and their consequences. Thus, the students of economics should have in-depth understanding about the international economic.

The book is divided into ten units, namely: 1. Comparative Cost and Opportunity Cost Models, 2. Trade, Factor Endowments and Factor Price, 3. Terms of Trade, 4. Tariff, 5. Trade and Economic Growth, 6.Balance of Payment, 7. Foreign Exchange Market, 8. Theory of Regional Blocks, 9. International Trade and Monetary Order, 10. Problems of Policy in an Open Economy.

The principle of comparative advantage has been the basis of international trade for over a century. When a country enters into trade with some other country, it will export those commodities in which its comparative costs of production are less, and will import those commodities in which its comparative costs of production are high. In the first unit, the book discusses Ricardo's theory of international trade. The modified Ricardian model; on the basis of rectification of its drawbacks; Haberler's Opportunity Cost is undertaken.

The importance and impacts of factor endowment and factor price on trade and intensity is discussed in the second unit. This unit examines understands Leontief Paradox, Stolper-Samuelson Theorem: Factor Price Equalization Theorem and International Trade and Imperfect Competition.

The Terms of Trade is the ratio of export price to imports. By understanding the concept of Terms of Trade, we can easily calculate whether the terms of trade between the countries is favourable or unfavourable. Thus, in the third unit, we have discussed Terms of Trade comprehensively.

In fourth unit learners are expected to acquaint themselves with tariff, the argument fore and against it, along with the impact of tariff(both under partial and general equilibrium framework). The learner is also introduced with the concept of game theory and its applicability pertaining to the tariff.

The reader will learn about the relaxation in the assumption of factor constancy and its subsequent outcomes in the fifth unit. The Ryvczynski Theorem, Stolper-Samuelson theorem, immiserizing growth and finally technical changes have discussed in this unit.

A Balance of Payment Account is a systematic record of all economic transactions between residents of a country and the rest of the world carried out in a specific period. The sixth unit discussed about the meaning, component and importance of the Balance of Payment.

The foreign exchange market is the market in which domestic currencies are exchanged for foreign currency. The buyers and sellers include individuals, firms, foreign exchange brokers, commercial banks and the central bank. The transactions in this market are not confined to only one or a few foreign currencies. In fact, there are a large number of foreign currencies which are traded, converted and exchanged in the foreign exchange market. Thus, in the seventh unit book gives deliberation about the meaning of foreign exchange market, the concept of fixed and floating exchange rate, its advantage and disadvantages, how exchange rate is determined under purchasing power parity and interest rate parity and the concept of interest arbitrage, hedging, premium and discount.

In unit eight the meaning and concept of Regional Block, the stages of regional integration, meaning of trade creation and trade diversion elaborately discussed. Further, the concept of custom union and the common market is discussed.

A student of economics should know about the term international trade and the monetary order. Therefore, international trade and the monetary order are comprehensively discussed in unit nine.

Finally, in unit tenth book has discussed about the problems and policy of an open economy.

We hope that the students will find it easy to understand and helpful for institutional examination and also for competitive examination.

UNIT- I
COMPARATIVE COST AND OPPORTUNITY COST MODELS

Structure

1.0 Introduction

Due to differences in climate, natural resources, geographical situation and efficiency of labour, a country can produce one commodity at a lower cost than the other because of these comparative advantages. When a country enters into trade with some other country, it

will export those commodities in which its comparative production costs are less, and will import those commodities in which its comparative production costs are high. The principle of comparative advantage has been the basis of international trade for over a century till the First World War. This is the basic of the Ricardian theory. The theory has been elaborated and modified by economists like J.S. Mill, Alfred Marshall and Taussig in regard of more than two countries and more than two commodities. Haberler also used the concept of opportunity cost of a commodity to explain the law of comparative advantage. The existence of comparative advantage in costs of production is the principal cause of emergence of international trade. It may be assumed that the opportunity cost is subject to constant cost, increasing cost and decreasing cost explaining with the help of production possibility curve.

1.1 Objectives

- To understand the Ricardo's theory of international trade in view of comparative advantages.
- To find out the modified Ricardian model on the basis of rectification of the drawbacks of Ricardo's theory of international trade.
- To know Haberler's Opportunity Cost Theory with the help of Production possibility curves.
- To define the trade under increasing, decreasing and constant cost conditions.

1.2 Ricardo's Model of Comparative Advantages

According to David Ricardo, it is not only the absolute but the comparative differences in costs that determine trade relations between two countries. Production costs differ in countries because of geographical division of labour and specialisation in production. Due to differences in climate, natural resources, geographical situation and efficiency of labour, a country can produce one commodity at a lower cost than the other because of these comparative advantages. In this way, each country specialises in the production of that commodity in which its comparative cost of production is the least. Therefore, when a country enters into trade with some other country, it will export those commodities in which its comparative production costs are less, and will import those commodities in which its comparative production costs are high. According to Ricardo, this

is the basis of international trade. It follows that each country will specialise in the production of those commodities in which it has the greatest comparative advantage or the least comparative disadvantage. Thus, a country will export those commodities in which its comparative advantage is the greatest and import those commodities in which its comparative disadvantage is the least.

Assumptions

The Ricardian theory of comparative advantage is based on the following assumptions:

1. There are only two countries, say England and Portugal.
2. They produce the same two commodities say, wine and cloth.
3. There are similar tastes in both countries.
4. Labour is the only factor of production.
5. The supply of labour is unchanged.
6. All units of labour are homogeneous.
7. Prices of two commodities are determined by labour cost, i.e, the number of labour-units employed to produce each.
8. Commodities are produced under the law of constant costs or returns.
9. Technological knowledge is unchanged.
10. Trade between the two countries takes place on the basis of the barter system.
11. Factors of production are perfectly mobile within each country, but are perfectly immobile between countries.
12. There is free trade between the two countries, there being no trade barriers or restrictions in the movement of commodities.
13. No transport costs are involved in carrying trade between the two countries.
14. All factors of production are fully employed in both the countries.
15. The international market is perfect so that the exchange ratio for the two commodities is the same.

1.2.1 Explanation of the Theory

Given these assumptions, Ricardo shows that trade is possible between two countries even when one country has an absolute advantage in the production of both commodities, but

the country has a comparative advantage in the production of one commodity than in the other. This is illustrated in terms of Ricardo's well-known example of trade between England and Portugal as shown in table 1.1.

Table 1.1: Labour Required For Producing One Unit

Country	Wine	Cloth
England	120	100
Portugal	80	90

The table 1.1 shows the production of a unit of wine in England requires 120 men for a year, while a unit of cloth requires 100 men for the same period. On the other hand, the production of the same quantities of wine and cloth in Portugal requires 80 and 90 men respectively. Thus, England uses more labour than Portugal in producing both wine and cloth. In other words, the Portuguese labour is more efficient than the English labour in producing both the products. So Portugal possesses an absolute advantage in both wine and cloth. But Portugal would benefit more by producing wine and exporting it to England because it possesses greater comparative advantage in it. This is because the cost of production of wine (80/120 men) is less than the cost of production of cloth (90/100 men). On the other hand, it is in England's interest to specialise in the production of cloth in which it has the least comparative disadvantage. This is because the cost of production of cloth in England in less (100/90 men) as compared with wine (120/80 men). Thus, trade is beneficial for both the countries. The comparative advantage position of both is illustrated in fig. 1.1 in terms of production possibility curves.

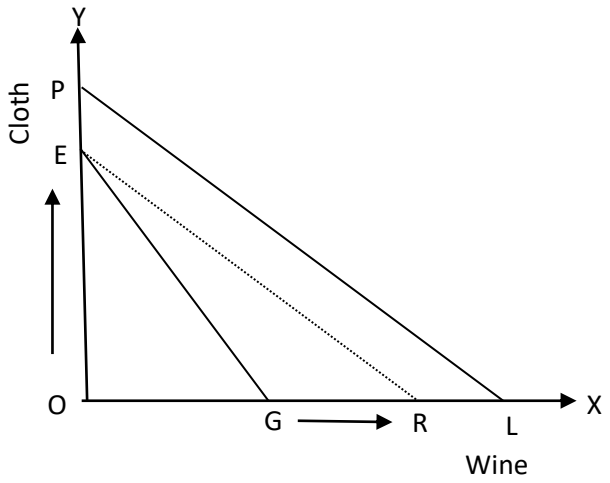

Fig. 1.1

PL is the production possibility curve of Portugal, and EG that of England. Portugal enjoys an absolute advantage in the production of both wine and cloth over England. It produces OL of wine and OP of cloth, as against OG of wine and OE of cloth produced by England. But the slope of ER (parallel to PL) reveals that Portugal has a greater comparative advantage in the production of wine because if it gives up the resources required to produce OE of cloth, it can produce OR of wine which is greater than OG of wine of England. On other hand England had the least comparative disadvantage in the production of OE of cloth. Thus, Portugal will export OR of wine to England in exchange for OE of cloth from her.

1.2.2 Gains from Trade and their Distribution

Ricardo does not discuss the actual ratio at which wine and cloth would exchange and how much the two countries gain from trade. Before trade, the domestic trade ratios in the two countries for wine and cloth are shown in Table 1.2. The cost of production of one unit of wine in England is 120 men and that of producing one unit of cloth is 100 men. It shows that the cost of producing wine is more as against cloth because one unit of wine can exchange for 1.2 units of cloth. On the other hand, the cost of producing one unit of wine in Portugal is 80 men and that of producing one unit of cloth is 90 men. It is clear that the cost of producing cloth is more than that of wine because one unit of wine can exchange for 0.89 unit of cloth. Suppose trade begins between the two countries. England will gain if it imports one unit of wine from Portugal in exchange for less than 1.2 units of cloth. Portugal will also gain if it imports more than 0.89 units of cloth from England in exchange for 1 unit of wine.

Table 1.2: Domestic Exchange Ratios

England	Portugal
Wine 120: 100 Cloth (6/5) 1: 1.2 Cloth 100: 120 Wine(5/6) 1: 0.83	Wine 80 : 90 Cloth (8/9) 1: 0. 89 Cloth 90: 80 Wine (9/8) 1: 1.125

The table shows that the domestic exchange ratio in England is one unit of cloth= 0.83 units of wine, and in Portugal one unit of wine= 0.89 unit of cloth. If we assume the exchange ratio between the two countries to be 1 unit of cloth = 1 unit of wine, England would gain 0.17 (1-0.83) unit of wine by exporting one unit of cloth to Portugal. Similarly, the gain to Portugal by exporting one unit of wine to England will be 0.11(1- 0.89) unit of cloth. Thus, trade is beneficial for both countries.

The gains from trade and their distribution are shown in Figure 1.2 where the line C_1 W_2 depicts the domestic exchange ratio 1 unit of cloth= 0.83 unit of wine of England, and the line W_1 C_2 that of Portugal at the domestic exchange ratio 1 unit of wine= 0.89 unit of cloth. The line C_1 W_1 shows the exchange rate of trade of 1 unit of cloth=1 unit of wine between the two countries. At this exchange rate England gains W_2W_1 (0.17 unit) of wine, while Portugal gains C_2 C_1 (0.11 unit) of cloth.

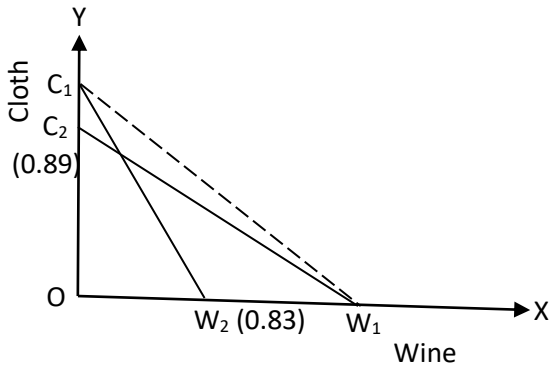

Fig. 1.2

Thus, both England and Portugal specialise in the production of one commodity on the basis of comparative costs. Each reallocates its factors accordingly and exports that commodity in which it has comparative advantage and imports that commodity in which it has a comparative disadvantage. Both gain through trade and can increase the consumption of the two commodities.

1.2.3 Criticisms

The principle of comparative advantage has been the basis of international trade for over a century till the First World War. Since then the critics have been able only to modify

and amplify the theory. In particular, it has been several times criticised by Bertin Ohlin and Frank D. Graham. We discuss here some of the important criticisms given below:

1. **Unrealistic Assumption of Labour Cost:** The most severe criticism of the comparative advantage doctrine is that it is based on the labour theory of value. In calculating production costs, it takes only labour costs and neglects non-labour costs involved in the production of commodities. This is highly unrealistic because it is money costs and not labour costs that are the basis of national and international transactions of goods. Further, the labour cost theory is based on the assumption of homogeneous labour. This is again unrealistic because labour is heterogeneous of different kinds and grades, some specific or specialized, and other non-specific or general.

2. **No Similar Tastes:** The assumption of similar tastes is unrealistic because tastes differ with different income brackets in a country. Moreover, they also change with the growth on an economy and with the development of its trade relations with other countries.

3. **Assumption of Fixed Proportions:** The theory of comparative costs is based on the assumption that labour is used in the same fixed proportions in the production of all commodities. This is essentially a static analysis and hence unrealistic. As a matter of fact, labour is used in varying proportions in the production of commodities. For instance, less labour is used per unit of capital in the production of textiles. Moreover, some substitution of labour for capital is always possible in production.

4. **Unrealistic Assumption of Constant Costs:** The theory is based on another weak assumption that an increase of output due to international specialisations if followed by constant costs. If the large-scale of production reduces costs, the comparative advantage will be increased. On the other hand, if increased output is the result of increased cost of production, the comparative advantage will be reduced, and in some cases it may even disappear.

5. **Ignores Transport Costs:** Ricardo ignores transport costs in determining comparative advantage in trade. This is highly unrealistic because transport costs play

an important role in determining the pattern of world trade. Like economies of scale, it is an independent factor of production. For instance, high transport costs may nullify the comparative advantage and the gain from international trade.

6. **Mobility of Factor:** The doctrine assumes that factors of production are perfectly mobile internally and wholly immobile internationally. This is not realistic because even within a country factors do not move freely from one industry to another or from one region to another. The greater the degree of specialisation in an industry, the less is the factor mobility from one industry to another. Thus, factor mobility influences costs and hence the pattern of international trade.

7. **Two-Country two- Commodity Model**: The Ricardian model is related to trade between two countries on the basis of two commodities. This is again unrealistic because in actuality, international trade is among many countries trading in many commodities.

8. **Unrealistic Assumption of Free Trade:** Another serious weakness of the doctrine is that it assumes perfect and free world trade. But in reality, world trade is not free. Every country applies restrictions on the free movement of goods to and from other countries. Thus, tariffs and other trade restrictions affect world imports and exports. Moreover, products are not homogeneous but differentiated. By neglecting these aspects, the Ricardian theory becomes unrealistic.

9. **Unrealistic Assumptions of Full Employment:** Like all classical theories, the theory of comparative advantage is based on the assumption of full employment. This assumption also makes the theory static. Keynes falsified the assumption of full employment and proved the existence of under-employment in an economy. Thus, the assumption of full employment makes the theory unrealistic.

10. **Self-Interest Hinders its Operation:** The doctrine does not operate if a country having a comparative disadvantage does not wish to import a commodity from the other country due to strategic, military or development considerations. Thus, often self-interest stands in the operation of the theory of comparative costs.

11. **Neglects the Role of Technology:** The theory neglects the role of technological innovation in international trade. This is unrealistic because technological changes help in increasing the supply of goods not only for the domestic market but also for international market. World trade has gained much from innovations and research and development.

12. **One–Sided Theory:** The Ricardian theory is one–sided because it considers only the supply side of international trade and neglects the demand side. Prof. Ohlin opined, "it is indeed nothing more than an abbreviated acccount of the conditions of supply."

13. **Impossibility of Complete Specialization:** Prof. Frank Graham has pointed out that complete specialisaton will be impossible on the basis of comparative advantage in producing commodities entering into international trade. He explains two cases in support of his argument: one, relating to a big country and a small county; and two, relating to a commodity of high value and low value.

Conclusion: Despite of the above criticisms, the theory has most important glimpse of truth. The theory has given many clues to develop the other theory of international trade.

Check Your Progress

1. Define Ricardo's Model of comparative advantages.
2. What do you mean by gains from trade?
3. What are the drawbacks of Ricardo's Model of comparative advantages?

1.3 Modified Ricardian Theory (Elaboration and Refinement)

The Ricardian theory of comparative costs was based on a number of simplifying assumptions. This, however, does not mean that the theory is valid only under the assumptions upon which it was originally formulated; the relaxation of the simplifications does not invalidate the law of comparative advantage. The theory has been elaborated and modified by economists like J.S. Mill, Alfred Marshall and Taussig.

Introduction of Money

One of the major criticisms of the comparative cost theory is that it expresses production cost in real terms and not in money terms. But as Haberler states, in a modern economy,… "goods are not exchanged directly against other goods, but goods are bought with money. People do not think of the exchange relations between goods in *natura* but money prices. The flow of international trade is determined directly by absolute differences in money prices and not by comparative differences in labour cost". To make the theory more realistic, labour cost should, therefore, be transformed into money price. The translation of comparative differences in cost into absolute differences in price in no way alters the real exchange relations between commodities which lie behind the money prices.

To illustrate the refinement of the comparative cost theory with introduction of money, let us take the hypothetical example of labour costs of wine and cloth in Portugal and England and assume that the wage per unit of labour is $1 in England and $1.3 in Portugal. Then, the price per unit of cloth will be $100 in England and $117 in Portugal and the price per unit of wine will be $120 in England $104 in Portugal (see Table 1.3). Therefore, England will import wine from Portugal instead of producing it at home at a higher cost. Similarly, Portugal will import cloth from England instead of producing it at a higher cost.

Table 1.3: Comparative Money Costs

County	No. of Units of labour required for one unit of		Wage per unit of labour ($)	Price per Unit of	
	Cloth	wine		Cloth ($)	wine ($)
Enland	100	120	1.00	100.00	120.00
Portugal	90	80	1.30	117	104.00

The above table clearly shows that the discarding of labour cost and the introduction of money does not invalidate the comparative cost theory. It should, however, be noted that if wages rise or fall below certain limits, it will distort the trade pattern. For example, while the

money wage remains stable in England, if it rises above $1.5 in Portugal, the price of wine will exceed $120 (the price in England) and, therefore, England will not import wine from Portugal. Similarly, a rise in wages beyond a certain level in England will make the English cloth more expensive than the Portuguese. A fall in the wage in a county beyond a certain limit will cause a similar situation. For example, if the wage level remains stable in England and if it falls to less than $1.11 in Portugal, English cloth will no longer be cheaper than that produced in Portugal.

1.3.1 Introduction of Transfer Costs

The Ricardian theory assumed that the transfer of goods between countries does not involve any cost. Quite obviously, certain transfer costs like the cost of transport are involved in international trade. It is not difficult to introduce the costs of transfer to the comparative cost theory. The introduction of transfer costs, however, decreases the extent of the international division of labour, because if the cost of transfer of a commodity is more than the difference in the costs of production between two countries, it will not be traded between them. For instance, with reference to our previous example, if the cost of the transfer of wine from Portugal to England is more than $16 per unit, England is not likely to import wine from Portugal because the landed cost of Portuguese wine in England will be more than $ 120 (which is the price of the domestic wine.)

In the absence of transfer costs, the condition for the establishment of trade between country A and B is that $X_a/X_b<Y_a/Y_b$ where Xa and Ya denote the number of units of the commodities X and Y which one unit of labour can produce in county A. X_b and Yb denote the number of units of the commodities X and Y which one unit of labour can produce in county B. Introduction of transfer costs requires the fulfillment of two more conditions for the establishment of trade, viz. $X_a/X_b^1 <Y_a/Y_b$ and $X_a/ X_b<Y_a^1<Ya^1/ Y_b$ where X_b^1 denotes the number of units of commodity X which can be produced and transferred to A with one unit of labour in B, and Y_a^1 denotes the number of unit of commodity Y which can be produced and transported to B with one unit of labour in A.

1.3.2 More than Two commodities

Though Ricardo considered only two commodities, the theory can be applied to cases in which not merely two commodities but any number of goods is produced in the two

countries. If Countries I and II exchange a number of commodities between them, according to the doctrine of comparative cost differences, Country I must be enjoying a comparative advantage over Country II in all its export commodities relatively to all its import commodities. Similarly, Country II must be enjoying a comparative advantage over Country I in all its export commodities relatively to all its import commodities.

To get an idea of which commodities a country exports and imports, we may arrange various goods in order of the comparative advantage of Country I over Country II, so that if we call them a,b,c,d,e,….$a_1/a_2 < b_1/b_2 < c_1/c_2 < d_1/d_2 < e_1/e_2$ … Country I will export commodities on the left side and import commodities on the right side. County II, On the other hand, specialises in the production of commodities on the right side and imports those on the left side. It is not possible that Country I exports a, b, d and imports c. If it imports c, it must necessarily be importing d (assuming, of course, that d has a demand in Country I).

Relying only on the cost data, we cannot determine the exact position of this dividing line. We can say only that it must be drawn in such a manner that Country I enjoys a comparative advantage in every commodity it exports relatively to every commodity it imports. The dividing line will be at a position at which the balance of payments will be in equilibrium. The point at which the balance of payments will be in equilibrium and determined by the reciprocal demand of the two countries for each other's product. An examination of Table 1.4 will make the meaning of the algebraic expression clear.

Table 1.4: Production Costs of Goods in two Countries

Kinds of Goods		A	B	C	D	E	F	G	H	I	J	K	L
Real cost per unit, expressed in units of labour	In country 1* ($a_1, b_1, c_1, \ldots$)	30	30	30	30	30	30	30	30	30	30	30	30
	In country II ($a_2, b_2, c_2, ..$)	55	50	46	40	32	30	27	25	20	15	12	10

*In this example, the units of quantity of various commodities are chosen in such a way that the cost per unit of every commodity in Country I is the same. Hence, the number of units of labour per unit of every commodity is equal (30).

If we assume that money wages are the same in both the countries, we can easily say which goods will be exported and which will be imported. Country I will export goods A to E and County II will export goods L to G. It depends upon the reciprocal demand whether or not this situation maintains equilibrium in balance of payments.

1.3.3 More than Two Countries

Though the Ricardian model consists of two countries only, the theory is equally applicable to a situation in which more than two countries participate. Each country will specialise in the commodity or commodities in the production of which it has comparative advantage over the other and import from other countries goods which can be produced domestically only at a comparative disadvantage.

A country may import a commodity from more than one country just as it may export a commodity to more than one country. Assume that the international price of commodity X is $ 100 per unit. Now, all countries who can produce at a cost of less than $100 per unit, can export X. However, the gains to the different exporting countries may vary. The country with the least production cost will gain the maximum (per unit of export) and vice versa. All countries with costs of production of over $ 100 per unit of X will gain by importing it rather than producing domestically at a higher cost. The extent of gain from import also may vary between the various importing countries. The gain (per unit) will be the maximum for the importing country with the highest domestic cost of production of X and vice versa.

Variable Costs of Production

Ricardo assumed a constant cost of production. The removal of the assumption of constant costs and the introduction of variable costs do not, however, change the substance of the comparative cost theory. It should, however, be noted that although the consideration of conditions of increasing costs calls for no basic modification of the theory, production under conditions of increasing costs does prevent international specialisation from developing, consequently reducing the potential gains from trade. Production under conditions of decreasing costs, on the other hand, tends to widen national costs differentials and also the limits of the terms of trade.

Non-Competing Groups

The Ricardian theory assumed that labour in each country is homogeneous and perfectly mobile within the country. But as a matter of fact, labour force in any county consists of many different groups, i.e., the technical, skilled, semi-skilled and unskilled, and mobility between these groups is far from perfect. These distinct categories of labour with rather well marked and enduring differences in wages are known as "non-competing" groups.

The mere existence of such groups would not affect the theory of international trade, provided that in each country the relative scale of wages was the same. But the relative scale of wages differs between countries due to factors like the relative abundance or scarcity of certain categories of labour, and this affects the pattern of trade. For instance, abnormally low wages for a particular category of labour in a country enables it to produce some commodity or commodities at a lower money cost than its competitors, even though it has no comparative advantage. The existence of non-competing groups within a country affects international trade only when the situation thus engendered is peculiar to that country.

Capital Charges

Taussig has pointed out that interest charges influence international trade when different quantities of capital are used in the production of different commodities. Hence, like non-competing groups of labour, interest charges may also affect the cost of production and pattern of trade. A low rate of interest tends to give a country a comparative advantage for those goods which are made with much capital; these tend to be exported from it. A high rate of interest correspondingly is a handicap on the export of these same goods and a stimulus to their import. However, high or low interest does not in itself act as an independent factor; it exercises an influence only so far as it enters to a greater degree in one commodity than in another. The conclusion is of the same sort as that reached with regard to non-competing groups and differences of wages.

Check Your Progress

1. Explain the modified Ricardian theory.
2. Why is modified Ricardian theory superior to Ricardian theory?
3. Define introduction of transfer costs in modified Ricardian theory.

1.4 Haberler's Opportunity Cost Theory

Opportunity cost of a commodity is defined as the amount of a second commodity that must be given up to release just enough resources to produce one additional unit of the first. Haberler used this concept to explain the law of comparative advantage. In this form, this law is referred to as the law of comparative cost. Consequently, the nation with the lower opportunity cost is said to have a comparative advantage in the production of that commodity and comparative disadvantage in the production of other commodity.

The existence of comparative advantage in costs of production is the principal cause of emergence of international trade. Ricardo has given an example of trade between England and Portugal shown in Table 1.5.

Table 1.5

Nations	One day of Labour	
	Units of Wine	Units of Cloth
England	60	80
Portugal	150	100

From the above table, it is clear that Portuguese labour is more efficient than English lobour in the production of wine as well as cloth. So Portugal has an absolute advantage in the production of wine and cloth.

The trade between England and Portugal can also be demonstrated by introducing the concept of opportunity cost. Table 1.6 gives the opportunity costs for producing wine and cloth in the two nations calculated on the basis of information given in Table 1.5.

Table 1.6

	Opportunity Costs for	
Nations	Wine	Cloth
England	60/80=3/4	80/60= 4/3
Portugal	150/100= 3/2	100/150= 2/3

This table shows that

In England, 1 unit of cloth = 3/4 units of wine. (Domestic exchange ratio of England)

In Portugal, 1 unit of wine= 2/3 units of cloth. (Domestic Exchange Ratio of Portugal)

Here, England has the lower opportunity cost of the two nations in producing cloth and Portugal has lower opportunity cost in producing wine. Thus, England has comparative advantage in producing cloth and Portugal has comparative advantage in producing wine. As long as the opportunity cost of production for a good differs in the two nations. One nation has a comparative advantage in the producing of one of the two goods, while the other nation has a comparative advantage in the production of the other good.

England will gain from trade if it can get more than 3/4 units of wine by exporting 1 unit of cloth. Likewise, Portugal gains from trade if it gets more than 2/3 unit of cloth by exporting 1 unit of wine. England gains from export so long it exports 80 units of cloth for more than 60 unit of wine. While Portugal gain if it gets 80 units of cloth for less than 120 units of wine.

Trade between two countries does not take place in case of equal cost differences. In this case, the opportunity cost of producing the two commodities is the same in both the countries. So, the production possibility curves will coincide with no possibility of gain from trade to either country. Here, the absolute advantage (or disadvantage) of each country with respect to the other is the same for both the commodities. Table 1.7 shows such situation. In this situation, the labour in county ‘A’ as well ‘B’ is twice as productive in commodity ‘X’ in comparison to production of commodity ‘Y’. As the internal cost and comparative cost are same in both the countries and there are no price differences, no mutually beneficial trade can take place.

Table 1.7

Commodities Countries	X	Y	Opportunity Cost Ratio
A	10	5	2:1
B	12	6	2:1

PRODUCTION POSSIBILITY CURVE

The production possibility curve (PPC) represents all the alternative combinations of two commodities that a nation can produce by fully utilizing all its factors of production. In other words, the production possibility curve shows the frontier beyond which production cannot be carried on with the available resources and technology.

Figure 1.3 depicts the production frontier of country A. With a given amount of productive resources, it can produce either 10 units of cloth (if it employs all resources in cloth production) or 20 units of wine (if all resources are used in wine production). Alternatively, it can have a combination of cloth and wine if resources are allocated for both. For example, it may have eight units of cloth and four units of wine, or six units of cloth and eight units of wine. If it reduces the output of cloth by one unit, it can increase the output of wine by two units because with the resources required to produce one unit of cloth, two units of wine can be produced.

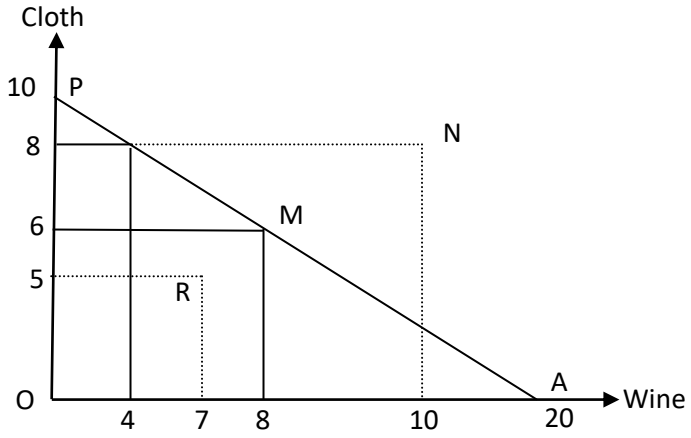

Fig. 1.3: PPC under Constant Costs

In short, any point on the production possibility curve (PPA) shows the combination of cloth and wine output when the productive resources are fully employed and allocated between cloth and wine in a certain production.

Any point above the PA line is beyond reach with the particular quantum of resources. For example, point N indicates a combination of eight units of cloth and ten units of wine which is impossible to obtain with the available resources. Again, when eight units of

cloth are produced, the remaining resources are sufficient to produce only four units of wine. Any point below the production possibility curve represents a combination of cloth and wine when the available resources are not fully employed. For example, point R represents a combination of five units of cloth and seven units of wine. When only five units of cloth are produced, the remaining resources if they are fully employed, can give an output of ten units of wine.

It may be clear from what has been explained above that we are measuring the cost of producing cloth in terms of the amount of wine foregone in order to produce one more unit of cloth and vice-versa. In other words, we are measuring the *opportunity cost* of producing a unit of the commodity.

The slope of the production possibility curve (PPA) represents the marginal rate of transformation (MRT) or the amount of the commodity that the nation must give up in order to get one more unit of the second commodity. If the nation faces constant costs or MRT, then its production possibility curve is a straight line as shown in Fig. 1.3 with slope equal to the constant opportunity costs or MRT and to the relative commodity prices in the nation.

In many cases, production is subject to the law of increasing opportunity costs or MRT. Under such conditions, the production possibility curve is concave to the origin as shown in Fig. 1.4.

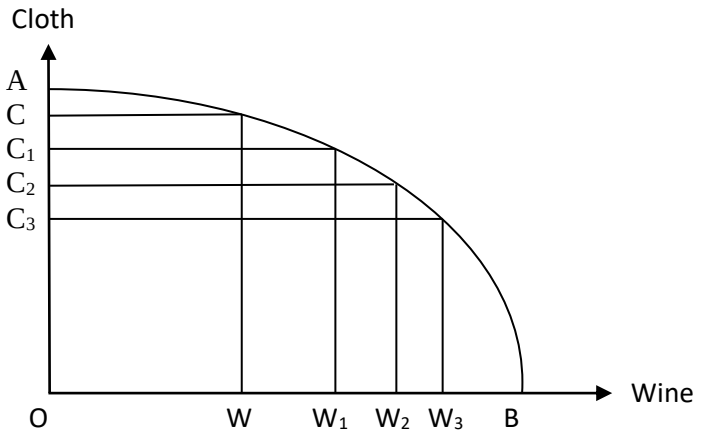

Fig. 1.4: PPC under Increasing Costs

In this figure 1.4: $AC=CC_1=C_1C_2=C_2C_3$ and $OW>WW_1>W_1W_2>W_2W_3$

Starting with OA output of cloth and zero of wine, if AC unit of cloth is given up, we can produce OW wine. But, if we give up further CC_1 output of cloth and reduce cloth production to C_1 level, the increase in wine output that can be achieved is WW_1, which is less than OW. The addition to the wine output that can be produced by giving up yet another equivalent amount of cloth is W_1W_2, which is still lower than WW_1 and so on. Thus, the amount of extra wine we can produce by decreasing production of cloth with a given amount of resources steadily decreases as we move downward along the PPC. This implies that opportunity cost of wine in terms of cloth is steadily increasing as we increase the production of wine and decrease the production of cloth. Conversely, for every additional unit of cloth, the amount of wine is to be given up. For the subsequent increases in the cloth output, the amount of wine to be given per unit of cloth increases from W_2W_3 to W_2W_1 and from W_1W to WO.

Under increasing costs, a nation will choose a combination of output at which the MRT will equal the equilibrium relative commodity price in the nation. The equilibrium relative commodity price in the nation is determined by the supply and demand conditions in the nation. This is presented in Fig. 1.5. If PP represents the price ratio in the country, production will be at point F, representing OC_1 cloth and OW_1 wine, because at F, PP, which represents the price ratio, is tangent to the PPC. When the price ratio is PP, if the country were to produce at some other point, for example A, the opportunity cost of producing more wine would be lower than its price which implies that producers could increase their profits by producing more wine. The profit will be maximum at point F at which the relative prices and opportunity costs are equal.

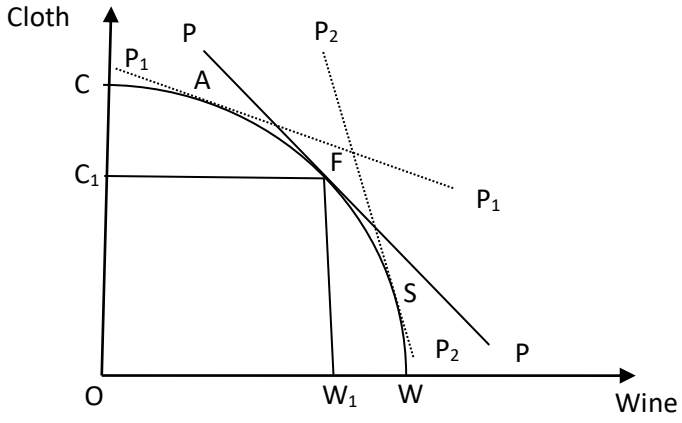

Fig. 1.5: PPC and Optimum Combination of Output

If the price of cloth increases and P_1P_1 becomes the new price ratio, producers will reallocate resources to produce more cloth and move to A at which the price line is tangent to

the production frontier. On the other hand, if the cloth price falls and price ratio changes to P_2P_2, production of wine will be increased by reducing the output of cloth and a new equilibrium will be established at point S.

Changes in factor supplies will cause a shift in the PPC of a nation, *ceteris paribus*. An increase in the factors of production will cause an outward shift and a decrease will cause an inward shift of the production frontier. In Fig. 1.6 given below, the X-axis represents labour intensive goods and the Y-axis represents capital intensive goods. In this figure, AA represents the original PPC. Supposing that all the factors of production increase in the same proportion, it will cause a shift of the PPC upward and the new PPC, A_1A_1 will be parallel to the old PPC, AA.

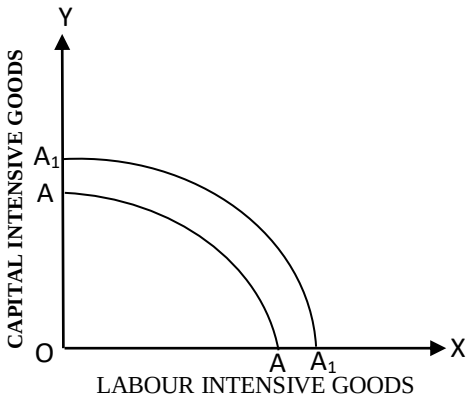

Fig. 1.6: Changes in Factor Supplies and Shift in PPC

If only one of the factors of production increases or if the increase in the factors of production is disproportionate, the shape of the new PPC will be different from that of the old one. Assume that in Fig. 1.7, the X-axis represents labour intensive goods and the Y-axis represents capital intensive goods. If only the supply of labour increases, the PPC will shift from AA to A_2A_2 as shown below in Fig. 1.7 implying that the country is now capable of producing a much larger amount of labour intensive commodities.

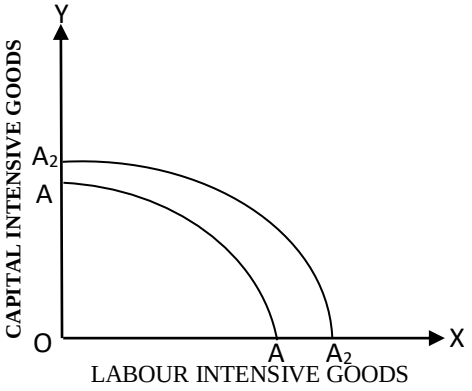

Fig. 1.7: Changes in Factor Supplies and Shift in PPC

Again, if only the supply of capital increases, the PPC will shift from AA to A_3A_3 as shown in Fig. 1.8. It implies that the country is now capable of producing a much larger amount of capital intensive commodities.

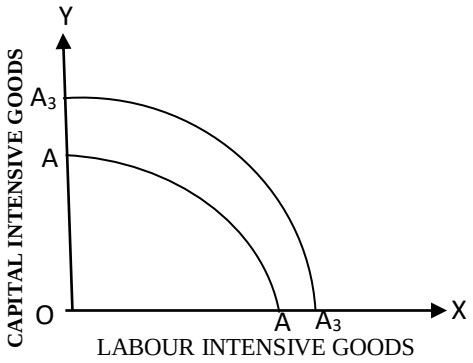

Fig. 1.8: Changes in Factor Supplies and Shift in PPC

Technological progress increases the productivity of a nation's factors of production and has the same general effect on the production possibilities as an increase in the supply of its factors of production. In respect of technological advances, we may consider the following three different cases.

Neutral Innovation: This refers to an innovation that increases the productivity of all factors by the same proportion. This will cause a uniform or symmetrical outward shift in the nation's PPC as shown in Fig. 1.6.

Labour Saving Innovation: This refers to an innovation that increases the labour productivity. *Ceteris paribus*, a labour saving innovation will cause the PPC to shift from AA to A_2A_2 as shown in Fig. 1.7.

Capital Saving Innovation: A capital saving innovation increases the productivity of capital and causes the PPC curve to shift from AA to A_3A_3 as shown in 1.8.

Check Your Progress

1. Explain the Haberler's opportunity cost theory
2. Define the production possibility curve.

1.5 Trade under Increasing, Decreasing and Constant Cost Conditions

A production-possibility curve (Samuelson) in the international trader literature is also known as the substitution curve (Haberler), production indifference curve (Lerner) and transformation curve. It is a simple device for depicting all possible combinations of two goods which a nation might produce with a given resources. The slope of the curve at any point represents the ratio of the marginal opportunity costs of the two commodities. That is, the marginal opportunity cost of an extra unit of one commodity is the necessary reduction in the output of the other. The shape of the curve depends on the assumptions made about the opportunity costs. It may be assumed that opportunity cost is constant. In this case the amount of G given up to allow additional production of D is the same regardless of the amount of G and D being produced.

In contrast, it may be assumed that the opportunity cost is one of increasing cost; this means that every time an additional unit of D is produced, ever increasing amount of G must be given up in order to provide the resources for expanding D's output. Therefore, it may be assumed that the opportunity cost is one of constant cost, increasing cost and decreasing cost.

Constant cost means that the MRT is constant. It is the result of each factor of production being equally effective in producing both goods, i.e., a factor of production is not more suited to the production of one good than two other.

In analysing the problem of international trade under decreasing costs, Professor F. B. Graham subscribes to an opposite view in the classical dogma that specialisation based on comparative cost advantage leads to an increase in the volume of output of the trading countries.

1.5.1 Trade under Constant Costs

The marginal rate of transformation (MRT) is the amount of one good G which must be given up in order to release resources necessary to produce an additional unit of second good D.

Table 1.8: Alternative Outputs of G and D when all world's Resources are utilized

Combination	G	D	MRT
a	40	0	8/1
b	32	1	8/1
c	24	2	8/1
d	16	3	8/1
e	8	4	8/1
f	0	5	8/1

The figures of the table 1.8 are illustrated in the Fig. 1.9.

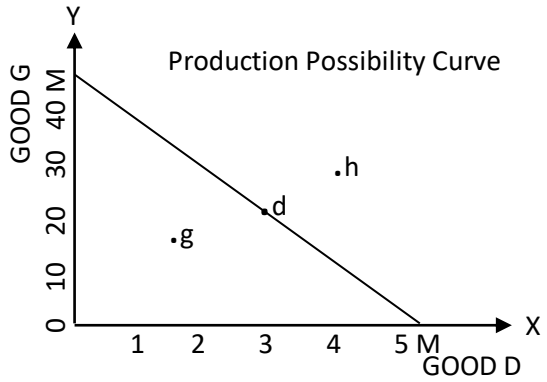

Fig. 1.9

In the table, each additional unit of D has the same cost in terms of G, resources capable of producing 8 units of G must be diverted to increase output of D by one unit, regardless of the level of production of G and D. Constant cost means that the MRT is constant. It is the result of each factor of production being equally effective in producing both goods, i.e., a factor of production is not more suited to the production of one good than two other.

The production possibilities curve (MM) then shows all possible combinations of two commodities which country W might produce. The particular combination to be chosen lies on the curve. Points inside the curve such as (g) -represent outputs of less than full employment and are therefore not considered. Points beyond the curve, such as (h), require more resources than the country possesses and are therefore also beyond consideration.

The full employment output under consideration must be on the production possibilities curve. The slope of the production possibilities curve is the marginal rate of transformation. The slope shows the reduction required in one commodity in order to increase the output of the second commodity. Since the MRT is constant the slope must be constant and thus the production possibilities curve must be straight line. It can be seen that the MRT of G for D is 8 to 1; reducing the output of D by one unit will provide resources sufficient to expand output of G by 8 units.

Country, Z has a comparative advantage in the production of D; less G has to be given up for each additional unit of D. On the other hand, country W has the comparative advantage in the production of G and less D, which has to be given up to produce an additional unit G.

With constant returns to scale, trade can take place only when each nation has a different MRT. The gains from trade for a particular nation depend on how much the international exchange rates differ from that nation's MRT. The greater the difference, the greater is the gains from trade. The gains from trade rest further upon the amount of trade taking place. Obviously a larger volume of trade allows larger gains from trade and a greater increase in the standard of living.

Under constant cost, the exchange ratio is determined solely by costs; the demand determines only the allocation of available factors between the two branches of production, and hence the relative quantities of G and D which are produced. In this case, demand has nothing to be with the price.

1.5.2 Trade under Increasing Costs

It would seem unlikely that most nations would be confronted with constant costs over the substantial range of production. Constant costs imply that all resources are of equal quality and that they are all equally suited to the production of both commodities.

Increasing opportunity costs mean that for each additional unit of G produced, ever-increasing amounts of D must be given up. At first as production G is increased, resources suited to G but not to D are used to increase greatly the output of G and reduce the output of

D by little. But eventually, the resources being transferred are not well-suited to G but highly suited to D and consequently G's production increases by little and D's fall by a great deal. Increasing opportunity costs can be explained by the use of a table 1.9 and Fig. 1.10.

Table 1.9: Alternative Combinations of G and D with All Resources Fully Employed

G	D	MRT
40	0	-
36	1	4/1
30	2	6/1
20	3	10/1
0	4	20/1

Suppose we take a given amount of land, labour and capital and experimentally find out how much G and D we can produce as shown in Table 1.9. If all our resources are devoted to the production of G, we find that we can produce 40 units of G. if we want 36 units of G; we find that we can have one unit of D, with all our resources fully employed. If we want two units of D, we can have only 30 units of G. With 3 units of D, we can have only 20 units of G. The first unit of D costs 4 units of G, the second 6 and the third 10.

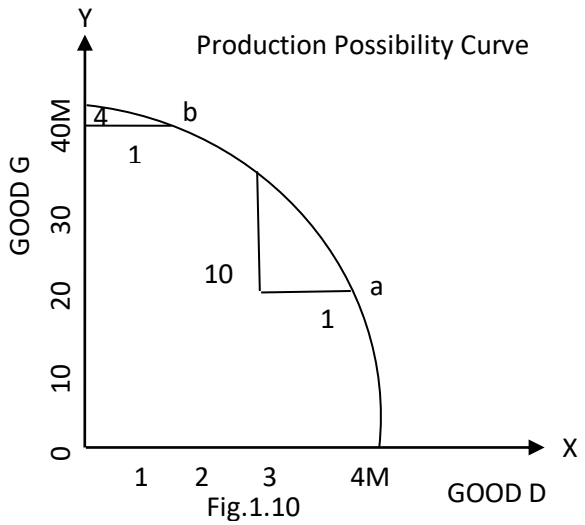

Fig.1.10

The MRT of G for D is increasing; larger amounts of G must be given up for additional units of D. This is what is meant by increasing opportunity costs. When costs are increasing, the demand affects the exchange ratio also, since the relative costs the substitution

ratio will vary with the relative demand for G and D. Given the combination of G and D which is demanded, the exchange ratio between them will equal their substitution ratio at that point. In other words, the ratio at which G and D will exchange against one another in the market will be equal to the ratio of their marginal costs. Any other situation would be one of disequilibrium: there will be an incentive to produce more G and less D or conversely. The data in the table 1.9 may be represented graphically as a transformation curve as shown in Fig. 1.10.

First, in this Fig. 1.10, combinations of 40G & 0D, 36G & 1D, 30G & 2D, 20G & 3D and 0G & 4D are plotted; the connected points yield a production possibilities curve, the slope of which is the MRT. The production possibilities curve is concave toward the origin, showing that the substitution rate is not constant but increasing.

At a combination of 20 G and 3 D, represented by point a in this figure, one unit of D may be substituted in production for 10 of G. But at the combination of 36 G and 1 D, represented by point b in the figure, the resources required to produce 1 D can be used alternatively to produce 4 additional unit of G. Now, the production possibilities curve shows all possible combination of G and D which can be produced at full employment. To be inside the curve is to be at less than full employment. There are not sufficient resources to go beyond the curve.

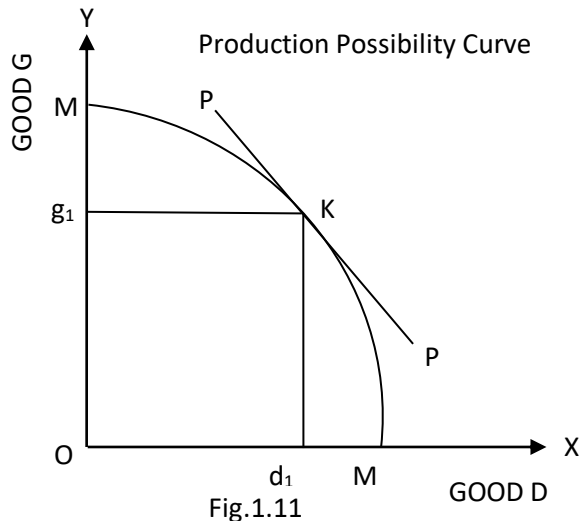

Fig.1.11

A price ratio must be introduced in the graph of production possibilities curve in order to determine the output of two commodities. With the assumption, that nation W has a closed

economy the domestic price-ratio is drawn tangent to the production possibilities curve in the Fig. 1.11. The equilibrium point is at (K), where og_1 of G and od_1 of D are produced and consumed.

'A straight line tangent to the transformation curve indicates the ratio of market prices of the two commodities, and the condition of tangency expresses equilibrium in production, that is, equality between prices and marginal costs stated in opportunity terms. Domestic demand conditions enter into this construction via community indifference curves, or simply as a consumption point determined by a given arrangement of production and income distribution." In an open economy, the world price ratios enter to reveal the possible positions of equilibrium with international trade.

Finally, tangency of a line representing the equilibrium international price ratio to both transformation function and community indifference curve indicates equilibrium in exchange, that is:

(i) Equality domestically between the marginal rate of substitution in consumption and marginal rate of transformation in production, and

(ii) Equality of the value of exports and the value of imports.

1.5.3 Trade under Conditions of Decreasing Costs

Decreasing costs refer to a fall in average or marginal costs as output expands. In a pure theoretical sense, Haberler contends that, decreasing costs are the consequence of increase in demand for the product led by foreign trade. In fact, the decreasing costs result when increasing returns tend to operate on account of internal and external economies of large-scale production.

Graham's Thesis

In analysing the problem of international trade under decreasing costs, Professor F. B. Graham subscribes to an opposite view in the classical dogma that specialisation based on

comparative cost advantage leads to an increase in the volume of output of the trading countries.

His contention is that under free trade conditions, when a country is induced to specialisation on the basis of comparative cost industries and give up decreasing-cost industries, its aggregate real income will be less than before trade. Suppose two goods, wine and cloth, are produced and wine is subject to diminishing returns or increasing cost while cloth has increasing returns or decreasing costs.

Now the country having comparative cost advantage in wine, when it specialises in producing wine, shifts its resources from increasing returns industry to diminishing returns industry and to that extent its total real income will be reduced after specialisation under free trade, while, the other country specialising in decreasing cost industry (in producing cloth) will be benefited in the process.

To illustrate the point, say England and Portugal produce cloth and wine. Before trade, the price ratio in England is 100 units of wine to 100 units of cloth, and that in Portugal it is 100 units of wine to 80 units of cloth. Thus, England has a comparative cost advantage in producing cloth and Portugal has in wine. Let us assume that the international exchange ratio is set as: 100 units of wine to 100 units of cloth.

Now, when Portugal concentrates on wine production, her cloth production contracts, say by 8,000 units. The diversified factors from cloth to wine will produce less than 10,000 units of wine, say 8,500 units on account of diminishing returns.

Exchange ratio being 1: 1.8,500 units of wine will get in exchange 8,500 units of cloth from England. Now, again if Portugal contracts her cloth production by shifting the same amount of the factors as before for employing them in wine production, the cloth output this time may be curtailed by 7,000 units because cost increases in the contracting decreasing cost industry (cloth industry).

On the other hand, wine output rises only to 7,300 units due to the operation of law of diminishing returns. Under trade these 7,300 units of wine will get 7,30(1 units of English cloth in exchange. Hence, Portugal's after trade position is: 8,500 + 7,300 = 15,800 (11 units

of cloth, while before trade, for the same efforts it was originally producing 8,000 + 8,000= 16,000 units of cloth domestically. That means, under foreign trade Portugal loses 200 units of cloth,

From the above example, it follows thus, that guided by the comparative cost doctrine, an unfortunate country which specialises in increasing cost industries against the decreasing coat industries becomes worse off with the expansion of trade, its real income would decline in terms of both goods than in the absence of trade. For this reason, Graham strongly advocates for the protection policy rather than free trade for such an unfortunate country.

Haberler, however, vehemently criticised Graham's contention of decreasing costs. Graham' conclusion would be valid only if his assumption that cost decreases with expansion of output and increases with contraction in the decreasing cost industry is acceptable. Graham's conclusion that decreasing cost industry contracts due to foreign competition rests on the assumption that there is perfect competition in that industry.

Haberler regards this as an impossible phenomenon, as the industry subject to decreasing cost will tend to have monopoly rather than competition. And when there is monopoly in an industry, the monopolist has full control over his supply, so he will expand his output to lower his marginal cost, under a situation of falling price, and not contract the output, as visualised by Graham.

Moreover, Graham has failed to distinguish between average and marginal relationship, while setting out his analysis. It is the marginal and not the average cost which is the main determinant of equilibrium output and price. Hence, no resources will be transferred from one industry to another, when a loss in the marginal revenue product results thereby. It is impossible to see under profit maximising rule followed by the producer that he transfers resources and forgoes production of Q units of cloth to get Z units of wine, when Z is less than Q.

Haberler, however, contends that Graham's thesis has some validity when decreasing costs is the outcome of external economies enjoyed by all the firms, which are internal to the industry as a whole.

In this case only, each firm will not be induced to expand even though, industry may gain by further expansion. And when there is increasing foreign competition, the industry may even contract its output which would deprive the firm of its previous external economies, so costs will rise with the contraction of industry. Under this situation, protection is essential. But, here too, it is difficult to have an empirical measurement of external economies to devise an appropriate protection policy.

Most of the modern economists, however, do not subscribe to Graham's thesis and affirm that, decreasing costs tend to strengthen rather than weaken the case of international trade, which leads to complete specialisation in due course.

It has been said that when monopoly emerges under decreasing costs condition, protection will only strengthen the monopolistic position; a free trade, which will encourage competition, will help in preventing the growth of undue monopoly. For this reason, decreasing costs due to internal economies becomes the most commendable argument for advocating free trade rather than protection.

Check Your Progress

1. Define trade under conditions of increasing costs.
2. Define trade under conditions of constant costs.
3. Define trade under conditions of decreasing costs.

1.6 Summary

Due to differences in climate, natural resources, geographical situation and efficiency of labour, a country can produce one commodity at a lower cost than the other because of these comparative advantages.

A country will export those commodities in which its comparative production costs are less, and will import those commodities in which its comparative production costs are high.

The Ricardian theory of comparative costs was based on a number of simplifying assumptions. The theory has been elaborated and modified by economists like J.S. Mill,

Alfred Marshall and Taussig considering more than two commodities and more than two countries.

Opportunity cost of a commodity is defined as the amount of a second commodity that must be given up to release just enough resources to produce one additional unit of the first. Haberler used this concept to explain the law of comparative advantage.

The production possibility curve (PPC) represents all the alternative combinations of two commodities that a nation can produce by fully utilizing all its factors of production. In other words, the production possibility curve shows the frontier beyond which production cannot be carried on with the available resources and technology.

1.7 Key Wods

Comparative advantages: A country can produce one commodity at a lower cost than the other because of comparative advantages such as favourable climate, natural resources, geographical situation and efficiency of labour.

Opportunity cost: Opportunity cost of a commodity is defined as the amount of a second commodity that must be given up to release just enough resources to produce one additional unit of the first.

Production Possibility Curve: The production possibility curve (PPC) represents all the alternative combinations of two commodities that a nation can produce by fully utilizing all its factors of production.

Innovation: Innovation is the creation, development and implementation of a new product, process or service, with the aim of improving efficiency, effectiveness or competitive advantage. Innovation is the creation of something that improves the way we live our lives.

Neutral Innovation: This refers to an innovation that increases the productivity of all factors by the same proportion.

Labour Saving Innovation: This refers to an innovation that increases the labour productivity.

Capital Saving Innovation: A capital saving innovation increases the productivity of capital and causes the PPC curve to shift.

1.8 Answer to check your progress

a) Define trade under conditions of increasing costs.
b) Define trade under conditions of constant costs.
c) Define trade under conditions of decreasing costs.
d) Explain the Haberler's opportunity cost theory
e) Define the production possibility curve.
f) Explain the modified Ricardian theory.
g) Why is modified Ricardian theory superior to Ricardian theory?
h) Define introduction of transfer costs in modified Ricardian theory.
i) Define Ricardo's Model of comparative advantages.
j) What do you mean by gains from trade?
k) What are the drawbacks of Ricardo's Model of comparative advantages?

1.9 Questions and Answers

1.9.1 Short-Answer Questions (5 Marks)

1. What are the criticisms of Ricardo's Model of Comparative Advantages?

1. **Unrealistic Assumption of Labour Cost:** The most severe criticism of the comparative advantage doctrine is that it is based on the labour theory of value. In calculating production costs, it takes only labour costs and neglects non-labour costs involved in the production of commodities. This is highly unrealistic because it is money costs and not labour costs that are the basis of national and international transactions of goods. Further, the labour cost theory is based on the assumption of homogeneous labour. This is again unrealistic because labour is heterogeneous of different kinds and grades, some specific or specialized, and other non-specific or general.

2. **No Similar Tastes:** The assumption of similar tastes is unrealistic because tastes differ with different income brackets in a country. Moreover, they also change with the growth on an economy and with the development of its trade relations with other countries.
3. **Assumption of Fixed Proportions:** The theory of comparative costs is based on the assumption that labour is used in the same fixed proportions in the production of all commodities. This is essentially a static analysis and hence unrealistic. As a matter of fact, labour is used in varying proportions in the production of commodities. For instance, less labour is used per unit of capital in the production of textiles. Moreover, some substitution of labour for capital is always possible in production.
4. **Unrealistic Assumption of Constant Costs:** The theory is based on another weak assumption that an increase of output due to international specialisations if followed by constant costs. If the large-scale of production reduces costs, the comparative advantage will be increased. On the other hand, if increased output is the result of increased cost of production, the comparative advantage will be reduced, and in some cases it may even disappear.
5. **Ignores Transport Costs:** Ricardo ignores transport costs in determining comparative advantage in trade. This is highly unrealistic because transport costs play an important role in determining the pattern of world trade. Like economies of scale, it is an independent factor of production. For instance, high transport costs may nullify the comparative advantage and the gain from international trade.
6. **Mobility of Factor:** The doctrine assumes that factors of production are perfectly mobile internally and wholly immobile internationally. This is not realistic because even within a country factors do not move freely from one industry to another or from one region to another. The greater the degree of specialisation in an industry, the less is the factor mobility from one industry to another. Thus, factor mobility influences costs and hence the pattern of international trade.
7. **Two-Country two- Commodity Model**: The Ricardian model is related to trade between two countries on the basis of two commodities. This is again unrealistic because in actuality, international trade is among many countries trading in many commodities.
8. **Unrealistic Assumption of Free Trade:** Another serious weakness of the doctrine is that it assumes perfect and free world trade. But in reality, world trade is not free.

Every country applies restrictions on the free movement of goods to and from other countries. Thus, tariffs and other trade restrictions affect world imports and exports. Moreover, products are not homogeneous but differentiated. By neglecting these aspects, the Ricardian theory becomes unrealistic.

9. **Unrealistic Assumptions of Full Employment:** Like all classical theories, the theory of comparative advantage is based on the assumption of full employment. This assumption also makes the theory static. Keynes falsified the assumption of full employment and proved the existence of under-employment in an economy. Thus, the assumption of full employment makes the theory unrealistic.
10. **Self-Interest Hinders its Operation:** The doctrine does not operate if a country having a comparative disadvantage does not wish to import a commodity from the other country due to strategic, military or development considerations. Thus, often self-interest stands in the operation of the theory of comparative costs.

2. What is the introduction of transfer costs in modified Ricardian Theory?

The Ricardian theory assumed that the transfer of goods between countries does not involve any cost. Quite obviously, certain transfer costs like the cost of transport are involved in international trade. It is not difficult to introduce the costs of transfer to the comparative cost theory. The introduction of transfer costs, however, decreases the extent of the international division of labour, because if the cost of transfer of a commodity is more than the difference in the costs of production between two countries, it will not be traded between them. For instance, with reference to our previous example, if the cost of the transfer of wine from Portugal to England is more than $16 per unit, England is not likely to import wine from Portugal because the landed cost of Portuguese wine in England will be more than $ 120 (which is the price of the domestic wine.)

In the absence of transfer costs, the condition for the establishment of trade between country A and B is that $X_a/X_b<Y_a/Y_b$ where Xa and Ya denote the number of units of the commodities X and Y which one unit of labour can produce in county A. X_b and Yb denote the number of units of the commodities X and Y which one unit of labour can produce in county B. Introduction of transfer costs requires the fulfillment of two more conditions for the establishment of trade, viz. $X_a/X_b^1 <Y_a/Y_b$ and $X_a/ X_b<Y_a^1<Ya^1/ Y_b$ where X_b^1 denotes the number of units of commodity X which can be produced and transferred to A with one

unit of labour in B, and Y_a^1 denotes the number of unit of commodity Y which can be produced and transported to B with one unit of labour in A.

3. How are more than two commodities considered in Modified Ricardian Theory?

Though Ricardo considered only two commodities, the theory can be applied to cases in which not merely two commodities but any number of goods is produced in the two countries. If Countries I and II exchange a number of commodities between them, according to the doctrine of comparative cost differences, Country I must be enjoying a comparative advantage over Country II in all its export commodities relatively to all its import commodities. Similarly, Country II must be enjoying a comparative advantage over Country I in all its export commodities relatively to all its import commodities.

To get an idea of which commodities a country exports and imports, we may arrange various goods in order of the comparative advantage of Country I over Country II, so that if we call them a,b,c,d,e,….$a_1/a_2 < b_1/b_2 < c_1/c_2 < d_1/d_2 < e_1/e_2$ … Country I will export commodities on the left side and import commodities on the right side. County II, On the other hand, specialises in the production of commodities on the right side and imports those on the left side. It is not possible that Country I exports a, b, d and imports c. If it imports c, it must necessarily be importing d (assuming, of course, that d has a demand in Country I).

Relying only on the cost data, we cannot determine the exact position of this dividing line. We can say only that it must be drawn in such a manner that Country I enjoys a comparative advantage in every commodity it exports relatively to every commodity it imports. The dividing line will be at a position at which the balance of payments will be in equilibrium. The point at which the balance of payments will be in equilibrium and determined by the reciprocal demand of the two countries for each other's product. An examination of Table 1.4 will make the meaning of the algebraic expression clear.

Table 1.4: Production Costs of Goods in two Countries

Kinds of Godds		A	B	C	D	E	F	G	H	I	J	K	L
Real cost per unit, expressed in units of labour	In country 1* ($a_1, b_1, c_1, \ldots$)	30	30	30	30	30	30	30	30	30	30	30	30
	In country II ($a_2, b_2, c_2, ..$)	55	50	46	40	32	30	27	25	20	15	12	10

*in this example, the units of quantity of various commodities are chosen in such a way that the cost per unit of every commodity in Country I is the same. Hence, the number of units of labour per unit of every commodity is equal (30).

If we assume that money wages are the same in both the countries, we can easily say which goods will be exported and which will be imported. Country I will export goods A to E and County II will export goods L to G. It depends upon the reciprocal demand whether or not this situation maintains equilibrium in balance of payments.

4. How are more than two countries considered in Modified Ricardian Theory?

Though the Ricardian model consists of two countries only, the theory is equally applicable to a situation in which more than two countries participate. Each country will specialise in the commodity or commodities in the production of which it has comparative advantage over the other and import from other countries goods which can be produced domestically only at a comparative disadvantage.

A country may import a commodity from more than one country just as it may export a commodity to more than one country. Assume that the international price of commodity X is $ 100 per unit. Now, all countries who can produce at a cost of less than $100 per unit, can export X. However, the gains to the different exporting countries may vary. The country with the least production cost will gain the maximum (per unit of export) and vice versa. All countries with costs of production of over $ 100 per unit of X will gain by importing it rather than producing domestically at a higher cost. The extent of gain from import also may vary between the various

importing countries. The gain (per unit) will be the maximum for the importing country with the highest domestic cost of production of X and vice versa.

5. What is Production Possibility Curve? Explain

The production possibility curve (PPC) represents all the alternative combinations of two commodities that a nation can produce by fully utilizing all its factors of production. In other words, the production possibility curve shows the frontier beyond which production cannot be carried on with the available resources and technology.

Figure 1.3 depicts the production frontier of country A. With a given amount of productive resources, it can produce either 10 units of cloth (if it employs all resources in cloth production) or 20 units of wine (if all resources are used in wine production). Alternatively, it can have a combination of cloth and wine if resources are allocated for both. For example, it may have eight units of cloth and four units of wine, or six units of cloth and eight units of wine. If it reduces the output of cloth by one unit, it can increase the output of wine by two units because with the resources required to produce one unit of cloth, two units of wine can be produced.

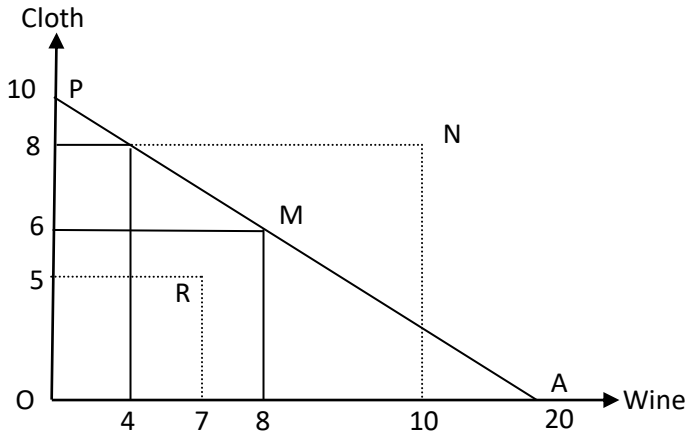

Fig. 1.3: PPC under Constant Costs

In short, any point on the production possibility curve (PPA) shows the combination of cloth and wine output when the productive resources are fully employed and allocated between cloth and wine in a certain production.

Any point above the PA line is beyond reach with the particular quantum of resources. For example, point N indicates a combination of eight units of cloth and ten units of wine which is impossible to obtain with the available resources. Again, when eight units of cloth are produced, the remaining resources are sufficient to produce only four units of wine. Any point below the production possibility curve represents a combination of cloth and wine when the available resources are not fully employed. For example, point R represents a combination of five units of cloth and seven units of wine. When only five units of cloth are produced, the remaining resources if they are fully employed, can give an output of ten units of wine.

6. Explain Trade under Constant Costs

The marginal rate of transformation (MRT) is the amount of one good G which must be given up in order to release resources necessary to produce an additional unit of second good D.

Table 1.8: Alternative Outputs of G and D when all world's Resources are utilized

Combination	G	D	MRT
a	40	0	8/1
b	32	1	8/1
c	24	2	8/1
d	16	3	8/1
e	8	4	8/1
f	0	5	8/1

The figures of the table 1.8 are illustrated in the Fig. 1.9.

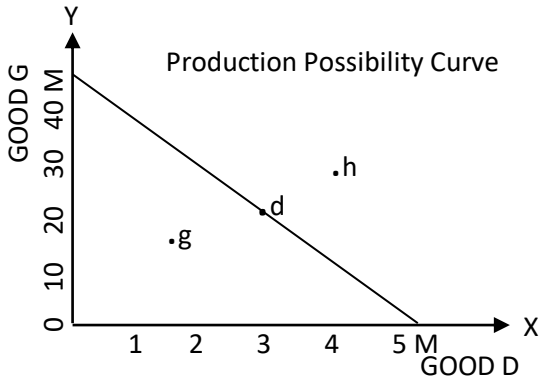

Fig. 1.9

In the table, each additional unit of D has the same cost in terms of G, resources capable of producing 8 units of G must be diverted to increase output of D by one unit, regardless of the level of production of G and D. Constant cost means that the MRT is constant. It is the result of each factor of production being equally effective in producing both goods, i.e., a factor of production is not more suited to the production of one good than two other.

The production possibilities curve (MM) then shows all possible combinations of two commodities which country W might produce. The particular combination to be chosen lies on the curve. Points inside the curve such as (g) -represent outputs of less than full employment and are therefore not considered. Points beyond the curve, such as (h), require more resources than the country possesses and are therefore also beyond consideration.

The full employment output under consideration must be on the production possibilities curve. The slope of the production possibilities curve is the marginal rate of transformation. The slope shows the reduction required in one commodity in order to increase the output of the second commodity. Since the MRT is constant the slope must be constant and thus the production possibilities curve must be straight line. It can be seen that the MRT of G for D is 8 to 1; reducing the output of D by one unit will provide resources sufficient to expand output of G by 8 units.

Country, Z has a comparative advantage in the production of D; less G has to be given up for each additional unit of D. On the other hand, country W has the comparative advantage in the production of G and less D, which has to be given up to produce an additional unit G.
With constant returns to scale, trade can take place only when each nation has a different MRT. The gains from trade for a particular nation depend on how much the international exchange rates differ from that nation's MRT. The greater the difference, the greater is the gains from trade. The gains from trade rest further upon the amount of trade taking place. Obviously a larger volume of trade allows larger gains from trade and a greater increase in the standard of living.

Under constant cost, the exchange ratio is determined solely by costs; the demand determines only the allocation of available factors between the two branches of production, and hence the relative quantities of G and D which are produced. In this case, demand has nothing to be with the price.

7. Explain Trade under Increasing Costs.

It would seem unlikely that most nations would be confronted with constant costs over the substantial range of production. Constant costs imply that all resources are of equal quality and that they are all equally suited to the production of both commodities.

Increasing opportunity costs mean that for each additional unit of G produced, ever-increasing amounts of D must be given up. At first as production G is increased, resources suited to G but not to D are used to increase greatly the output of G and reduce the output of D by little. But eventually, the resources being transferred are not well-suited to G but highly suited to D and consequently G's production increases by little and D's fall by a great deal. Increasing opportunity costs can be explained by the use of a table 1.9 and Fig. 1.10.

Table 1.9: Alternative Combinations of G and D with All Resources Fully Employed

G	D	MRT
40	0	-
36	1	4/1
30	2	6/1
20	3	10/1
0	4	20/1

Suppose we take a given amount of land, labour and capital and experimentally find out how much G and D we can produce as shown in Table 1.9. If all our resources are devoted to the production of G, we find that we can produce 40 units of G. if we want 36 units of G; we find that we can have one unit of D, with all our resources fully employed. If we want two units of D, we can have only 30 units of G. With 3 units of D, we can have only 20 units of G. The first unit of D costs 4 units of G, the second 6 and the third 10.

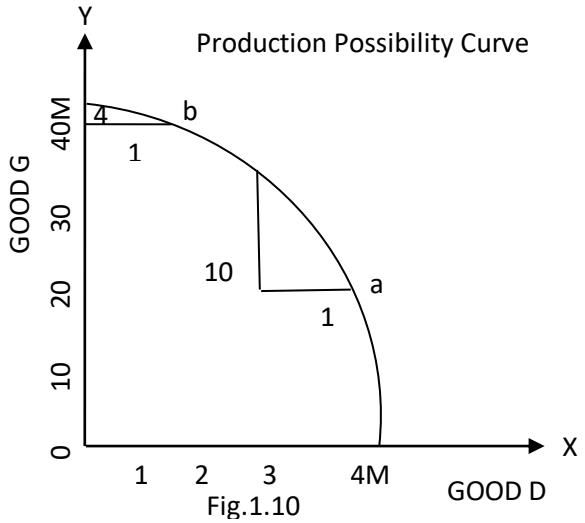

Fig.1.10

The MRT of G for D is increasing; larger amounts of G must be given up for additional units of D. This is what is meant by increasing opportunity costs. When costs are increasing, the demand affects the exchange ratio also, since the relative costs the substitution ratio will vary with the relative demand for G and D. Given the combination of G and D which is demanded, the exchange ratio between them will equal their substitution ratio at that point. In other words, the ratio at which G and D will exchange against one another in the market will be equal to the ratio of their marginal costs. Any other situation would be one of disequilibrium: there will be an incentive to produce more G and less D or conversely. The data in the table 1.9 may be represented graphically as a transformation curve as shown in Fig. 1.10.

First, in this Fig. 1.10, combinations of 40G & 0D, 36G& 1D, 30G & 2D, 20G & 3D and 0G & 4D are plotted; the connected points yield a production possibilities curve, the slope of which is the MRT. The production possibilities curve is concave toward the origin, showing that the substitution rate is not constant but increasing.

At a combination of 20 G and 3 D, represented by point a in this figure, one unit of D may be substituted in production for 10 of G. But at the combination of 36 G and 1 D, represented by point b in the figure, the resources required to produce 1 D can be used alternatively to produce 4 additional unit of G. Now, the production possibilities curve shows all possible combination of G and D which can be produced at full employment. To be inside the curve is to be at less than full employment. There are not sufficient resources to go beyond the curve.

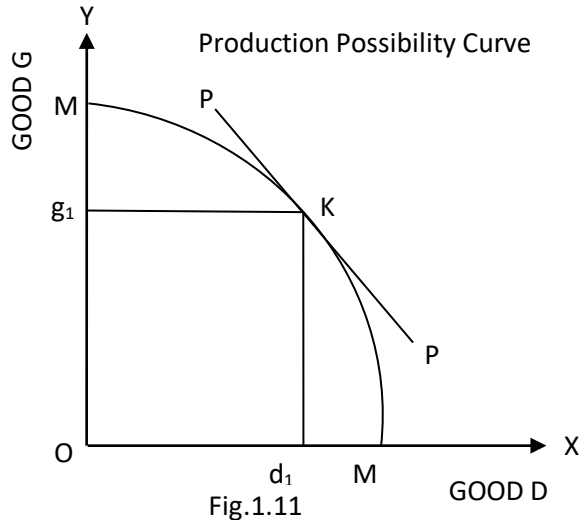

Fig.1.11

A price ratio must be introduced in the graph of production possibilities curve in order to determine the output of two commodities. With the assumption, that nation W has a closed economy the domestic price-ratio is drawn tangent to the production possibilities curve in the Fig. 1.11. The equilibrium point is at (K), where og_1 of G and od_1 of D are produced and consumed.

'A straight line tangent to the transformation curve indicates the ratio of market prices of the two commodities, and the condition of tangency expresses equilibrium in production, that is, equality between prices and marginal costs stated in opportunity terms. Domestic demand conditions enter into this construction via community indifference curves, or simply as a consumption point determined by a given arrangement of production and income distribution." In an open economy, the world price ratios enter to reveal the possible positions of equilibrium with international trade.

Finally, tangency of a line representing the equilibrium international price ratio to both transformation function and community indifference curve indicates equilibrium in exchange, that is:

(i) Equality domestically between the marginal rate of substitution in consumption and marginal rate of transformation in production, and

(ii) Equality of the value of exports and the value of imports.

8. Explain Trade under Conditions of Decreasing Costs.

Decreasing costs refer to a fall in average or marginal costs as output expands. In a pure theoretical sense, Haberler contends that, decreasing costs are the consequence of increase in demand for the product led by foreign trade. In fact, the decreasing costs result when increasing returns tend to operate on account of internal and external economies of large-scale production.

In analysing the problem of international trade under decreasing costs, Professor F. B. Graham subscribes to an opposite view in the classical dogma that specialisation based on comparative cost advantage leads to an increase in the volume of output of the trading countries.

His contention is that under free trade conditions, when a country is induced to specialisation on the basis of comparative cost industries and give up decreasing-cost industries, its aggregate real income will be less than before trade. Suppose two goods, wine and cloth, are produced and wine is subject to diminishing returns or increasing cost while cloth has increasing returns or decreasing costs.

Now the country having comparative cost advantage in wine, when it specialises in producing wine, shifts its resources from increasing returns industry to diminishing returns industry and to that extent its total real income will be reduced after specialisation under free trade, while, the other country specialising in decreasing cost industry (in producing cloth) will be benefited in the process.

To illustrate the point, say England and Portugal produce cloth and wine. Before trade, the price ratio in England is 100 units of wine to 100 units of cloth, and that in Portugal it is 100 units of wine to 80 units of cloth. Thus, England has a comparative cost advantage in producing cloth and Portugal has in wine. Let us assume that the international exchange ratio is set as: 100 units of wine to 100 units of cloth.

Now, when Portugal concentrates on wine production, her cloth production contracts, say by 8,000 units. The diversified factors from cloth to wine will produce less than 10,000 units of wine, say 8,500 units on account of diminishing returns.

Exchange ratio being 1: 1.8,500 units of wine will get in exchange 8,500 units of cloth from England. Now, again if Portugal contracts her cloth production by shifting the same amount of the factors as before for employing them in wine production, the cloth output this time may be curtailed by 7,000 units because cost increases in the contracting decreasing cost industry (cloth industry).

1.9.2 Long-Answer Questions

1. Explain the Ricardo's Model of Comparative Advantages.

Assumptions

The Ricardian theory of comparative advantage is based on the following assumptions:

1. There are only two countries, say England and Portugal.
2. They produce the same two commodities say, wine and cloth.
3. There are similar tastes in both countries.
4. Labour is the only factor of production.
5. The supply of labour is unchanged.
6. All units of labour are homogeneous.
7. Prices of two commodities are determined by labour cost, i.e, the number of labour-units employed to produce each.
8. Commodities are produced under the law of constant costs or returns.
9. Technological knowledge is unchanged.
10. Trade between the two countries takes place on the basis of the barter system.
11. Factors of production are perfectly mobile within each country, but are perfectly immobile between countries.
12. There is free trade between the two countries, there being no trade barriers or restrictions in the movement of commodities.
13. No transport costs are involved in carrying trade between the two countries.
14. All factors of production are fully employed in both the countries.

15. The international market is perfect so that the exchange ratio for the two commodities is the same.

Explanation of the Theory

Given these assumptions, Ricardo shows that trade is possible between two countries when one country has an absolute advantage in the production of both commodities, but the country has a comparative advantage in the production of one commodity than in the other. This is illustrated in terms of Ricardo's well-known example of trade between England and Portugal as shown in table 1.1.

Table 1.1: Man–Years of Labour Required For Producing One Unit

Country	Wine	Cloth
England	120	100
Portugal	80	90

The table 1.1 shows the production of a unit of wine in England requires 120 men for a year, while a unit of cloth requires 100 men for the same period. On the other hand, the production of the same quantities of wine and cloth in Portugal requires 80 and 90 men respectively. Thus, England uses more labour than Portugal in producing both wine and cloth. In other words, the Portuguese labour is more efficient than the English labour in producing both the products. So Portugal possesses an absolute advantage in both wine and cloth. But Portugal would benefit more by producing wine and exporting it to England because it possesses greater comparative advantage in it. This is because the cost of production of wine (80/120 men) is less than the cost of production of cloth (90/100 men). On the other hand, it is in England's interest to specialise in the production of cloth in which it has the least comparative disadvantage. This is because the cost of production of cloth in England in less (100/90 men) as compared with wine (120/80 men). Thus, trade is beneficial for both the countries. The comparative advantage position of both is illustrated in fig. 1.1 in terms of production possibility curves.

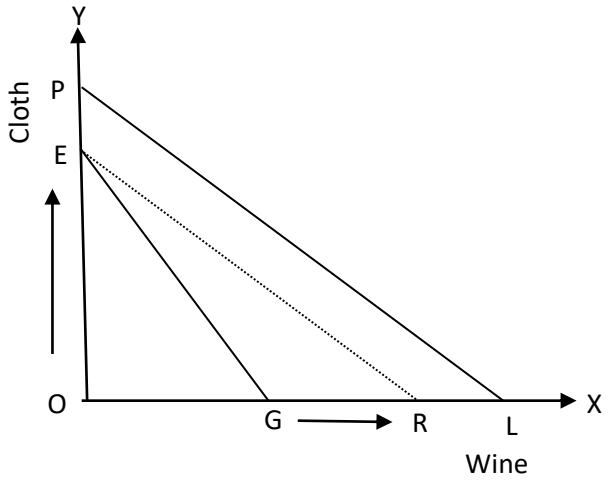

Fig. 1.1

PL is the production possibility curve of Portugal, and EG that of England. Portugal enjoys an absolute advantage in the production of both wine and cloth over England. It produces OL of wine and OP of cloth, as against OG of wine and OE of cloth produced by England. But the slope of ER (parallel to PL) reveals that Portugal has a greater comparative advantage in the production of wine because if it gives up the resources required to produce OE of cloth, it can produce OR of wine which is greater than OG of wine of England. On other hand England had the least comparative disadvantage in the production of OE of cloth. Thus, Portugal will export OR of wine to England in exchange for OE of cloth from her.

Gains from Trade and their Distribution

Ricardo does not discuss the actual ratio at which wine and cloth would exchange and how much the two countries gain from trade. Before trade, the domestic trade ratios in the two countries for wine and cloth are shown in Table 1.2. The cost of production of one unit of wine in England is 120 men and that of producing one unit of cloth is 100 men. It shows that the cost of producing wine is more as against cloth because one unit of wine can exchange for 1.2 units of cloth. On the other hand, the cost of producing one unit of wine in Portugal is 80 men and that of producing one unit of cloth is 90 men. It is clear that the cost of producing cloth is more than that of wine because one unit of wine can exchange for 0.89 unit of cloth. Suppose trade begins between the two countries. England will gain if it imports one unit of wine from Portugal in exchange for less than 1.2 units of cloth. Portugal will also gain if it imports one unit of cloth from England in exchange for more than 0.89 units of wine.

Table 1.2: Domestic Exchange Ratios

England	Portugal
Wine 120: 100 Cloth (6/5) 1: 1.2 Cloth 100: 120 Wine(5/6) 1: 0.83	Wine 80 : 90 Cloth (8/9) 1: 0. 89 Cloth 90: 80 Wine (9/8) 1: 0.83

The table shows that the domestic exchange ratio in England is one unit of cloth= 0.83 units of wine, and in Portugal one unit of wine= 0.89 unit of cloth. If we assume the exchange ratio between the two countries to be 1 unit of cloth = 1 unit of wine, England would gain 0.17 (1-0.83) unit of wine by exporting one unit of cloth to Portugal. Similarly, the gain to Portugal by exporting one unit of wine to England will be 0.11(1- 0.89) unit of cloth. Thus, trade is beneficial for both countries.

The gains from trade and their distribution are shown in Figure 1.2 where the line C_1 W_2 depicts the domestic exchange ratio 1 unit of cloth= 0.83 unit of wine of England, and the line W_1 C_2 that of Portugal at the domestic exchange ratio 1 unit of wine= 0.89 unit of cloth. The line C_1 W_1 shows the exchange rate of trade of 1 unit of cloth=1 unit of wine between the two countries. At this exchange rate England gains W_2W_1 (0.17 unit) of wine, while Portugal gains C_2 C_1 (0.11 unit) of cloth.

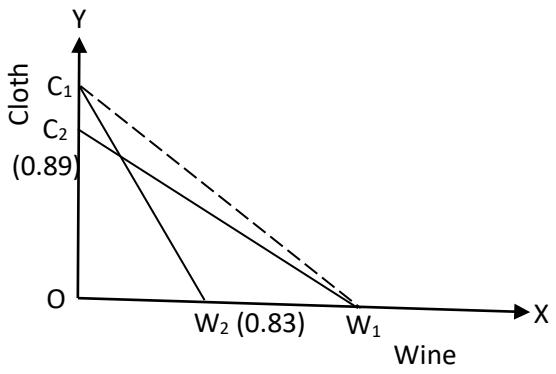

Fig. 1.2

Thus, both England and Portugal specialise in the production of one commodity on the basis of comparative costs. Each reallocates its factors accordingly and exports that commodity in which it has comparative advantage and imports that commodity in which it has a comparative disadvantage. Both gain through trade and can increase the consumption of the two commodities.

9. Explain the Modified Ricardian Theory.

The Ricardian theory assumed that the transfer of goods between countries does not involve any cost. Quite obviously, certain transfer costs like the cost of transport are involved in international trade. It is not difficult to introduce the costs of transfer to the comparative cost theory. The introduction of transfer costs, however, decreases the extent of the international division of labour, because if the cost of transfer of a commodity is more than the difference in the costs of production between two countries, it will not be traded between them. For instance, with reference to our previous example, if the cost of the transfer of wine from Portugal to England is more than $16 per unit, England is not likely to import wine from Portugal because the landed cost of Portuguese wine in England will be more than $ 120 (which is the price of the domestic wine.)

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Variable Costs of Production

Ricardo assumed a constant cost of production. The removal of the assumption of constant costs and the introduction of variable costs do not, however, change the substance of the comparative cost theory. It should, however, be noted that although the consideration of conditions of increasing costs calls for no basic modification of the theory, production under conditions of increasing costs does prevent international specialisation from developing, consequently reducing the potential gains from trade. Production under conditions of decreasing costs, on the other hand, tends to widen national costs differentials and also the limits of the terms of trade.

Non-Competing Groups

The Ricardian theory assumed that labour in each country is homogeneous and perfectly mobile within the country. But as a matter of fact, labour force in any county consists of many different groups, i.e., the technical, skilled, semi-skilled and unskilled, and mobility between these groups is far from perfect. These distinct categories of labour with rather well marked and enduring differences in wages are known as "non-competing" groups.

The mere existence of such groups would not affect the theory of international trade, provided that in each country the relative scale of wages was the same. But the relative scale of wages differs between countries due to factors like the relative abundance or scarcity of certain categories of labour, and this affects the pattern of trade. For instance, abnormally low wages for a particular category of labour in a country enables it to produce some commodity or commodities at a lower money cost than its competitors, even though it has no comparative advantage. The existence of non-competing groups within a country affects international trade only when the situation thus engendered is peculiar to that country.

Capital Charges

Taussig has pointed out that interest charges influence international trade when different quantities of capital are used in the production of different commodities. Hence, like non-competing groups of labour interest charges may also affect the cost of production and pattern of trade. A low rate of interest tends to give a country a comparative advantage for those goods which are made with much capital; these tend to be exported from it. A high rate of interest correspondingly is a handicap on the export of these same goods and a stimulus to their import. However, high or low interest does not in itself act as an independent factor; it exercises an influence only so far as it enters to a greater degree in one commodity than in another. The conclusion is of the same sort as that reached with regard to non-competing groups and differences of wages.

10. Define elaborately Haberler's Opportunity Cost Theory

Opportunity cost of a commodity is defined as the amount of a second commodity that must be given up to release just enough resources to produce one additional unit of the

first. Haberler used this concept to explain the law of comparative advantage. In this form, this law is referred to as the law of comparative cost. Consequently, the nation with the lower opportunity cost is said to have a comparative advantage in the production of that commodity and comparative disadvantage in the production of other commodity.

The existence of comparative advantage in costs of production is the principal cause of emergence of international trade. Ricardo has given an example of trade between England and Portugal shown in Table 1.5.

Table 1.5

Nations	One day of Labour	
	Units of Wine	Units of Cloth
England	60	80
Portugal	150	100

From the above table, it is clear that Portuguese labour is more efficient than English labour in the production of wine as well as cloth. So Portugal has an absolute advantage in the production of wine and cloth.

The trade between England and Portugal can also be demonstrated by introducing the concept of opportunity cost. Table 1.6 gives the opportunity costs for producing wine and cloth in the two nations calculated on the basis of information given in Table 1.5.

Table 1.6

	Opportunity Costs for	
Nations	Wine	Cloth
England	60/80=3/4	80/60= 4/3
Portugal	150/100= 3/2	100/150= 2/3

This table shows that

In England, 1 unit of cloth = 3/4 units of wine. (Domestic exchange ratio of England)

In Portugal, 1 unit of wine= 2/3 units of cloth. (Domestic Exchange Ratio of Portugal)

Here, England has the lower opportunity cost of the two nations in producing cloth and Portugal has lower opportunity cost in producing wine. Thus, England has comparative advantage in producing cloth and Portugal has comparative advantage in producing wine. As long as the opportunity cost of production for a good differs in the two nations. One nation has a comparative advantage in the producing of one of the two goods, while the other nation has a comparative advantage in the production of the other good.

England will gain from trade if it can get more than 3/4 units of wine by exporting 1 unit of cloth. Likewise, Portugal gains from trade if it gets more than 2/3 unit of cloth by exporting 1 unit of wine. England gains from export so long it exports 80 units of cloth for more than 60 unit of wine. While Portugal gain if it gets 80 units of cloth for less than 120 units of wine.

Trade between two countries does not take place in case of equal cost differences. In this case, the opportunity cost of producing the two commodities is the same in both the countries. So, the production possibility curves will coincide with no possibility of gain from trade to either country. Here, the absolute advantage (or disadvantage) of each country with respect to the other is the same for both the commodities. Table 1.7 shows such situation. In this situation, the labour in county 'A' as well 'B' is twice as productive in commodity 'X' in comparison to production of commodity 'Y'. As the internal cost and comparative cost are same in both the countries and there are no price differences, no mutually beneficial trade can take place.

Table 1.7

Commodities Countries	X	Y	Opportunity Cost Ratio
A	10	5	2.1
B	12	6	2.1

PRODUCTION POSSIBILITY CURVE

The production possibility curve (PPC) represents all the alternative combinations of two commodities that a nation can produce by fully utilizing all its factors of production. In

other words, the production possibility curve shows the frontier beyond which production cannot be carried on with the available resources and technology.

Figure 1.3 depicts the production frontier of country A. With a given amount of productive resources, it can produce either 10 units of cloth (if it employs all resources in cloth production) or 20 units of wine (if all resources are used in wine production). Alternatively, it can have a combination of cloth and wine if resources are allocated for both. For example, it may have eight units of cloth and four units of wine, or six units of cloth and eight units of wine. If it reduces the output of cloth by one unit, it can increase the output of wine by two units because with the resources required to produce one unit of cloth, two units of wine can be produced.

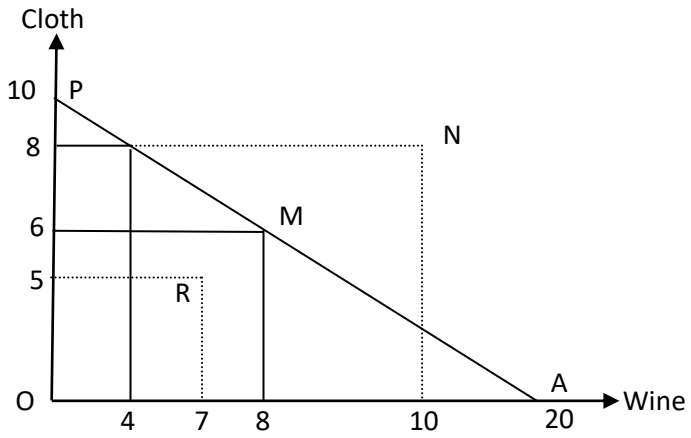

Fig. 1.3: PPC under Constant Costs

In short, any point on the production possibility curve (PPA) shows the combination of cloth and wine output when the productive resources are fully employed and allocated between cloth and wine in a certain production.

Any point above the PA line is beyond reach with the particular quantum of resources. For example, point N indicates a combination of eight units of cloth and ten units of wine which is impossible to obtain with the available resources. Again, when eight units of cloth are produced, the remaining resources are sufficient to produce only four units of wine. Any point below the production possibility curve represents a combination of cloth and wine when the available resources are not fully employed. For example, point R represents a combination of five units of cloth and seven units of wine. When only five units of cloth are

produced, the remaining resources if they are fully employed, can give an output of ten units of wine.

It may be clear from what has been explained above that we are measuring the cost of producing cloth in terms of the amount of wine foregone in order to produce one more unit of cloth and vice-versa. In other words, we are measuring the *opportunity cost* of producing a unit of the commodity.

The slope of the production possibility curve (PPA) represents the marginal rate of transformation (MRT) or the amount of the commodity that the nation must give up in order to get one more unit of the second commodity. If the nation faces constant costs or MRT, then its production possibility curve is a straight line as shown in Fig. 1.3 with slope equal to the constant opportunity costs or MRT and to the relative commodity prices in the nation.

In many cases, production is subject to the law of increasing opportunity costs or MRT. Under such conditions, the production possibility curve is concave to the origin as shown in Fig. 1.4.

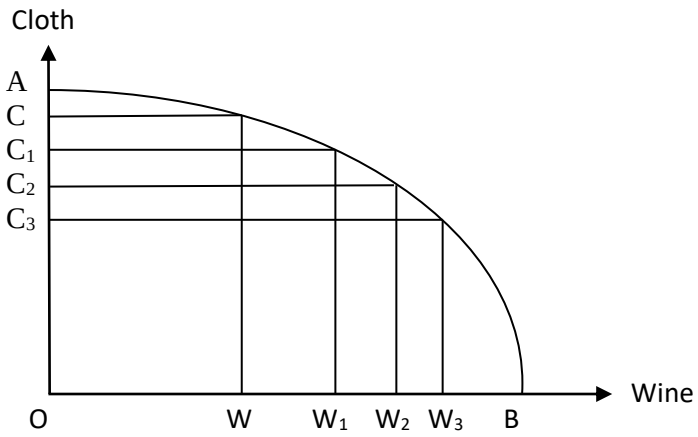

Fig. 1.4: PPC under Increasing Costs

In this figure 1.4: $AC=CC_1=C_1C_2=C_2C_3$ and $OW>WW_1>W_1W_2>W_2W_3$

Starting with OA output of cloth and zero of wine, if AC unit of cloth is given up, we can produce OW wine. But, if we give up further CC_1 output of cloth and reduce cloth production to C_1 level, the increase in wine output that can be achieved is WW_1, which is less than OW. The addition to the wine output that can be produced by giving up yet another equivalent amount of cloth is W_1W_2, which is still lower than WW_1 and so on. Thus, the amount of extra wine we can produce by decreasing production of cloth with a given amount of resources

steadily decreases as we move downward along the PPC. This implies that opportunity cost of wine in terms of cloth is steadily increasing as we increase the production of wine and decrease the production of cloth. Conversely, for every additional unit of cloth, the amount of wine is to be given up. For the subsequent increases in the cloth output, the amount of wine to be given per unit of cloth increases from W_2W_3 to W_2W_1 and from W_1W to WO.

Under increasing costs, a nation will choose a combination of output at which the MRT will equal the equilibrium relative commodity price in the nation. The equilibrium relative commodity price in the nation is determined by the supply and demand conditions in the nation. This is presented in Fig. 1.5. If PP represents the price ratio in the country, production will be at point F, representing OC_1 cloth and OW_1 wine, because at F, PP, which represents the price ratio, is tangent to the PPC. When the price ratio is PP, if the country were to produce at some other point, for example A, the opportunity cost of producing more wine would be lower than its price which implies that producers could increase their profits by producing more wine. The profit will be maximum at point F at which the relative prices and opportunity costs are equal.

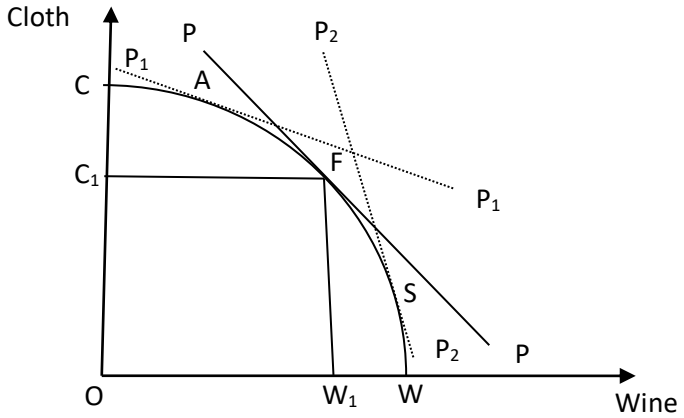

Fig. 1.5: PPC and Optimum Combination of Output

If the price of cloth increases and P_1P_1 becomes the new price ratio, producers will reallocate resources to produce more cloth and move to A at which the price line is tangent to the production frontier. On the other hand, if the cloth price falls and price ratio changes to P_2P_2, production of wine will be increased by reducing the output of cloth and a new equilibrium will be established at point S.

Changes in factor supplies will cause a shift in the PPC of a nation, *ceteris paribus*. An increase in the factors of production will cause an outward shift and a decrease will cause an inward shift of the production frontier. In Fig. 1.6 given below, the X-axis represents labour intensive goods and the Y-axis represents capital intensive goods. In this figure, AA

represents the original PPC. Supposing that all the factors of production increase in the same proportion, it will cause a shift of the PPC upward and the new PPC, A_1A_1 will be parallel to the old PPC, AA.

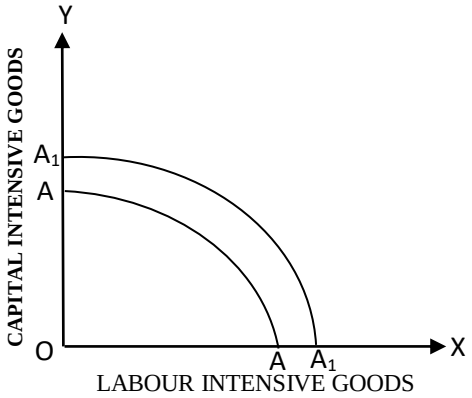

Fig. 1.6: Changes in Factor Supplies and Shift in PPC

If only one of the factors of production increases or if the increase in the factors of production is disproportionate, the shape of the new PPC will be different from that of the old one. Assume that in Fig. 1.7, the X-axis represents labour intensive goods and the Y-axis represents capital intensive goods. If only the supply of labour increases, the PPC will shift from AA to A_2A_2 as shown below in Fig. 1.7 implying that the country is now capable of producing a much larger amount of labour intensive commodities.

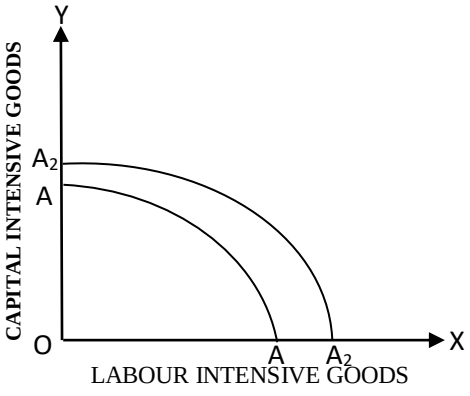

Fig. 1.7: Changes in Factor Supplies and Shift in PPC

Again, if only the supply of capital increases, the PPC will shift from AA to A_3A_3 as shown in Fig. 1.8. It implies that the country is now capable of producing a much larger amount of capital intensive commodities.

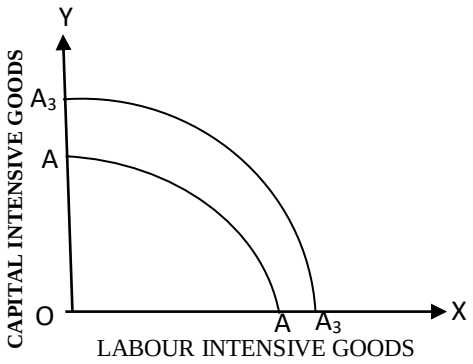

Fig. 1.8: Changes in Factor Supplies and Shift in PPC

Technological progress increases the productivity of a nation's factors of production and has the same general effect on the production possibilities as an increase in the supply of its factors of production. In respect of technological advances, we may consider the following three different cases.

1.10 Suggested Readings

D. Salvatore (2011): International Economics, Wiley, John, Tenth Edition, Delhi.

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Gandolfo, Giancarlo (2006): International Trade Theory and Policy, Springer, New Delhi

Chaturvedi, D.D., Beg, M. A. and Mittal, Arjun (2016): International Economics, Kitab Mahal, New Delhi

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UNIT-II

TRADE, FACTOR ENDOWMENTS AND FACTOR PRICE

Structure

2.0 Introduction

Heckscher-Ohlin theory assumes that relative factor prices reflect the relative supplies of factors.

According to Leontief, Heckscher-Ohlin model is essentially static, applies to a point of time, given factor endowments and techniques of production. It may not hold well in the real world subject to continuous changes. It was found that the income elasticity of demand for food, clothing, housing and other classes of goods was remarkably similar across the nations. Thus, this explanation of the Leontief paradox is also not accepted.

The Stolper-Samuelson Theorem states that when the relative price of a commodity rises, say due to tariff, it raises the return on the factor which is being extensively used in the production of that commodity. Therefore, the real return on the country's scarce factor production will rise with the imposition of tariff. Under these circumstances there are some proofs such as Samuelson's proof and Hicksian proof. Samuelson's proof or analysis of the factor price equalisation is based upon the some assumptions. J.R. Hicks attempted to provide a proof for the absolute factor price equalisation. He remained all the assumptions taken by Samuelson.

The problem of international trade under conditions of imperfect competition has received little attention up to the present. This is probably due to two main reasons. In the first place, the question seems to be one of little practical importance, since the most practical articles of international trade are raw materials or staple commodities, which are generally produced under condition of perfect competition.

2.1 Objectives

- To understand Leontief Paradox
- To explain Stolper-Samuelson Theorem: Factor Price Equalization Theorem
- To know the mechanism of International Trade And Imperfect Competition

2.2 Leontief Paradox

Heckscher-Ohlin theory assumes that relative factor prices reflect the relative supplies of factors. Thus, abundant factor will have a lower price and vice-versa. This implies that the supply outweighs the demand in the determination of factor prices. However, when the demand for factors prevails upon the supply, factor prices so determined would not confirm to the supplies of the factors. Suppose, a country has abundance of capital and scarcity of labour in physical terms, but there is relatively greater demand for capital. In such a situation, the price of capital would be relatively higher in comparison to that of labour.

Under these circumstances, contrary to the factor endowments, the country may export labour intensive commodities and import capital intensive commodities. "Perhaps it is

this which lies behind the empirical findings by Leontief that though America is a capital abundant and labour scarce country, in the structure of its imports, capital-intensive goods are relatively smaller whereas in the structure of its exports, labour intensive goods are relatively greater."

According to Leontief, Heckscher-Ohlin model is essentially static, applies to a point of time, given factor endowments and techniques of production. It may not hold well in the real world subject to continuous changes.

For a model to become a theory, a number of empirical tests are run on it. Heckscher-Ohlin model was tested empirically for the first time by Wassily Leontief in 1951 using the US data for the year 1947. Leontief hypothised that US being a capital abundant nation should export capital intensive goods and import labour intensive goods.

To measure and analyse it, Leontief developed a technique (tool) called the input-output table. He utilized the input-output table of the U.S. economy to calculate the amount of labour and capital in a 'representative bundle' of $ 1 million worth of US exports and imports substitutes for the year 1947. This table depicts the origin and destination of each commodity in the economy. Leontief was awarded Nobel Prize in 1973 for the development of this technique.

It should be noted here that Leontief estimated capital- labour for U.S import substitutes rather than imports. Import substitutes are the goods such as automobiles that are produced at U.S. (the home country), but are also imported from abroad because of incomplete specialisation in production. It was taken into account, because the foreign production data on U.S. imports was not available. However, an explanation on it was provided by Leontief himself. It stated that even though U.S. import substitutes would be more capital intensive rather than the actual imports; because capital was relatively cheaper in U.S. than abroad. So, they should be still less capital intensive than U.S. exports if Heckscher-Ohlin model holds true. The inclusion of import substitutes instead of foreign data on actual US imports eliminated the commodities such as coffee and banana, which are not at all produced in US.

On testing the hypothesis with the given data on U.S. exports and import substitutes, Leontief found out that U.S. import substitutes were about 30% more capital intensive than U.S. exports. This is to say that United Stated was exporting labour intensive commodities and importing capital intensive commodities in 1947. This was opposite of Heckscher-Onlin model postulated, and is popularly known as the Leontief Paradox, as it was contrary to the generally held view.

However, Mead's view on Leontief paradox was that Leontief did not refute the Heckscher-Ohlin model. Instead he reasoned out that it was an optical illusion since U.S. labour was about 3 times as productive as foreign labour in 1947. High labour productivity made U.S. a labour abundant country. As a result, U.S was essentially a labour intensive nation as compared to the availability of capital. Therefore, it was appropriate that U.S. exported labour intensive goods in relation to U.S. import substitutes. This explanation was not acceptable and Leontief himself withdrew it. Reason being that while U.S. labour was more productive than foreign labour (though the assumption of it being 3 times more productive was arbitrary), so it was U.S. capital. Thus, both U.S. labour and U.S. capital should be multiplied by the same multiple, leaving the relative abundance of capital in U.S. unaffected.

Another argument was postulated that U.S. tastes were biased strongly in favour of capital intensive commodities. As a result, the prices of such commodities rose relatively. Therefore U.S. would export relatively labour intensive commodities. However, this explanation was also rejected based on the study by Houthakker in 1957 on household consumption patterns in many countries. It was found that the income elasticity of demand for food, clothing, housing and other classes of goods was remarkably similar across the nations. Thus, this explanation of the Leontief paradox is also not accepted.

Check Your Progress

1. What do you mean by Leontief Paradox?
2. Explain Heckscher-Ohlin theory of international trade.

2.3 Stolper-Samuelson Theorem: Factor Price Equalization Theorem

Wolfgang Stolper and Paul Samuelson proved that trade does split a country into clear gainers and clear losers under certain assumptions: such as, a country produces two goods (for example, wheat and cloth) with two factors of production (for example, land and labour); neither good is an input into the production of the other; competition prevails; factor supplies are given; both factors are fully employed; one good (wheat) is land-intensive and the other (cloth) is labour–intensive with or without trade; both factors are mobile between sectors (but not between countries); and opening trade raises the relative price of wheat.

The Stolper-Samuelson theorem: under the assumptions just stated, moving from no trade to free trade unambiguously raises the returns to the factor used intensively in the rising-price industry (land) and lowers the returns to the factor used intensively in the falling-price industry (labour), regardless of which goods the sellers of the two factors prefer to consume.

When tariff is imposed, the domestic producers increase the production of imported goods due to rise in their prices and decrease that of exported goods. This change in the production pattern will affect the relative prices of the factors of production. The redistributive effect is explained here with the help of Stolper-Samuelson Theorem.

The Stolper-Samuelson Theorem states that when the relative price of a commodity rises, say due to tariff, it raises the return on the factor which is being extensively used in the production of that commodity. Therefore, the real return on the country's scarce factor production will rise with the imposition of tariff.

In our example, country 'B' being a capital abundant nation imposes an import tariff on commodity 'X' which is a labour-intensive commodity and Y is a capital-intensive commodity. Thus, P_X/Py rises for both domestic consumers and producers. So, the real wage of labour (i.e., the scarce resource of country 'B') will rise. This is explained now.

After imposition of import tariff on commodity 'X', the country starts producing more of commodity 'X', and less of commodity 'Y'. Thus, the country moves from point 'D' to point 'F' in Fig. 2.1. This movement to point 'F' is the result of increase in capital–labour

ratio in the production of both the commodities which further results in increase in the price of the country's scarce factor, labour.

To illustrate it, consider the following Fig.2.1, which makes use of the Edgeworth box diagram for country 'B'. The curve O_XO_Y is the usual contract curve and isoquants are assumed to be linearly homogenous in this country.

In this figure, point 'C' depicts the autarky situation and point 'D' is the free trade production point on the contract curve. Point 'F' is the new production point when country 'B' imposes 100 percent ad valorem tariff on importable commodity 'X'. Observe from the figure that point 'F' is further away from the origin 'O_x and closer to the origin 'O_Y' than point 'D' implying post-trade capital-labour ratio. The slope of the line from the origin 'O_x to point 'F' measures the capital–labour ratio in the production of commodity 'X'. Again, the slope of the line from the origin 'Oy to point 'D' measures the capital–labour ratio in the production of commodity 'Y'.

This shows that with the rise in the price (P_X/P_Y) as a result of import tariff on commodity 'X', country 'B' reduces more of commodity 'X' and less of commodity 'Y'.

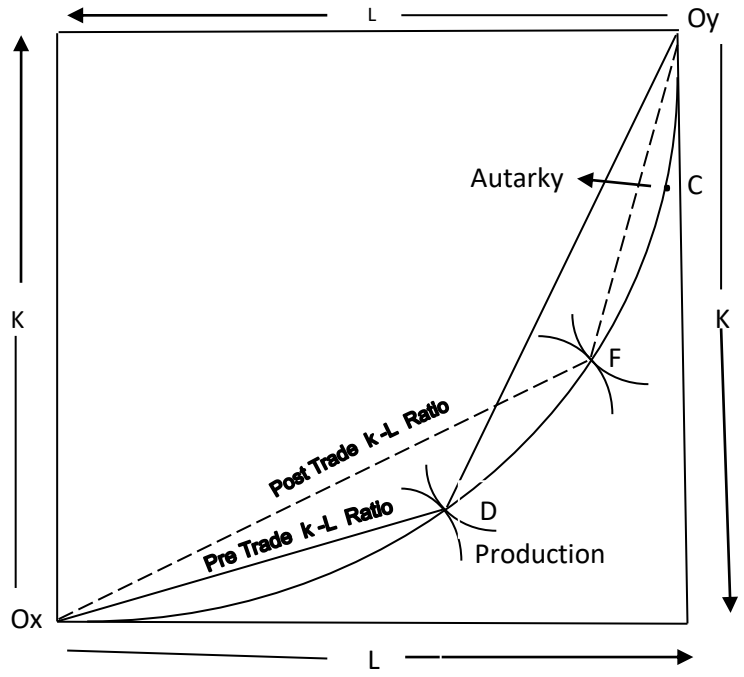

Fig 2.1: Stolper-Samuelson Theorem: Edgeworth Box Diagram

The slope of the line from the origin 'O_x to point 'D' measures the capital–labour ratio in the production of commodity 'X' implying pre trade capital-labour ratio. Further, the slope of the line from the origin O_Y to point 'D' measures the capital–labour ratio in the production of commodity 'Y' under free trade. After imposition of import tariff, the country 'B' produces at point 'F'.

The capital–labour ratio in the production of commodity 'X' and commodity 'Y' are measured by the slope of the dotted lines from the origins O_x and O_Y respectively to point 'F'. As it can be seen in the diagram, dotted lines from the origin are steeper than the solid lines O_XD and O_YD. This indicates use of higher capital-labour ratio in the production of both the commodities after imposition of import tariff than under the free trade.

When the tariff is imposed by country 'B' on commodity 'X', i.e., the labour-intensive commodity, each unit of labour is combined with more units of capital in the production of both the commodities. As a result, the productivity of labour increases. Consequently, not only the money wage but also the real wage rises in country 'B'. With labour fully employed before and after imposition of the tariff, the total earnings of labour and its share in national income will be greater. Thus, incomes get redistributed in favour of labour. It may thus, be concluded that tariff favours a factor which is used intensively after tariff implosion. In this Fig., since national income is reduced by the tariff, i.e., from point 'E' to point 'H' and the share of total income going to 'L' is higher, the rate of interest and total earnings of 'K' fall in country 'B'. Therefore, while a small nation as a whole is harmed by the tariff, its scarce factor benefits at the expense of its abundant factor.

2.3.1 Criticism

The validity of the Heckscher–Ohlin model has been questioned since the classical Leontief paradox. Indeed, Feenstra (2004) called the Heckscher–Ohlin model "hopelessly inadequate as an explanation for historical and modern trade patterns". As for the Stolper–Samuelson theorem itself, Davis and Mishra (2006) recently stated, "It is time to declare Stolper–Samuelson theorem dead". They argue that the Stolper–Samuelson theorem is "dead" because following trade liberalization in some developing countries (particularly in Latin America), wage inequality rose, and, under the assumption that these countries are labour-abundant, the Stolper–Samuelson theorem predicts that wage inequality should have

fallen. Aside from the declining trend in wage inequality in Latin America that has followed trade liberalization in the longer run; an alternative view would be to recognize that technically the Stolper–Samuelson theorem predicts a relationship between output prices and relative wages.

2.3.2 Factor Price Equalisation Theory

The factor price equalisation theory is an important corollary of the Heckscher- Ohlin theory of trade. If there is a free international movement of factors, the prices of the factors of production undisputedly get equalised. However, the classical theorists as well as Heckscher and Ohlin had assumed an international immobility of factors. This led to the crucial question of how the international trade would affect the prices of the factors of production.

Heckscher, on the one hand, suggested that international trade in commodities would act as a substitute for the international mobility of factors leading to a complete equalisation of the costs or factor prices. Ohlin, on the other hand, recognised that the international trade might result in only an incomplete or partial equalisation of prices of factors. The writers like Samuleson (1948) and Lerner (1953) discussed the possibility of a complete equalisation of factor prices.

The factor price equalisation theory picks up the argument that the labour-abundant country specialises in the export of the labour-intensive commodity because, labour is a relatively cheaper factor compared with capital. On the other hand, the capital-abundant country specialises in the export of capital-intensive commodity on account of capital being a relatively cheaper factor there. The pressure of international demand renders the abundant factor scarce and its price starts rising.

At the same time, the import of the commodities that require more input of scarce factor relieves the domestic pressure of demand for that factor, resulting in a fall in its price. The process of change in prices of factors will ultimately bring about equality in the prices of factors. It is in this sense that free international trade in commodities acts as a substitute for the international mobility of factors. Under these circumstances there are some proofs such as Samuelson’s proof and Hicksian proof. Now we shall discuss one by one.

2.3.3 Samuelson's Proof

Samuelson's proof or analysis of the factor price equalisation is based upon the following assumptions.

(i) There are two countries, say A and B.

(ii) These countries produce two commodities, say X and Y.

(iii) The production of these commodities requires only two factors of production—labour and capital.

(iv) There is free competition both in the product and labour markets.

(v) There is an absence of tariff and transport costs.

(vi) The production function related to each commodity is identical and homogeneous of degree one. It implies the production is governed by constant returns of scale.

(vii) The factor-intensities are different for the two commodities. For instance, the commodity X is labour-intensive, while commodity Y is capital- intensive. It means there is an absence of reversal of factor intensity.

(viii) Capital and labour are qualitatively identical in the two countries.

(ix) The availability of factors is quantitatively different in the two countries. The country A is supposed to be labour-abundant whereas country B is capital-abundant.

(x) There is absence of complete specialisation. It means both the countries continue to produce both the commodities even after trade takes place between them.

(xi) The factor supplies are fixed in the two countries.

(xii) In each country, there is full employment of both the factors.

(xiii) There is no mobility of factors between the countries.

(xiv) The marginal-physical product of each factor is diminishing.

(xv) The tastes are identical in the two countries.

Before trade, there is low capital-labour ratio in country A and a high capital-labour ratio in country B. As trade commences, the labour-abundant country A exports the labour-intensive commodity X and country B exports the capital-intensive commodity Y. The export of labour-intensive commodity X by A creates relative scarcity of labour and consequent rise in wage rate. It also leads to a rise in capital- labour ratio.

On the opposite, the export of capital- intensive commodity by country B will result in its scarcity there. It will cause a rise in the price of capital (rate of interest) and a consequent fall in the capital-labour ratio. These relative changes in K-L ratio will continue until the K-L ratios in both the countries become exactly equal. Along with it, the prices of the two factors also undergo changes (rise in wage rate in country A and rise in interest rate of country B) in such a manner that there is ultimate equalisation of prices of two factors in both the countries.

2.3.4 Hicksian Proof

J.R. Hicks attempted to provide a proof for the absolute factor price equalisation. He remained all the assumptions taken by Samuelson. It is assumed that price of labour is low in the labour-abundant country, while it is higher in country B which is capital-abundant. On the contrary, the price of capital is high in country A but it is low in country B.

After trade, country A exports labour-intensive commodity X and B exports capital-intensive commodity Y. l_x and l_y are the labour co-efficients for X and Y commodities and k_x and k_y are the capital co-efficient, w_a and w_b are the wage rates in the two countries, r_a and r_b are the rates of interest in these two countries. It is assumed that the unit cost of producing X and Y commodities becomes equal in the two countries after the determination of trade equilibrium.

Unit Cost of Commodity X:

$l_x.w_a + k_xr_a = l_x.w_b + k_xr_b$

Dividing both sides by k_x

$(l_x/k_x)\ w_a + r_a = (l_x/k_x)\ w_b + r_b$

$r_a - r_b = (l_x/k_x)\ w_b - (l_x/k_x)\ w_a$

$r_a - r_b = (l_x/k_x)\ [w_b - w_a]$ ….(i)

Unit Cost of Commodity Y:

$l_y.w_a + k_yr_a = l_y.w_b + k_yr_b$

Dividing both sides by k_y

$(I_y/k_y)\ w_a + r_a = (l_y/k_y)\ w_b + r_b$

$r_a - r_b = w_b\ (l_y/k_y) - (l_y/k_y)\ w_a$

$r_a - r_b = (ly/ky)(w_b - w_a)$ …(ii)

From (i) and (ii)

$(I_x/k_x)(w_b - w_a) = (l_y/k_y)(w_b - w_a)$

If trade results in equalisation of factor-intensity in the two products X and Y and $r_a = r_b$, there will also be $w_a = w_b$. It shows that after-trade equilibrium results in the equalisation of factor prices.

The relative factor price equalisation can be explained on the assumption that the value of marginal product (MP) of each factor within each country is equal before trade under the conditions of prefect competition in product and factor markets and constant return to scale.

In Country A:

MPLax .Pax =MPLay . Pay

Or, $\frac{Pax}{Pay} = \frac{MPLay}{MPLax}$

Again, MPKax .Pax =MPKay . Pay

Or, $\frac{Pax}{Pay} = \frac{MPKay}{MPKax}$

In Country B:

MPKbx .Pbx =MPkby . Pby

Or, $\frac{Pbx}{Pby} = \frac{MPKby}{MPKbx}$

Again, MPLbx .Pbx =MPLby . Pby

Or, $\frac{Pbx}{Pby} = \frac{MPLby}{MPLbx}$

After trade takes place, there is equalisation of MPL and MPK in both the countries.

$MPL_{ax} = MPL_{bx}$, $MPL_{ay} = MPL_{by}$

$MPK_{ax} = MPK_{bx}$, $MPK_{ay} = MPK_{by}$

Hence $(P_{ax}/ P_{ay}) = (P_{bx} / P_{by})$ respect of both the commodities in the two countries.

The trade will lead to a rise in K-L ratio in country A and a fall in K-L ratio in country B. The increase in demand for labour relative to capital in A causes a rise in both the ratio of P_L to P_K and the ratio of P_X to P_Y. On the other hand, export of capital-intensive commodity Y by country B causes an increase in the demand for capital relative to labour. It brings about a fall in the ratio of P_L to P_K and also a fall in the ratio of P_X to P_Y.

The increase in capital-intensity in country A occurs because of a rise in the price of labour relative to capital. On the opposite, the decrease in the capital-intensity in country B takes place because the price of capital rises relative to labour. Such changes in prices of the two factors bring about an equality in the factor price ratios in the two countries.

2.3.5 Criticisms of Factor Price Equalisation Theory

The factor price equalisation theory developed by Samuelson has been found to be deficient by several economists including Meade and Ellsworth. They raised serious doubts about the validity of this theory on account of highly restrictive and unrealistic assumptions. They believe that there can only be partial equalisation of factor prices. There are serious obstacles to a complete equalisation of factor prices in the trading countries.

Such obstacles are discussed below:

(i) Tariff and Non-Tariff Barriers:

The theory rests upon the assumption that there are no tariff and non-tariff barriers to trade. In actual reality, such barriers do exist. It was on account of them that Ohlin ruled out the possibility of complete equalisation of factor prices.

(ii) Transport Costs:

The factor price equalisation theory takes another unrealistic assumption that transport costs are absent. In fact, the import and export of commodities do involve transport costs, which not only have restrictive effect on the product mobility but may also affect the comparative advantages of the trading countries. The existences of transport costs are likely to prevent the equalisation of factor prices.

(iii) Complete Specialisation:

This theory assumes that the trading countries are engaged in the production of both the commodities. In other words, there is only partial or incomplete specialisation. When the trading countries are of unequal size, there is possibility that there is complete specialisation in at least the smaller country. In the event of complete specialisation, there is little possibility of complete factor price equalisation.

(iv) Identical Production Function:

Samuelson's factor price equalisation theory assumes that production functions are identical in the two trading countries. Even if the two countries have the same resources, yet their productive capacities are different because of natural, technical and sociological differences between them. The diversities in their production functions may create hindrance in the equalisation of factor prices.

(v) Absence of Perfect Competition:

This theory rests upon the assumption that there are the conditions of prefect competition in the product and factor markets. In actual reality, the prefect competition does not exist. In the real market situations like oligopoly or monopolistic competition, there are rigidities in the product and factor markets that prevent the possibility of equalisation of factor prices.

(vi) Increasing Returns to Scale:

The factor price equalisation theorem assumes that there is a first-degree homogeneous production function, which implies that the production is governed by the constant returns to scale. If the economies of scale are present, according to Meade, the theory will become invalid for two reasons. Firstly, it will result in the emergence of monopolies and consequent breakdown of the apparatus based on the assumption of perfect competition. Secondly, the increasing returns to scale will lead to complete specialisation, which again rules out the possibility of equalisation of factor prices.

(vii) Changes in Factor Supplies:

The theorem takes the assumption that the factor supplies remain fixed in the trading countries. In actual reality, however, there are changes in factor supplies and these changes will create difficulties in the equalisation of factor prices.

(viii) Dynamic Conditions: The factor price equalisation theory assumes static conditions such as fixed factor endowments, techniques and same taste pattern in the trading countries. In the actual dynamic conditions, the continuous changes take place in all the relevant factors and variables and many often it is found that the differences in factor prices get widened rather than being eliminated.

Such a trend has been confirmed by economists like Kindelberger, Myrdal and Sodresten. In the words of Kindelberger, "…trade between developed and less developed countries widens the gap in living standards (the factor prices such as wages) rather than narrows, and it is evident after centuries of trade that there are still poor as well as rich countries.

(ix) Multi-Country, Multi-Commodity and Multi-Factor Trade:

The theorem can deal efficiently only in respect of trade involving two countries, two commodities and two factors. The theory is likely to become indeterminate in the multi-country, multi-commodity and multi-factor trade situation. If the number of productive factors exceeds the number of commodities, the theory breaks down completely.

(x) Factor-Intensity Reversal:

This theory assumes that there is an absence of factor intensity reversal. It means the labour-surplus country will export only labour-intensive commodity and the capital-surplus country will export the capital- intensive commodity. If there is reversal of factor intensity, the factor price equalisation theorem will fail to hold. If the labour-surplus country A specialises in the labour-intensive commodity X, the absolute and relative wage rates will rise in this country.

If country B specialises in commodity Y but produces it thorough labour-intensive method, the demand for labour will increase even in this country resulting in a rise in the absolute and relative wage rate. As the wage rates rise in the two countries, whether the difference in absolute and relative wage rates will rise, fall or remain unchanged, will depend on the rates at which wages increase in the two countries. Thus the factor- intensity reversal can result in the invalidation of the factor price equalisation theory.

The above arguments suggest that factor price equalisation cannot take place in actual dynamic realities. It, however, does not mean that the theorem is completely invalid. It only means that the assumptions of this theorem, being unrealistic, lead to an unrealistic conclusion.

There is little doubt that the movement of products from one country to another can at least reduce the factor price differentials. In the absence of trade, such differences are likely to be considerably large. In the words of Robert Heller, "…the effect of international trade may be considered as a 'leaning against the wind' in that factor price differentials would be even larger in the absence of trade."

Check your Progress

1. Define Stolper-Samuelson Theorem in context of international trade.
2. What do you mean by Factor Price Equalization Theorem?
3. Define Samuelson's Proof in context ofFactor Price Equalization Theorem.
4. Define Hicksian Proof in context ofFactor Price Equalization Theorem.
5. What are the Criticisms to Factor Price EqualisationTheory.

2.4 International Trade and Imperfect Competition

The stratagem to simplify the analysis is to start from an integrated world economy, which will be subsequently divided into two countries. So at the beginning we have a closed economic system (the world), which produces two commodities: a differentiated commodity, say good A and a homogeneous commodity, say food good B. In industry A, there are increasing returns to scale and monopolistic completion, while in industry B there are constant returns to scale and perfect competition. Both industries use homogeneous capital and labour as factors of production; both factors are freely mobile between industries and fully employed. Given the prevailing set of factor prices and goods prices, there will be a certain factor allocation between the two sectors.

The problem of international trade under conditions of monopolistic or imperfect competition, as these terms are used by Prof. Chamberlin and by Mrs. Robinson has received little attention up to the present. This is probably due to two main reasons. In the first place, the question seems to be one of little practical importance, since the most practical articles of international trade are raw materials or staple commodities, which are generally produced

under condition of perfect competition. The second and perhaps even more logical reason is that it seems to be almost impossible to arrive at any definite conclusions regarding the question whether international trade will take place, and if it does, to what extent and with what result, when the commodities are produced under imperfect competition. Mr. Beach concludes that the higher cost of production and the smaller output under imperfect completion will cause the volume of trade also to be smaller than it would be under perfect competition: "……if monopolistic competition prevailed throughout the economic system, the volume of international trade would generally be less than it would be under pure competition. The higher costs of production and the reduction in output would tend to restrict foreign trade as well as domestic trade……..", he does not, however, answer the question.

Imperfect competition has come to the fore in the theoretical analysis of international trade. This development was driven by a number of factors. The theory that has been developed over this period succeeds in providing a fuller explanation of recent developments in trade flows, and also supports a rich set of policy analyses, linking trade and industrial policy, and illuminating economic integration. It is noteworthy that the theory can be integrated with the more traditional factor endowment and general equilibrium concerns of trade theory; in some circumstances it can be placed 'on top of' traditional theory, providing a theory of both inter- and intra-industry trade. It also opens the way to constructing a theory of 'new economic geography', incorporating the location decisions of mobile factors of production.

Here, we focus on market power derived from product differentiation. Our primary concern is the pattern of trade, and we develop a complete synthesis of factor endowment and market access determined trade flows. We also look at factor mobility, and the possibility that this may lead to the agglomeration of economic activity.

Oligopolistic Interaction

If firms from different countries compete on international markets that are less than perfectly competitive, then what form does their competitive interaction take? What trade flows does it create? And what are the welfare effects of trade and of trade policy'! To answer these questions we devote here to the study of markets in which there is strategic interaction between firms.

As is often remarked, whereas there is only one theory of perfect competition, the problem with imperfect competition is that there are many theories. These theories are unfilled in their use of modern game theory -- we shall be analysing Nash equilibria -- but differ principally in their specification of the strategic variable chosen by firms. In the following two sub-sections we shall look first at the case where firms' strategic variables are price, output or sales quantities. In Nash equilibrium no firm has an incentive to change the value of its strategic variable given the values selected by other firms. However, the equilibrium can be quite different according as to whether prices or quantities are chosen.

The difference between price competition (Bertrand) and quantity competition (Cournot) is well known from industrial organisation. In the international trade context further distinction becomes important. Firms may chooses quantities (or prices) in each market separately, which will refer to as the case of segmented markets. Or they may select a single world-wide quantity (or price), which we shall refer to as integrated market. We shall focus on the segmented market case, merely commenting on the difference made by integrated markets.

Price Competition

The simplest framework we can consider is a single industry containing one firm in each country, l and 2. These firms have constant marginal costs, denoted c1 and c2 respectively, for producing a homogeneous product. We shall assume that markets are segmented, so it will look at just one country's market (there is no interaction between the two markets, so the other market can be described analogously. We shall look at the country l market and suppose that there is a trade cost, *t* per unit that the firm in country 2 must incur if it is to supply country l, making its effective marginal cost. Each firm chooses its price, what does the equilibrium look like, and does it involve trade? Since both firms produce the same homogeneous product, all sales will go to whichever firm has the lowest price. If D is the market demand function, we therefore have demands faced by each firm.

What is optimal trade policy in this model? To answer this question supposes that *t* is not a real trade cost, but a tariff, creating revenue which is transferred to the country 1 government.

If c2 <cl then welfare is maximised by setting *t* = cl - c2. This value of t has two properties. First, at this value of t, c2 + t >c1; this means that the domestic (country 1) firm (by assumption the lower cost supplier) takes the entire market. Second, the domestic firm is induced to set price equal to its marginal cost.

If *c2* > cl then the optimal policy is *t* = c2 – *c1.* The foreign (country 2) firm will then take the entire market at this price, just less than the minimum price at which the domestic firm is willing to supply. This policy generates tariff revenue, so the unit cost of imports to economy l as a whole is the consumer price minus tariff revenue, which is the world minimum production cost. The policy, therefore, amounts to the lowest cost producer supply the market (through imports), but using the tariff to extract any profits that the importer might make.

Bertrand competition with homogeneous products is notorious for giving very sharp and extreme results, and this is what we see in this case. Although quite illuminating, the model fails to predict intra-industry trade, and effects are probably too extreme to give an adequate representation of many industries. We now turn to a case where the sharp price under-cutting of Bertrand competition does not take place.

We have reached the conclusion that country 1, the relatively capital abundant country, exports the relatively capital-intensive good A, and imports the relatively labour-intensive good B. These results are perfectly in line with the conventional Heckscher- Ohlin theorem. But there is more to it than that: while international trade in good B will be of the conventional inter-industry type, trade in good A will be of the intra-industry type. We have in fact just seen that the exports of A are net exports: this means that country 1 will simultaneously export and import goods belonging to industry A, the exports being however greater than the imports. To show this, we must recall that– as a consequence of economies of scale in the production of each variety of commodities A -no country can produce all the range of varieties of this commodity, but only pat. Therefore, even if both countries produce manufactures, each will produce different varieties. Thus, to satisfy domestic demand, country 1 will import from country 2 the varieties that it does not produce, and export to country 2 the varieties that it produces, to meet county 2’s domestic demand. There is,

consequently, intra-industry trade (that, as we have seen above, in the aggregate gives rise to net exports of A from coutny1), which will coexist with inter-industry trade.

Trade Policy

It is on the study of the effects of a tariff (or other protective measures) on the number of varieties produced and on the unit cost of production that the free trade versus protectionism debate has concentrated its attention. Protectionist measures could indeed allow domestic firms to increase the scale of production and so bring about a price decrease due to internal economies. This can be seen as a new argument in favour of the protection of the infant industry, a problem already examined in the context of the orthodox theory. The effect on the number of varieties produced is not so clear. In addition, the use of protectionist measures can give rise to retaliation, in which case the result is probably a reduction in social welfare even when the effect of protectionism would have been positive in the absence of retaliation.

Check your Progress

1. Explain International Trade and Imperfect Competition.
2. Define Oligopolistic Interaction and Price Competition under International Trade.

2.5 Summary

Heckscher-Ohlin theory assumes that relative factor prices reflect the relative supplies of factors. Thus, abundant factor will have a lower price and vice-versa. This implies that the supply outweighs the demand in the determination of factor prices. However, when the demand for factors prevails upon the supply, factor prices so determined would not confirm to the supplies of the factors. Suppose, a country has abundance of capital and scarcity of labour in physical terms, but there is relatively greater demand for capital. In such a situation, the price of capital would be relatively higher in comparison to that of labour.

Wolfgang Stolper and Paul Samuelson proved that trade does split a country into clear gainers and clear losers under certain assumptions: such as, a country produces two goods (for example, wheat and cloth) with two factors of production (for example, land and labour);

neither good is an input into the production of the other; competition prevails; factor supplies are given; both factors are fully employed; one good (wheat) is land-intensive and the other (cloth) is labour–intensive with or without trade; both factors are mobile between sectors (but not between countries); and opening trade raises the relative price of wheat.

The factor price equalisation theory is an important corollary of the Heckscher- Ohlin theory of trade. If there is a free international movement of factors, the prices of the factors of production undisputedly get equalised. However, the classical theorists as well as Heckscher and Ohlin had assumed an international immobility of factors. This led to the crucial question of how the international trade would affect the prices of the factors of production. Under these circumstances there are some proofs such as Samuelson's proof and Hicksian proof. Now we shall discuss one by one.

The problem of international trade under conditions of imperfect competition, as these terms are used by Prof. Chamberlin and by Mrs. Robinson has received little attention up to the present. This is probably due to two main reasons. In the first place, the question seems to be one of little practical importance, since the most practical articles of international trade are raw materials or staple commodities, which are generally produced under condition of perfect competition.

2.6 Key Words

Heckscher-Ohlin theory: **Heckscher-Ohlin theory** assumes that relative factor prices reflect the relative supplies of factors. Abundant factor will have a lower price and vice-versa. This implies that the supply outweighs the demand in the determination of factor prices.

The Stolper-Samuelson theorem: This theorem states that moving from no trade to free trade unambiguously raises the returns to the factor used intensively in the rising-price industry (land) and lowers the returns to the factor used intensively in the falling-price industry (labour), regardless of which goods the sellers of the two factors prefer to consume.

Factor Price Equalisation Theory: The factor price equalisation theory sates that the labour-abundant country specialises in the export of the labour-intensive commodity because, labour is a relatively cheaper factor compared with capital. On the other hand, the capital-abundant country specialises in the export of capital-intensive commodity on account of capital being a relatively cheaper factor there.

International Trade and Imperfect Competition: The problem of international trade under conditions of imperfect competition, as these terms are used by Prof. Chamberlin and by Mrs. Robinson has received little attention up to the present. This is probably due to two main reasons. In the first place, the question seems to be one of little practical importance, since the most practical articles of international trade are raw materials or staple commodities, which are generally produced under condition of perfect competition. The second and perhaps even more logical reason is that it seems to be almost impossible to arrive at any definite conclusions regarding the question whether international trade will take place, and if it does, to what extent and with what result, when the commodities are produced under imperfect competition.

2.7 Questions

1. Explain International Trade and Imperfect Competition.
2. Define Oligopolistic Interaction and Price Competition under International Trade.
3. Define Stolper-Samuelson Theorem in context of international trade.
4. What do you mean by Factor Price Equalization Theorem?
5. Define Samuelson's Proof in context of Factor Price Equalization Theorem.
6. Define Hicksian Proof in context of Factor Price Equalization Theorem.

7. What are the Criticisms to Factor Price EqualisationTheory.
8. What do you mean by Leontief Paradox?
9. Explain Heckscher-Ohlin theory of international trade.

2.8 Questions and Answers

2.8.1 Short-Answer Questions

1. What do you mean by Leontief Paradox?

According to Leontief, Heckscher-Ohlin model is essentially static, applies to a point of time, given factor endowments and techniques of production. It may not hold well in the real world subject to continuous changes.

For a model to become a theory, a number of empirical tests are run on it. Heckscher-Ohlin model was tested empirically for the first time by Wassily Leontief in 1951 using US data for the year 1947. Leontief hypothised that US being a capital abundant nation should export capital intensive goods and import labour intensive goods.

To measure and analyse it, Leontief developed a technique (tool) called the input-output table. He utilized the input-output table of the U.S. economy to calculate the amount of labour and capital in a 'representative bundle' of $ 1 million worth of US exports and imports substitutes for the year 1947. This table depicts the origin and destination of each commodity in the economy. Leontief was awarded Nobel Prize in 1973 for the development of this technique.

It should be noted here that Leontief estimated capital- labour for U.S import substitutes rather than imports. Import substitutes are the goods such as automobiles that are produced at U.S. (the home country), but are also imported from abroad because of incomplete specialisation in production. It was taken into account, because the foreign production data on U.S. imports was not available. However, an explanation on it was provided by Leontief himself. It stated that even though U.S. import substitutes would be more capital intensive rather than the actual imports; because capital was relatively cheaper in U.S. than abroad. So, they should be still less capital intensive than U.S. exports if

Heckscher-Ohlin model holds true. The inclusion of import substitutes instead of foreign data on actual US imports eliminated the commodities such as coffee and banana, which are not at all produced in US.

2. What is Stolper-Samuelson Theorem?

Wolfgang Stolper and Paul Samuelson proved that trade does split a country into clear gainers and clear losers under certain assumptions: such as, a country produces two goods (for example, wheat and cloth) with two factors of production (for example, land and labour); neither good is an input into the production of the other; competition prevails; factor supplies are given; both factors are fully employed; one good (wheat) is land-intensive and the other (cloth) is labour–intensive with or without trade; both factors are mobile between sectors (but not between countries); and opening trade raises the relative price of wheat.

The Stolper-Samuelson theorem: under the assumptions just stated, moving from no trade to free trade unambiguously raises the returns to the factor used intensively in the rising-price industry (land) and lowers the returns to the factor used intensively in the falling-price industry (labour), regardless of which goods the sellers of the two factors prefer to consume.

When tariff is imposed, the domestic producers increase the production of imported goods due to rise in their prices and decrease that of exported goods. This change in the production pattern will affect the relative prices of the factors of production. The redistributive effect is explained here with the help of Stolper-Samuelson Theorem.

The Stolper-Samuelson Theorem states that when the relative price of a commodity rises, say due to tariff, it raises the return on the factor which is being extensively used in the production of that commodity. Therefore, the real return on the country's scarce factor production will rise with the imposition of tariff.

3. What is Factor Price Equalisation Theory?

The factor price equalisation theory states that the labour-abundant country specialises in the export of the labour-intensive commodity because, labour is a relatively cheaper factor

compared with capital. On the other hand, the capital-abundant country specialises in the export of capital-intensive commodity on account of capital being a relatively cheaper factor there. The pressure of international demand renders the abundant factor scarce and its price starts rising.

At the same time, the import of the commodities that require more input of scarce factor relieves the domestic pressure of demand for that factor, resulting in a fall in its price. The process of change in prices of factors will ultimately bring about equality in the prices of factors. It is in this sense that free international trade in commodities acts as a substitute for the international mobility of factors. Under these circumstances there are some proofs such as Samuelson's proof and Hicksian proof. Now we shall discuss one by one.

4. Describe the Samuelson's Proof in view of factor price equalization.

Samuelson's proof or analysis of the factor price equalisation is based upon the following assumptions

(i) There are two countries, say A and B.

(ii) These countries produce two commodities, say X and Y.

(iii) The production of these commodities requires only two factors of production—labour and capital.

(iv) There is free competition both in the product and labour markets.

(v) There is an absence of tariff and transport costs.

(vi) The production function related to each commodity is identical and homogeneous of degree one. It implies the production is governed by constant returns of scale.

(vii) The factor-intensities are different for the two commodities. For instance, the commodity X is labour-intensive, while commodity Y is capital- intensive. It means there is an absence of reversal of factor intensity.

(viii) Capital and labour are qualitatively identical in the two countries.

(ix) The availability of factors is quantitatively different in the two countries. The country A is supposed to be labour-abundant whereas country B is capital-abundant.

(x) There is absence of complete specialisation. It means both the countries continue to produce both the commodities even after trade takes place between them.

(xi) The factor supplies are fixed in the two countries.

(xii) In each country, there is full employment of both the factors.

(xiii) There is no mobility of factors between the countries.

(xiv) The marginal-physical product of each factor is diminishing.

(xv) The tastes are identical in the two countries.

Before trade, there is low capital-labour ratio in country A and a high capital-labour ratio in country B. As trade commences, the labour-abundant country A exports the labour-intensive commodity X and country B exports the capital-intensive commodity Y. The export of labour-intensive commodity X by A creates relative scarcity of labour and consequent rise in wage rate. It also leads to a rise in capital- labour ratio.

On the opposite, the export of capital- intensive commodity by country B will result in its scarcity there. It will cause a rise in the price of capital (rate of interest) and a consequent fall in the capital-labour ratio. These relative changes in K-L ratio will continue until the K-L ratios in both the countries become exactly equal. Along with it, the prices of the two factors also undergo changes (rise in wage rate in country A and rise in interest rate of country B) in such a manner that there is ultimate equalisation of prices of two factors in both the countries.

5. Describe the Hicksian Proof in view of factor price equalization.

J.R. Hicks attempted to provide a proof for the absolute factor price equalisation. He remained all the assumptions taken by Samuelson. It is assumed that price of labour is low in the labour-abundant country, while it is higher in country B which is capital-abundant. On the contrary, the price of capital is high in country A but it is low in country B.

After trade, country A exports labour-intensive commodity X and B exports capital-intensive commodity Y. l_x and l_y are the labour co-efficients for X and Y commodities and k_x and k_y are the capital co-efficient, w_a and w_b are the wage rates in the two countries, r_a and r_b are the rates of interest in these two countries. It is assumed that the unit cost of producing X and Y commodities becomes equal in the two countries after the determination of trade equilibrium.

Unit Cost of Commodity X:

$l_x.w_a + k_xr_a = l_x.w_b + k_xr_b$

Dividing both sides by k_x

$(l_x/k_x)\ w_a + r_a = (l_x/k_x)\ w_b + r_b$

$r_a - r_b = (l_x/k_x)\ w_b - (l_x/k_x)\ w_a$

$r_a - r_b = (l_x/k_x)\ [w_b - w_a]$ ….(i)

Unit Cost of Commodity Y:

$l_y.w_a + k_yr_a = l_y.w_b + k_yr_b$

Dividing both sides by k_y

$(I_y/k_y)\ w_a + r_a = (l_y/k_y)\ w_b + r_b$

$r_a - r_b = w_b\ (l_y/k_y) - (l_y/k_y)\ w_a$

$r_a - r_b = (ly/ky)(w_b - w_a)$ …(ii)

From (i) and (ii)

$(I_x/k_x)\ (w_b - w_a) = (l_y/k_y)\ (w_b - w_a)$

If trade results in equalisation of factor-intensity in the two products X and Y and $r_a = r_b$, there will also be $w_a = w_b$. It shows that after-trade equilibrium results in the equalisation of factor prices.

The relative factor price equalisation can be explained on the assumption that the value of marginal product (MP) of each factor within each country is equal before trade under the conditions of prefect competition in product and factor markets and constant return to scale.

In Country A:

MPLax .Pax =MPLay . Pay

Or, $\frac{Pax}{Pay} = \frac{MPLay}{MPLax}$

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Again, MPLbx .Pbx =MPLby . Pby

$$\text{Or, } \frac{Pbx}{Pby} = \frac{MPLby}{MPLbx}$$

After trade takes place, there is equalisation of MPL and MPK in both the countries.

$MPL_{ax} = MPL_{bx}$, $MPL_{ay} = MPL_{by}$

$MPK_{ax} = MPK_{bx}$, $MPK_{ay} = MPK_{by}$

Hence $(P_{ax}/ P_{ay}) = (P_{bx} / P_{by})$ respect of both the commodities in the two countries.

The trade will lead to a rise in K-L ratio in country A and a fall in K-L ratio in country B. The increase in demand for labour relative to capital in A causes a rise in both the ratio of P_L to P_K and the ratio of P_X to P_Y. On the other hand, export of capital-intensive commodity Y by country B causes an increase in the demand for capital relative to labour. It brings about a fall in the ratio of P_L to P_K and also a fall in the ratio of P_X to P_Y.

The increase in capital-intensity in country A occurs because of a rise in the price of labour relative to capital. On the opposite, the decrease in the capital-intensity in country B takes place because the price of capital rises relative to labour. Such changes in prices of the two factors bring about an equality in the factor price ratios in the two countries.

6. Describe the Criticisms to Factor Price Equalisation Theory.

(i) Tariff and Non-Tariff Barriers: The theory rests upon the assumption that there are no tariff and non-tariff barriers to trade. In actual reality, such barriers do exist. It was on account of them that Ohlin ruled out the possibility of complete equalisation of factor prices.

(ii) Transport Costs: The factor price equalisation theory takes another unrealistic assumption that transport costs are absent. In fact, the import and export of commodities do involve transport costs, which not only have restrictive effect on the product mobility but may also affect the comparative advantages of the trading countries. The existences of transport costs are likely to prevent the equalisation of factor prices.

(iii) Complete Specialisation: This theory assumes that the trading countries are engaged in the production of both the commodities. In other words, there is only partial or incomplete specialisation. When the trading countries are of unequal size, there is possibility that there is complete specialisation in at least the smaller country. In the event of complete specialisation, there is little possibility of complete factor price equalisation.

(iv) Identical Production Function: Samuelson's factor price equalisation theory assumes that production functions are identical in the two trading countries. Even if the two countries have the same resources, yet their productive capacities are different because of natural, technical and sociological differences between them. The diversities in their production functions may create hindrance in the equalisation of factor prices.

(v) Absence of Perfect Competition: This theory rests upon the assumption that there are the conditions of prefect competition in the product and factor markets. In actual reality, the prefect competition does not exist. In the real market situations like oligopoly or monopolistic competition, there are rigidities in the product and factor markets that prevent the possibility of equalisation of factor prices.

(vi) Increasing Returns to Scale: The factor price equalisation theorem assumes that there is a first-degree homogeneous production function, which implies that the production is governed by the constant returns to scale. If the economies of scale are present, according to Meade, the theory will become invalid for two reasons. Firstly, it will result in the emergence of monopolies and consequent breakdown of the apparatus based on the assumption of perfect competition. Secondly, the increasing returns to scale will lead to complete specialisation, which again rules out the possibility of equalisation of factor prices.

(vii) Changes in Factor Supplies: The theorem takes the assumption that the factor supplies remain fixed in the trading countries. In actual reality, however, there are changes in factor supplies and these changes will create difficulties in the equalisation of factor prices.

(viii) Dynamic Conditions: The factor price equalisation theory assumes static conditions such as fixed factor endowments, techniques and same taste pattern in the trading countries. In the actual dynamic conditions, the continuous changes take place in all the relevant factors and variables and many often it is found that the differences in factor prices get widened rather than being eliminated.

Such a trend has been confirmed by economists like Kindelberger, Myrdal and Sodresten. In the words of Kindelberger, "…trade between developed and less developed countries widens the gap in living standards (the factor prices such as wages) rather than narrows, and it is evident after centuries of trade that there are still poor as well as rich countries.

(ix) Multi-Country, Multi-Commodity and Multi-Factor Trade: The theorem can deal efficiently only in respect of trade involving two countries, two commodities and two factors. The theory is likely to become indeterminate in the multi-country, multi-commodity and multi-factor trade situation. If the number of productive factors exceeds the number of commodities, the theory breaks down completely.

(x) Factor-Intensity Reversal: This theory assumes that there is an absence of factor intensity reversal. It means the labour-surplus country will export only labour-intensive commodity and the capital-surplus country will export the capital- intensive commodity. If there is reversal of factor intensity, the factor price equalisation theorem will fail to hold. If the labour-surplus country A specialises in the labour-intensive commodity X, the absolute and relative wage rates will rise in this country.

If country B specialises in commodity Y but produces it thorough labour-intensive method, the demand for labour will increase even in this country resulting in a rise in the absolute and relative wage rate. As the wage rates rise in the two countries, whether the difference in absolute and relative wage rates will rise, fall or remain unchanged, will depend on the rates at which wages increase in the two countries. Thus the factor- intensity reversal can result in the invalidation of the factor price equalisation theory.

The above arguments suggest that factor price equalisation cannot take place in actual dynamic realities. It, however, does not mean that the theorem is completely invalid. It only means that the assumptions of this theorem, being unrealistic, lead to an unrealistic conclusion.

There is little doubt that the movement of products from one country to another can at least reduce the factor price differentials. In the absence of trade, such differences are likely

to be considerably large. In the words of Robert Heller, "…the effect of international trade may be considered as a 'leaning against the wind' in that factor price differentials would be even larger in the absence of trade."

2.8.2 Long-Answers Questions

1. **Describe elaborately Leontief Paradox.**

Heckscher-Ohlin theory assumes that relative factor prices reflect the relative supplies of factors. Thus, abundant factor will have a lower price and vice-versa. This implies that the supply outweighs the demand in the determination of factor prices. However, when the demand for factors prevails upon the supply, factor prices so determined would not confirm to the supplies of the factors. Suppose, a country has abundance of capital and scarcity of labour in physical terms, but there is relatively greater demand for capital. In such a situation, the price of capital would be relatively higher in comparison to that of labour.

Under these circumstances, contrary to the factor endowments, the country may export labour intensive commodities and import capital intensive commodities. "Perhaps it is this which lies behind the empirical findings by Leontief that though America is a capital abundant and labour scarce country, in the structure of its imports, capital-intensive goods are relatively smaller whereas in the structure of its exports, labour intensive goods are relatively greater."

According to Leontief, Heckscher-Ohlin model is essentially static, applies to a point of time, given factor endowments and techniques of production. It may not hold well in the real world subject to continuous changes.

For a model to become a theory, a number of empirical tests are run on it. Heckscher-Ohlin model was tested empirically for the first time by Wassily Leontief in 1951 using US data for the year 1947. Leontief hypothised that US being a capital abundant nation should export capital intensive goods and import labout intensive goods.

To measure and analyse it, Leontief developed a technique (tool) called the input-output table. He utilized the input-output table of the U.S. economy to calculate the amount

of labour and capital in a ‘representative bundle’ of $ 1 million worth of US exports and imports substitutes for the year 1947. This table depicts the origin and destination of each commodity in the economy. Leontief was awarded Nobel Prize in 1973 for the development of this technique.

It should be noted here that Leontief estimated capital- labour for U.S import substitutes rather than imports. Import substitutes are the goods such as automobiles that are produced at U.S. (the home country), but are also imported from abroad because of incomplete specialisation in production. It was taken into account, because the foreign production data on U.S. imports was not available. However, an explanation on it was provided by Leontief himself. It stated that even though U.S. import substitutes would be more capital intensive rather than the actual imports; because capital was relatively cheaper in U.S. than abroad. So, they should be still less capital intensive than U.S. exports if Heckscher-Ohlin model holds true. The inclusion of import substitutes instead of foreign data on actual US imports, eliminated the commodities such as coffee and banana, which are not at all produced in US.

On testing the hypothesis with the given data on U.S. exports and import substitutes, Leontief found out that U.S. import substitutes were about 30% more capital intensive than U.S. exports. This is to say that United Stated was exporting labour intensive commodities and importing capital intensive commodities in 1947. This was opposite of Heckscher-Onlin model postulated, and is popularly known as the Leontief Paradox, as it was contrary to the generally held view.

However, Mead's view on Leontief paradox was that Leontief did not refute the Heckscher-Ohlin model. Instead he reasoned out that it was an optical illusion since U.S. labour was about 3 times as productive as foreign labour in 1947. High labour productivity made U.S. a labour abundant country. As a result, U.S was essentially a labour intensive nation as compared to the availability of capital. Therefore, it was appropriate that U.S. exported labour intensive goods in relation to U.S. import substitutes. This explanation was not acceptable and Leontief himself withdrew it. Reason being that while U.S. labour was more productive than foreign labour (though the assumption of it being 3 times more productive was arbitrary), so it was U.S. capital. Thus, both U.S. labour and U.S. capital

should be multiplied by the same multiple, leaving the relative abundance of capital in U.S. unaffected.

Another argument was postulated that U.S. tastes were biased strongly in favour of capital intensive commodities. As a result, the prices of such commodities rose relatively. Therefore U.S. would export relatively labour intensive commodities. However, this explanation was also rejected based on the study by Houthakker in 1957 on household consumption patterns in many countries. It was found that the income elasticity of demand for food, clothing, housing and other classes of goods was remarkably similar across the nations. Thus, this explanation of the Leontief paradox is also not accepted.

2. **Explain Stolper-Samuelson Theorem.**

The Stolper-Samuelson theorem: Moving from no trade to free trade unambiguously raises the returns to the factor used intensively in the rising-price industry (land) and lowers the returns to the factor used intensively in the falling-price industry (labour), regardless of which goods the sellers of the two factors prefer to consume.

When tariff is imposed, the domestic producers increase the production of imported goods due to rise in their prices and decrease that of exported goods. This change in the production pattern will affect the relative prices of the factors of production. The redistributive effect is explained here with the help of Stolper-Samuelson Theorem.

The Stolper-Samuelson Theorem states that when the relative price of a commodity rises, say due to tariff, it raises the return on the factor which is being extensively used in the production of that commodity. Therefore, the real return on the country's scarce factor production will rise with the imposition of tariff.

In our example, country 'B' being a capital abundant nation imposes an import tariff on commodity 'X' which is a labour-intensive commodity and Y is a capital-intensive commodity. Thus, P_X/Py rises for both domestic consumers and producers. So, the real wage of labour (i.e., the scarce resource of country 'B') will rise. This is explained now.

After imposition of import tariff on commodity ‘X’, the country starts producing more of commodity ‘X’ , and less of commodity ‘Y’. Thus, the country moves from point ‘D’ to point ‘F’ in Fig. 2.1. This movement to point ‘F’ is the result of increase in capital–labour ratio in the production of both the commodities which further results in increase in the price of the country’s scarce factor, labour.

To illustrate it, consider the following Fig.2.1, which makes use of the Edgeworth box diagram for country ‘B’. The curve O_XO_Y is the usual contract curve and isoquants are assumed to be linearly homogenous in this country.

In this figure, point ‘C’ depicts the autarky situation and point ‘D’ is the free trade production point on the contract curve. Point ‘F’ is the new production point when country ‘B’ imposes 100 percent ad valorem tariff on importable commodity ‘X’. Observe from the figure that point ‘F’ is further away from the origin ‘O_x and closer to the origin ‘O_Y’ than point ‘D’ implying post-trade capital-labour ratio. The slope of the line from the origin ‘O_x to point ‘F’ measures the capital–labour ratio in the production of commodity ‘X’. Again, the slope of the line from the origin ‘Oy to point ‘D’ measures the capital–labour ratio in the production of commodity ‘Y’.

This shows that with the rise in the price (P_X/P_Y) as a result of import tariff on commodity ‘X’, country ‘B’ reduces more of commodity ‘X’ and less of commodity ‘Y’.

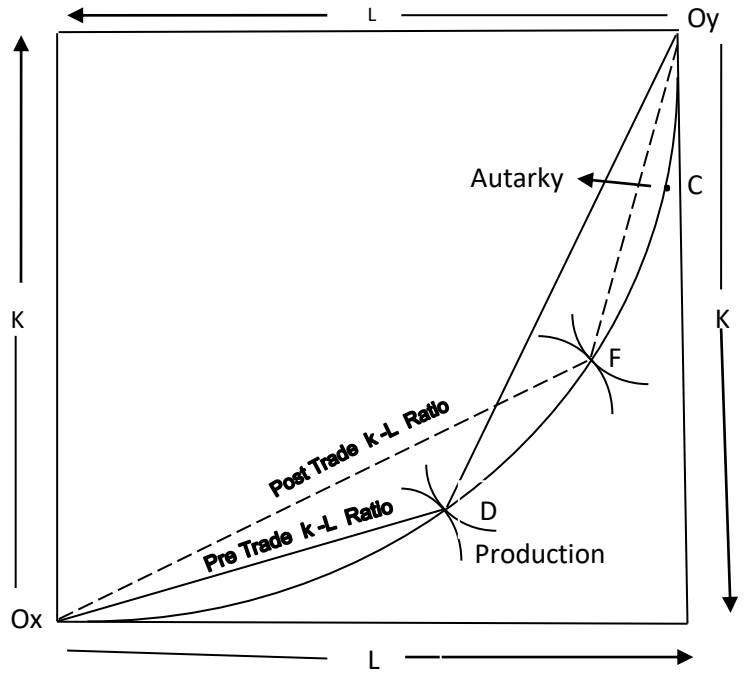

Fig 2.1: Stolper-Samuelson Theorem: Edgeworth Box Diagram

The slope of the line from the origin 'O_x to point 'D' measures the capital–labour ratio in the production of commodity 'X' implying pre trade capital-labour ratio. Further, the slope of the line from the origin O_Y to point 'D' measures the capital–labour ratio in the production of commodity 'Y' under free trade. After imposition of import tariff, the country 'B' produces at point 'F'.

The capital–labour ratio in the production of commodity 'X' and commodity 'Y' are measured by the slope of the dotted lines from the origins O_x and O_Y respectively to point 'F'. As it can be seen in the diagram, dotted lines from the origin are steeper than the solid lines O_XD and O_YD. This indicates use of higher capital-labour ratio in the production of both the commodities after imposition of import tariff than under the free trade.

When the tariff is imposed by country 'B' on commodity 'X', i.e., the labour-intensive commodity, each unit of labour is combined with more units of capital in the production of both the commodities. As a result, the productivity of labour increases. Consequently, not only the money wage but also the real wage rises in country 'B'. With labour fully employed before and after imposition of the tariff, the total earnings of labour and its share in national income will be greater. Thus, incomes get redistributed in favour of labour. It may thus, be concluded that tariff favours a factor which is used intensively after tariff implosion. In this Fig., since national income is reduced by the tariff, i.e., from point 'E' to point 'H' and the share of total income going to 'L' is higher, the rate of interest and total earnings of 'K' fall in country 'B'. Therefore, while a small nation as a whole is harmed by the tariff, its scarce factor benefits at the expense of its abundant factor.

3. **Discuss the relationship between International Trade And Imperfect Competition.**

The stratagem to simplify the analysis is to start from an integrated world economy, which will be subsequently divided into two countries. So at the beginning we have a closed economic system (the world), which produces two commodities: a differentiated commodity, say good A and a homogeneous commodity, say food good B. In industry A, there are increasing returns to scale and monopolistic completion, while in industry B there are constant returns to scale and perfect competition. Both industries use homogeneous capital and labour as factors of production; both factors are freely mobile between industries and

fully employed. Given the prevailing set of factor prices and goods prices, there will be a certain factor allocation between the two sectors.

The problem of international trade under conditions of monopolistic or imperfect competition, as these terms are used by Prof. Chamberlin and by Mrs. Robinson has received little attention up to the present. This is probably due to two main reasons. In the first place, the question seems to be one of little practical importance, since the most practical articles of international trade are raw materials or staple commodities, which are generally produced under condition of perfect competition. The second and perhaps even more logical reason is that it seems to be almost impossible to arrive at any definite conclusions regarding the question whether international trade will take place, and if it does, to what extent and with what result, when the commodities are produced under imperfect competition. Mr. Beach concludes that the higher cost of production and the smaller output under imperfect completion will cause the volume of trade also to be smaller than it would be under perfect competition: "……if monopolistic competition prevailed throughout the economic system, the volume of international trade would generally be less than it would be under pure competition. The higher costs of production and the reduction in output would tend to restrict foreign trade as well as domestic trade……..", he does not, however, answer the question.

Imperfect competition has come to the fore in the theoretical analysis of international trade. This development was driven by a number of factors. The theory that has been developed over this period succeeds in providing a fuller explanation of recent developments in trade flows, and also supports a rich set of policy analyses, linking trade and industrial policy, and illuminating economic integration. It is noteworthy that the theory can be integrated with the more traditional factor endowment and general equilibrium concerns of trade theory; in some circumstances it can be placed 'on top of' traditional theory, providing a theory of both inter- and intra-industry trade. It also opens the way to constructing a theory of 'new economic geography', incorporating the location decisions of mobile factors of production.

Here, we focus on market power derived from product differentiation. Our primary concern is the pattern of trade, and we develop a complete synthesis of factor endowment and market access determined trade flows. We also look at factor mobility, and the possibility that this may lead to the agglomeration of economic activity.

Oligopolistic Interaction

If firms from different countries compete on international markets that are less than perfectly competitive, then what form does their competitive interaction take? What trade flows does it create? And what are the welfare effects of trade and of trade policy'! To answer these questions we devote here to the study of markets in which there is strategic interaction between firms.

As is often remarked, whereas there is only one theory of perfect competition, the problem with imperfect competition is that there are many theories. These theories are unfilled in their use of modern game theory -- we shall be analysing Nash equilibria -- but differ principally in their specification of the strategic variable chosen by firms. In the following two sub-sections we shall look first at the case where firms' strategic variables are price, output or sales quantities. In Nash equilibrium no firm has an incentive to change the value of its strategic variable given the values selected by other firms. However, the equilibrium can be quite different according as to whether prices or quantities are chosen.

The difference between price competition (Bertrand) and quantity competition (Cournot) is well known from industrial organisation. In the international trade context further distinction becomes important. Firms may chooses quantities (or prices) in each market separately, which will refer to as the case of segmented markets. Or they may select a single world-wide quantity (or price), which we shall refer to as integrated market. We shall focus on the segmented market case, merely commenting on the difference made by integrated markets.

Price Competition

The simplest framework we can consider is a single industry containing one firm in each country, l and 2. These firms have constant marginal costs, denoted c1 and c2 respectively, for producing a homogeneous product. We shall assume that markets are segmented, so it will look at just one country's market (there is no interaction between the two markets, so the other market can be described analogously. We shall look at the country l market and suppose that there is a trade cost, *t* per unit that the firm in country 2 must incur if it is to supply country l, making its effective marginal cost. Each firm chooses its price, what does the equilibrium look like, and does it involve trade? Since both firms produce the same

homogeneous product, all sales will go to whichever firm has the lowest price. If D is the market demand function, we therefore have demands faced by each firm.

What is optimal trade policy in this model? To answer this question supposes that *t* is not a real trade cost, but a tariff, creating revenue which is transferred to the country 1 government.

If c2 < cl then welfare is maximised by setting *t* = cl - c2. This value of t has two properties. First, at this value of t, c2 + t >c1 ; this means that the domestic (country 1) firm (by assumption the lower cost supplier) takes the entire market. Second, the domestic firm is induced to set price equal to its marginal cost.

If *c2* > cl then the optimal policy is *t* = c2 – *c1*. The foreign (country 2) firm will then take the entire market at this price, just less than the minimum price at which the domestic firm is willing to supply. This policy generates tariff revenue, so the unit cost of imports to economy l as a whole is the consumer price minus tariff revenue, which is the world minimum production cost. The policy, therefore, amounts to the lowest cost producer supply the market (through imports), but using the tariff to extract any profits that the importer might make.

Bertrand competition with homogeneous products is notorious for giving very sharp and extreme results, and this is what we see in this case. Although quite illuminating, the model fails to predict intra-industry trade, and effects are probably too extreme to give an adequate representation of many industries. We now turn to a case where the sharp price under-cutting of Bertrand competition does not take place.

We have reached the conclusion that country 1, the relatively capital abundant country, exports the relatively capital-intensive good A, and exports the relatively labour-intensive good B. These results are perfectly in line with the conventional Heckscher- Ohlin theorem. But there is more to it than that: while international trade in good B will be of the conventional inter-industry type, trade in good A will be of the intra-industry type. We have in fact just seen that the exports of A are net exports: this means that country 1 will simultaneously export and import goods belonging to industry A, the exports being however greater than the imports. To show this, we must recall that– as a consequence of economies of scale in the production of each variety of commodities A -no country can produce all the

range of varieties of this commodity, but only pat. Therefore, even if both countries produce manufactures, each will produce different varieties. Thus, to satisfy domestic demand, country 1 will import from country 2 the varieties that it does not produce, and export to country 2 the varieties that it produces, to meet county 2's domestic demand. There is, consequently, intra-industry trade (that, as we have seen above, in the aggregate gives rise to net exports of A from coutny1), which will coexist with inter-industry trade.

2.9. Suggested Readings

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UNIT- III
TERMS OF TRADE

Structure

3. 0 Introduction

With the exception of a handful of countries in North America, Western Europe, and Japan, most countries of the world are classified as less developed or developing countries. Moreover, some countries in the world adopt open economy while few countries adopt closed economy and others adopt both the types of economy. However, the term 'trade' originated with human civilization but trade started with barter system being replaced by Mercantilism in the 16th and the 17th centuries. The 18th century saw the shift towards liberalism. It was in this period that Adam Smith, the father of Economics wrote the famous book *The Wealth of Country* in 1776 where in he defined the importance of specialization in production and brought trade under the said scope. David Ricardo developed the Comparative advantage principle, which stands true even today. But, the term (barter) terms of trade was first coined by the US American economist Frank William Taussig in his 1927 book *International Trade*.

3.1 Objectives

By the time you complete the study of this unit, you should be able to do the followings:

- To explain the meaning of Terms of Trade
- To understand different measures of Terms of Trade and illustrate their measurement
- To analyse the meaning of a change in a country's terms of trade
- To explain Offer curves, its elasticity and Terms of Trade
- To take stock of what have been accomplished and examine the usefulness of trade models.

3.2 Meaning of the Terms of Trade

The terms of trade are defined as *the ratio between export price of a commodity and import price of a commodity*. If the export price of a commodity increases more than the import price of a commodity, a country has a positive terms of trade, as for the same amount of exports, it can purchase more imports.

However, trade today, is not fixed in one commodity only and multi-commodities play an active part in the process of trade. Under such circumstances, average exports and average imports price index are taken into consideration for calculation of terms of trade. Trade, in goods and services, is defined as the transactions in goods and services between residents and non-residents. It is measured in million US dollar, as percentage of Gross Domestic Product for net trade, and also in annual growth for exports and imports.
Therefore, we calculate the terms of trade as an index number using the following formula:

Terms of trade, $(ToT) = \frac{P_x}{P_m} X100$ where P_x is the average Export Price index and P_m is the average Import Price Index of a country.

If a country can buy more imports with a given quantity of exports, its terms of trade are better-off or improved. For example, during the commodity price boom, many resource-exporting developing countries experienced increases in their terms of trade. In other words, for the same physical quantity of exports (copper, rubber, oil etc.) as before, they could buy

more consumer and capital goods from abroad. If import prices rise faster than export prices, the terms of trade are worse-off or deteriorated. A greater volume of exports has to be sold to finance a given amount of imported goods and services. Typically, this leads to a fall in the standard of living because imports of foods and technologies are more costly. The terms of trade fluctuate in line with changes in export and import prices. The exchange rate and the rate of inflation can both influence the direction of any change in terms of trade. A key variable for many developing countries is the world price received for exports of primary commodity e.g. the world export price for coffee, raw sugar cane, iron ore and soybeans.

3.2.1 Measurement of Terms of Trade and Illustration of the Terms of Trade

There are various types of terms of trade. These are Gross barter terms of trade, Net barter terms of trade, Income terms of trade, Single factorial terms of trade, Double factorial terms of trade, Real Cost terms of Trade and Utility terms of trade. These measures are classified under three broad categories by G. M. Meier as follows:

A. The terms of trade that measures to the ratio of exchange between commodities:
   (i) Gross Barter terms of trade (G)
   (ii) Net Barter terms of trade (N)
   (iii) Income terms of trade (I)

B. The terms of trade that measures to the interchange between productive resources:
   (i) Single factorial terms of trade (S)
   (ii) Double factorial terms of trade (D), and

C. The terms of trade that measures to the gains from trade in terms of utility analysis:
   (i) Real cost terms of trade (R)
   (ii) Utility terms of trade (U)

W.F. Taussig developed both Gross barter terms of trade and Net barter terms of trade and G.S. Dorrance improved Net barter terms of trade by formulating the concept of Income terms of trade. Jacob Viner made another modification of Net barter terms of trade and corrected it for changes in factor productivity in the production of export goods which is called as Single factorial terms of trade and later he modified it to Double factorial terms of trade for being able to measure the productive resources from import sector. Later on, the gains from trade in terms of utility by Real cost and Utility terms of trade.

1. **Gross barter terms of trade**:

The Gross barter terms of trade (G) is the ratio of the quantity of goods exported of a country to the quantity of goods imported multiplied by 100 to express the terms of trade in percentages.
That is:

$$G = \frac{Q_m}{Q_x} x100.....(1)$$

Where, G stands for Gross barter terms of trade

Q_m stands for an index of the volume or quantity of imports and Q_x for an index of the volume or quantity of exports. To measure it in percentages, it is multiplied by 100.

So long as the numerator value (i.e., Q_m) is more than the denominator value (i.e., Q_x), Gross barter terms of trade will remain positive, it becomes negative when the former is less than the later and it becomes constant when both the value is equal. The first instance is a case of favorable or better-off situation of a country, the second instance is a case of un-favorable or worse-off situation and the last one is a case of neither favorable or better-off or worst-off situation of a country.

The Gross barter terms of trade is useful in barter economy where exchange of goods for goods take place but it becomes obsolete in the mercantilist and liberal period.

2. **Net barter terms of trade**:

The commodity or net barter terms of trade (N) is the ratio of the price index of the country's exports (P_x), to the price index of its imports (P_m), multiplied by 100 to express the terms of trade in percentages.
That is:

$$N = \frac{P_x}{P_m} x100.....(2)$$

For example, if we take 1990 as the base year (N-100), and we find that by the end of 2018, the country's P_x fell by 5% (to 95), while its P_m rose by 10% (to 110), then this country's commodity terms of trade declined to

$$N = \frac{95}{110} x100 = 86.36$$

This means that between 1990 and 2018, the country's export prices fell by 14% in relation to its import prices.

3. Income terms of trade:

A country's income terms of trade (I) are given by:

$$I = \frac{P_x}{P_m} xQ_x .....(3)$$

Where, Q_x is an index of the volume of exports of a country. Thus, I measures the country's export-based capacity to import. In our example, if Q_x rose from 100 in 1990 to 120 in 2018, then the country's income terms of trade rose to

$$I = \frac{95}{110} X120 = 0.8636x120 = 103.63$$

This means that from 1990 to 2018 the country's capacity to import (based on its export earnings) increased by 3.63% (even though $\frac{P_x}{P_m}$ declined). The change in the income terms of trade is very important for developing countries, since they rely to a large extent on imported capital goods for their development.

4. Single factorial terms of trade:

A country's single factorial terms of trade (S) are given by:

$$S = \frac{P_x}{P_m} xZ_x .....(4)$$

Where, Z_x is a productivity index in the country's export sector. Thus, S measures the amount of imports the country gets per unit of domestic factors of production included in its exports.

For example, if productivity in the country's export sector rose from 100 in 1990 to 130 in 201**8 then the country's single factorial terms of trade increased to:**

$$S = \frac{95}{110} x130 = 0.8636x130 = 112.27$$

This means that in 2018 the country received 12.27% more imports per unit of domestic factors embodied in its exports than it did in 1990. Even though the country shares part of its productivity increase in its export sector with other country's, the country was better-off in 2018 than it was in 1990 (by more than indicated by the increase in/and even though N declined).

5. **Double factorial terms of trade**:

The concept of the single factorial terms of trade can be extended to measure the country's double factorial terms of trade (D), given by

$$D = \frac{P_x}{P_m} x \frac{Z_x}{Z_m} x100.....(5)$$

Where, Z_m is an import productivity index. Thus, D measures how many units of domestic factors embodied in the country's exports are exchanged per unit of foreign factors included in its imports.

For example, if Z_m **rises from 100 to 105 between 1990 and** 201**8 then D rises to:**

$$D = \frac{95}{110} x \frac{130}{105} x100 = 0.8636x1.23813x100 = 106.92$$

6. **Real cost terms of trade**:

The real cost terms of trade (R) measures the gain from trade in utility terms.

$$R = SxK_x.....(6)$$

Where, K_x is an index of amount of disutility incurred per unit in productive factors in export sector.

7. **Utility terms of trade**:

$$U = RxK_m$$

K_m is an index of relative utility of imports as compared with those productive factors which are at present engaged to the production of export sector.

Illustration of the Terms of Trade:

If country 1 exports commodity X and imports commodity Y, its terms of trade are given by P_x/P_y. If it exported and imported many commodities, P_x would be the index of its export prices, and P_y would be the index of its import prices.

If country 2 exports commodity Y and imports commodity X, its terms of trade are given by P_y/P_x. This is the inverse, or reciprocal, of country 1's terms of trade and also equals 1 or 100 (in percentages) in this case.

If through time the terms of trade of country 1 rose, say, from 100 to 120, this would mean that country 1's export prices rose by 20% in relation to its import prices. This would also mean that country 2 is terms of trade have deteriorated from 100 to (100/120)100 = 83. We can always set a country's terms of trade equal to 100 in the base period, so that changes in its terms of trade over time can be measured in percentages.

Even if country 1's terms of trade improve over time, we cannot conclude that country 1 is necessarily better-off because of this, or that country 2 is necessarily worse-off because of the deterioration in its terms of trade. Changes in a country's terms of trade are the result of many forces at work both in that country and in the rest of the world, and we cannot determine their new effect on a country's welfare by simply looking at the change in the country's terms of trade.

Check your Progress 1

1. Mark True (T) or False (F):
   (i) Terms of trade is the ratio between Import price of a commodity and Export price of a commodity.
   (ii) A country can sell more exports with a given quantity of imports if its terms of trade are better-off or improved.
   (iii) G, N and I measure to the ratio of exchange between commodities in international trade.
   (iv) S and D measure to the interchange between productive resources in international trade.

(v) In the developing countries, all the measures of terms of trade are practiced for gains from trade.

2. Explain the important measures of terms of trade in about five sentences.

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3.2.2 Offer curves, its elasticity and Terms of Trade

J. S. Mill propounded the theory of reciprocal demand or the law of international values to explain the actual determination of equilibrium terms of trade. This theory allows examining the unfinished task of David Ricardo's theory of comparative cost where it states that comparative cost difference between the countries sets the outer limits between where international trade can take place, but did not explain where and between the limits, international trade will actually take place.

In this theory, Mill provides answer to these questions. According to him, the equilibrium terms of trade are determined by the equation of reciprocal demand. Reciprocal demand means the relative strength and elasticity of demand of the two countries for each other's commodity in terms of their own product. In other words, the actual ratio at which goods are traded will depend upon the strength and elasticity of each country's demand for the other country's commodity or upon reciprocal demand. Simply, a stable ratio of exchange will be determined at a level where the value of imports and exports of each country is in equilibrium. In other words, the ratio will be stable when the value of each country's export is adequate to pay for its imports.

$$e = \frac{\%\Delta Q_m}{\frac{\%\Delta P_x}{\%\Delta P_m}}$$

Where, ΔQ_m is change in quantity of imports, ΔP_x is the change in price of exports and ΔP_m is the change in price of imports. The symbol % indicates percentage.

If $e > 1$, then the terms of trade will be favorable for the concerned country and its share of gains from trade will be larger; if $e < 1$, the terms of trade for the concerned country and the share of gains from trade will be relatively less or unfavorable and if $e = 1$, the gains from trade will be equally distributed between the two countries.

Alfred Marshall developed a geometrical technique which is known as offer curve through this we can show the determination of equilibrium terms of trade graphically. The offer curve is a typical demand curve as it shows the demand (imports) for one commodity in terms of the supply (exports) of another commodity.

In Fig 3.1, we take up two Countries, two commodities and one factor case where, India (I) and Britain (B) are the countries. Wheat is produced by India and Cloth by Britain. OI is India's offer curve indicating India's demand for cloth in terms of wheat. In other words, OI offer curve represents the quantity of wheat which India is willing to offer in exchange of British cloth. As the quantity of cloth increases, India will be offering lesser amount of wheat in exchange for cloth. For example, in exchange for KW cloth India is offering OW wheat. Similarly, OB is the Britain's offer curve of cloth for wheat which represents Britain's demand for wheat. For example, Britain is willing to offer DW cloth in exchange for OW wheat. T is the equilibrium point where TP cloth is exchange for OP wheat. The reciprocal demands are equal at the equilibrium point T. The line OT shows the general equilibrium terms of trade.

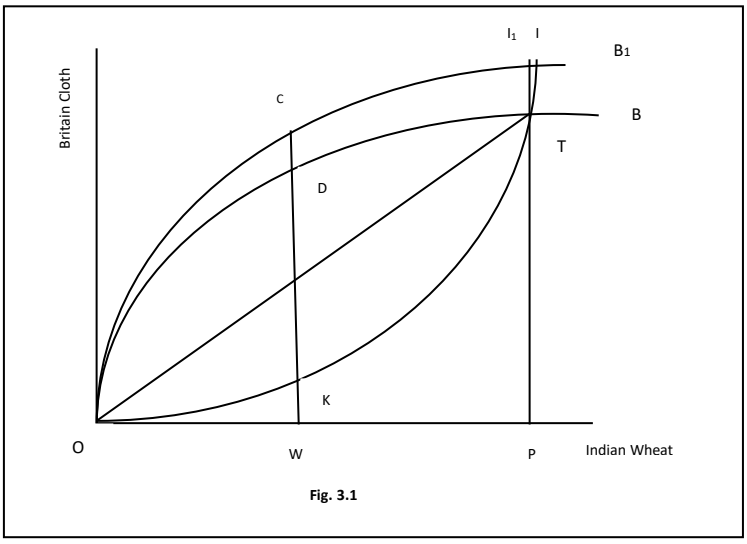

Fig. 3.1

If any change in demand and supply due to cost reduction in production of increase in tastes and preferences the offer curves will change. For example, due to sudden cost reduction in the production of cloth in Britain, the offer curve shifts from OB offer curve to OB_1 offer curve thereby no change in demand for cloth in India, then the terms of trade is in favour of India as OP wheat will be available for I_2P cloth since $TP < I_2P$ or vice versa.

The theory of reciprocal demand has been criticized of its unrealistic assumptions such as perfect completion and full employment. This theory focuses on the elasticity of demand, thus negating the impact of elasticity of supply.

In fact, terms of trade and economic development of a country have two-way relationship; first terms of trade affects the nature and extent of a country's economic development and second, the course of economic development also affects the terms of trade. An improvement in terms of trade promotes a country's development while deterioration in terms of trade adversely affects the economic development. However, some of the most important factors that influence terms of trade are as follows:

(i) Changes in factor endowments: Nature has provided different factor to different countries in the world. Some countries are large and others are small in terms of land, labour, capital and organizational capabilities. Any changes in factor endowments influence the terms of trade in the world.

(ii) Changes in technology: Technology is the main driving force for augmentation of output. Any change in technology has great impact on the production of an output.

(iii) Changes in tastes and preferences: Tastes and preferences of consumers have also an effect in the demand of a commodity and thus it influences the terms of trade of a nation.

(iv) Economic growth: The growth effect of trade may differ according to the level of economic development. Greater openness to trade has positive impacts on economic growth for advanced economies. For developing countries, however, higher trade openness has negative impacts on economic growth.

(v) Reciprocal demand: Reciprocal demand refers to the intensity of demand for a commodity of one country in the other country. Higher the intensity of demand in the other country allows the country to export more and can improve the terms of trade and vice versa.

(vi) Tariff: Tariffs, Quotas or preferential trade influence the terms of trade. These measures, if not retaliated by other trading countries, improve a country's terms of trade by increasing more exports and restricting imports.

(vii) Balance of payments: If a country experiences deterioration in the balance of payment then it may impact upon the terms of trade because the country's value of imports increases faster than the value of exports. In other words, deterioration in balance of payment means a country is importing more than exporting. This

would mean cheaper exports and more expensive imports. Hence, balance of payment controls the terms of trade of a nation.

(viii) International capital flows: International capital flows are the financial side of international trade. When a country imports a goods and services, the buyer or importer gives the seller or exporter a monetary payment, just as done in domestic transactions. If total exports are equal to total imports, these monetary transactions would balance at net zero. In other words, people in the country would receive as much financial inflows as they paid out in financial outflows. Hence, it influences the terms of trade of the country.

(ix) Import substitution: It is a trade and economic policy which advocates replacing foreign goods with domestic goods. This policy is adopted to correct the terms of trade of a country.

(x) Degree of competition: There are four types of competition in a free market system: monopoly, perfect competition, monopolistic completion, and oligopoly. In a monopoly, there is only one seller in the market. The monopolist is able to control prices of his goods. Most monopolies fall into one of two categories: natural and legal. Natural monopoly includes public utilities such as electricity and gas suppliers. They inhibit competition in the society. Legal monopoly on the other hand, arises when a company receives a patent giving it exclusive use of an invented product or process for a limited time, generally twenty years. If a country enjoys legal monopoly power in case of its exports and there are many alternative sources of supply of its imports, then it will have favourable terms of trade.

(xi) Rate of exchange: Changes in the rate of exchange of a country's currency affect its terms of trade. If a country's currency appreciates, its terms of trade will be improved because of the rise in the value of currency which led to increase in export prices and decrease in import prices. On the other hand, if a country's currency depreciates, its terms of trade will be deteriorated because of the fall in the value of currency which led to decrease in export prices and increase in import prices. Therefore, rate of exchange also influences the terms of trade of the country.

Check Your Progress 2

1. Mark True (T) or False (F):

(i) The theory of reciprocal demand or the law of international values explains the actual determination of equilibrium terms of trade.

(ii) J. S. Mill propounded the concept of offer curve.

(iii) Offer curve represents a country's demand for a commodity.

(iv) If $e > 1$, then the terms of trade will be unfavorable for the concerned country and its share of gains from trade will be smaller.

(v) An improvement in terms of trade promotes a country's development while deterioration in terms of trade adversely affects the economic development.

2. Explain the factors that influence terms of trade in about five sentences.

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3.3 Lets Sum Up

Of the seven terms of trade defined, N, I and S are the most important measures of terms of trade. G, D, R and U do not have much significance for developing countries and are not usually used for measurement of terms of trade in the world. However, it is significant to mention that these measures are only in theory. Generally, the most significant terms of trade for developing countries are I and S. Since N is the easiest to measure, it is widely used. Indeed, N is often referred to simply as "the terms of trade".

I and S can rise even when N declines. This is generally regarded as favorable to a developing country. Of course, the most favorable situation is when N, I and S all increase. On the other hand, the worst possible situation from the point of view of a developing country occurs when all three terms of trade deteriorate at the same time.

The concept of Income terms of trade attempted is a correction in the Commodity terms of trade for changes in the volume of exports. Jacob Viner made another modification over the Net barter or Commodity terms of trade. He corrected the Net barter terms of trade for changes in factor productivity in the production of export goods. The concept of terms of trade developed by him is called as the 'Single Factorial Terms of Trade'. It is determined by

multiplying the commodity terms of trade with the productivity index in the domestic export sector. The Single factorial terms of trade imply a ratio of the export price index and import price index adjusted for changes in the productivity of factors used in the production of export goods.

3.4 Key Terms

Terms of trade: The terms of trade are defined as the ratio between export price of a commodity and import price of a commodity.

Commodity or net barter terms of trade: The commodity or net barter terms of trade is the ratio of the price index of the country's exports to the price index of its imports multiplied by 100 to express the terms of trade in percentages.

General equilibrium: The intersection between the demand and supply curve shows the general equilibrium.

Offer curves: The offer curve is a typical demand curve as it shows the quantity that will be import (offered) for each quantity of other commodity that it imports.

Open economy: An open economy is an economy in which there are economic activities between the domestic country and outside world.

Close economy: A closed economy is a self-sufficient, which means no imports come into the country and no exports leave the country. It provides domestic consumers with everything they need from within the country's borders and no international trade and finance can take place.

Exports: The act of selling goods and service to a foreign country is called exports.

Imports: The act of buying goods and service from a foreign country is called imports.

Better-off: Better-off means being in comfortable economic circumstances.

Worse-off: Worse-off means being in uncomfortable economic circumstances.

3.5 Answers to Check Your Progress

1. Check Your Progress 1

   (i) T

   (ii) F

   (iii) T

   (iv) T

   (v) F

2. Explain the important measures of terms of trade in about five sentences.

There are seven important measures of terms of trade. Gross barter terms of trade (G), Net barter terms of trade (N), Income terms of trade (I), Single factorial terms of trade (S), Double factorial terms of trade (D), Real cost terms of trade (R) and Utility terms of trade (U). Out of these measures of terms of trade, N, I and S are the most important measures of terms of trade. The commodity or net barter terms of trade (N) is the ratio of the price index of the country's exports (P_x), to the price index of its imports (P_m), multiplied by 100 to express the terms of trade in percentages. Income terms of trade is the multiplication of N and Q_x, where, Q_x is an index of the volume of exports of a country. Similarly, **Single factorial terms of trade is the product of N and Z_x, w**here, Z_x is a productivity index in the country's export sector. Thus, S measures the amount of imports the country gets per unit of domestic factors of production included in its exports.

Check Your Progress 2

1. Mark True (T) or False (F):

   (i) T

   (ii) F

   (iii) T

   (iv) F

   (v) T

2. Explain the factors that influence terms of trade in about five sentences.

Some of the most important factors that influence terms of trade are changes in factor endowments, changes in technology, changes in tastes and preferences, economic growth, reciprocal demand, tariffs etc. Any changes in factor endowments influence the terms of trade

in the world. Similarly, any change in technology has great impact on the production of an output. Tastes and preferences of consumers have also an effect in the demand of a commodity and thus it influences the terms of trade of a nation. Moreover, the growth effect of trade may differ according to the level of economic development. Greater openness to trade has positive impacts on economic growth for advanced economies.

3.6 Questions and Answers

3.6.1 Short-Answer Questions

1. What is meant by terms of trade?
2. What is a Gross barter term of trade?
3. Define Net barter terms of trade?
4. Classify Income terms of trade.
5. Define Single factorial terms of trade.
6. What do you know about Reciprocal demand?
7. Define Offer curve.
8. What are the measures of terms of trade that evaluate the ratio of exchange between commodities?
9. What are the measures of terms of that appraise the interchange between productive resources?
10. What are the measures of terms of that analyze the gains from trade in terms of utility analysis

3.6.2 Long-Answers Questions

1. What are terms of trade? What are the factors influencing terms of trade?
2. What are gains from trade? Examine gains from trade through suitable examples and diagrams.
3. Examine Mill's theory of Reciprocal demand.
4. Explain the determination of equilibrium terms of trade with the help of Marshal's offer curves.
5. Discuss the relation between terms of trade and economic development.

3.7 Suggested Readings

Meade, J. E (1952): A Geometry of International Trade, George Allen and Unwin, London.

Meier, G. M (1964): Leading Issues in Development Economics, Oxford University Press, New York.

Salvatore, D (2007): International Economics, Wiley India (P) Ltd, New Delhi.

Viner, J (1937): Studies in the Theory of International Trade, Harper and Brothers, New York.

UNIT-IV
TARIFF

Structure

4.0 Introduction

In this unit learners are expected to acquaint themselves with tariff, the argument fore and against it, along with, the impact of tariff ; both under partial and general equilibrium framework. The learner are also introduced with the concept of game theory and its applicability pertaining to tariff.

4.1 Objectives

In this unit the following will be discussed;

- Arguments of tariff,
- Impact of tariff: Partial and general equilibrium analysis

- Game theoretic approach to tariff
- Tariff and income distribution.

4.2 Arguments in favour of tariff

A. Infant industry argument:

According to this argument, infant industries during the initial stages of their development are not strong enough to compete with the long established foreign industries. Such an industry needs to be fully protected by the government from foreign competition. By imposing a tariff on imports, the government raises the domestic price and helps the home producers to cover their high costs and thus grow under protection.

B. Promotion of employment argument:

It is believed that imposition of tariff leads to expansion of employment and income. Imposition of tariff restricts certain imports so that some money is saved in the domestic economy which will be spent upon the purchase of the products of protected home industries. As the protected industries expand, employment therein increases and income of the economy increases.

C. balance of payments argument:

Achievement of favourable balance of payments is another argument put forward in favour of protection. The basic idea is that, country which faces deficit in balance of payment should impose tariffs to have an excess of export over imports. This will enable the country to earn more foreign exchange.

D. Revenue argument:

According to this argument, tariffs are a good source of revenue to the government. The imposition of tariff duties not only provides protection to the domestic industries, but also brings revenue to the state.

4.3 Arguments against tariff:

A. Uneconomic use of resources:

Protected industries are generally those in which a country has less comparative advantage. Thus, protection leads to the development of economically less efficient

industries and shifting of natural resources of the country from more productive occupations to less productive occupations.

B. Loss to consumer:

The ultimate burden of the imposition of tariff falls on the consumers. Tariff results in the restriction on cheap imports and raising of domestic prices. The consumer suffer from these effects.

C. Production inefficiency:

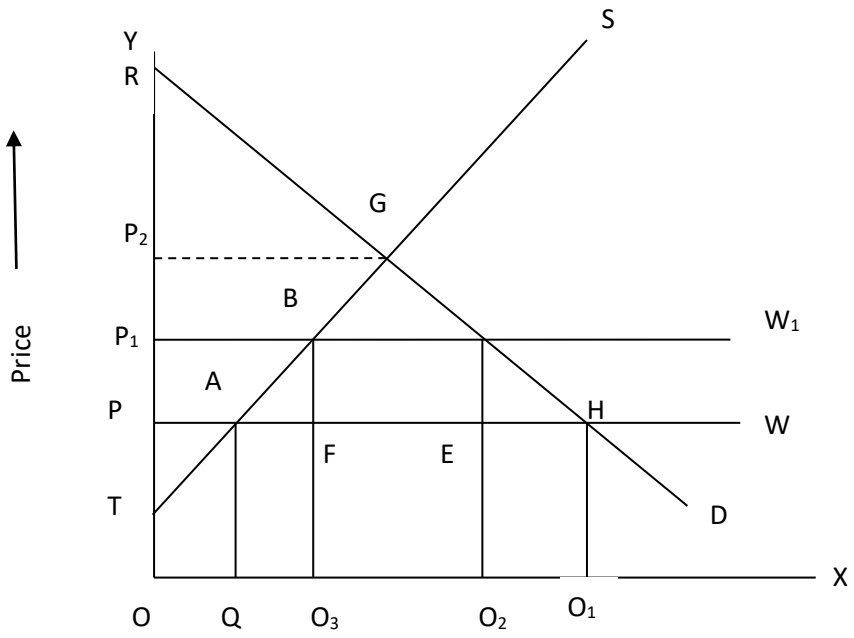
The imposition of tariff leads to increase in domestic price compare to international price. As such the domestic producers who otherwise are inefficient or cannot produce at world price are subsidise due to hiked domestic price. This leads to breeding of inefficient domestic producers and inefficient resource utilisation and allocation thereof.

4.4 Impact of tariff (partial equilibrium analysis)

When a small country impose tariff on import of the product that compete with the product of the small domestic industry, the tariff can neither effect the international prices nor can it affect the rest of the economy (as the industry is small). In such conditions, the partial equilibrium analysis that concern the market for a particular product becomes the most appropriate.

Assumption:

1. The demand and supply curves of the given commodity are concerned with home country that imposes import tariff.
2. The given demand and supply curve remain constant.
3. There is no change in consumer's taste, prices of other commodities and money income of the consumers.
4. No tariff is imposed by the home country on the import of materials that are required in producing the given commodity.
5. There is an absence of transportation cost.
6. Imported product and home produced product are perfect substitutes.



Demand and Supply

Figure 2.1

1. Protective/productive effect:

In the above diagram, D and S are the domestic demand and supply curve of the given commodity respectively. PW is the world supply curve of the commodity. At OP price, domestic supply is OQ and demand is OQ_I. the gap QQ_I between demand and supply is met through import of commodity from abroad.

Now, given the above situation, if PP_I per unit of tariff is impossed on import, the price rises to OP_I and world supply curve shift to $P_I W_I$. at this higher price, the demand is reduced from OQ_I to OQ_2 whereas the domestic supply expands from OQ to OQ_3.

Thus, the domestic production of import substitutes rises by the extent of QQ_3. This is the protective or production or import substitute effect. The increased domestic production reduced the demand for foreign product from QQ_1 to Q_2Q_3.

2. Consumption effect:

At the free trade price OP , the total consumption was OQ_1. After the imposition of tariff, when price rises to OP_1, the consumption is reduced from OQ_1 to OQ_2. Out of it, OQ_3 is the consumption of home-produced good and Q_2Q_3 is the consumption of foreign produced good. Thus, there is a reduction in consumption by OQ_1-OQ_2=Q_1Q_2.There is net loss in consumer satisfaction amounting to the area $PHCP_I$.

Combined protective and consumption effect as thetrade effect. Subsequent to the imposition of tariff the volume of international trade gets reduced from QQ_1 to Q_2Q_3.

3. Revenue effect:

Tariff being revenue to the government. The revenue receipts due to tariff is equal to PP_1 x Q_3Q_2=BF x FE=BCEF. This is the revenue effect.

4. **Redistribution effect**:

The imposition of tariff on one hand, causes a reduction in consumer's satisfaction and on the other hand, provide a larger producer's surplus or economic rent to domestic producers and revenue to the government.

Thus, tariff leads to redistribution effect in the tariff imposing country.

Loss in consumer's surplus=RHP-RCP_1=$PHCP_1$

Gain in producer's surplus=TBP_1-TAP=$PABP_1$

Gain in revenue to the Government=BCEF.

5. Balance of payment effect:

Imposition of tariff reduce import and increase export. Thus, it reduce the deficit in balance of payment.

4.5 Impact of tariff (General Equilibrium Analysis)

In a gneral equilibrium analysis when tariffs are imposed by a country on its import, import substitution would take place in the tariff imposing country. This must then lead to a contraction in output of other production sectors in theeconomy, because the resources will be drawn into the importing replacement sector away from other sectors of the economy. This means, a reallocation of the country's resources in favour of import-replacement production.

Assumption:

1. Trade take place between two countries, say A and B.
2. One-home country.
3. It produces two goods(wheat and steel)
4. Wheat is exportable and steel is importable.

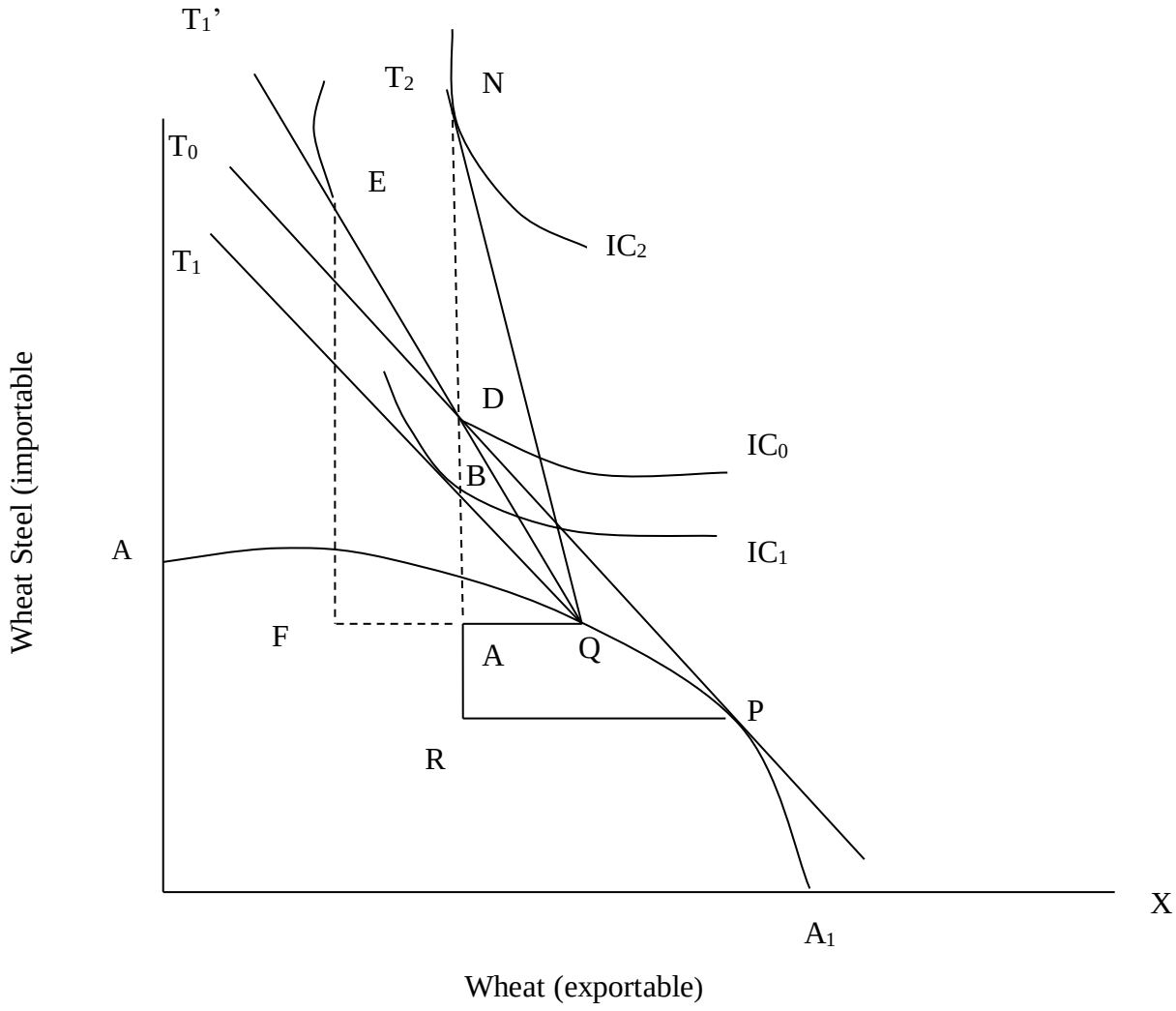


Figure 2.2

In the above diagram, under free-trade equilibrium, country produces at point P and consume at point D, exporting RP amount of wheat in exchange for RD amount of steel. T_0T_0 is the international exchange ratio line. At this pre-tariff free-trade-equilibrium, the economic welfare of the country is indicated by point D on IC_0.

Let us now introduce tariffs on the import of steel. As a result of the tariff imposition, the level of import will fall and domestic production of the importable goods will rise at unchanged terms of trade. This will have the effect of shifting the production equilibrium point from P to Q. note that line T_1Q is parallel to T_0T_0 indicating no change in terms of trade. After the imposition of tariff, the country import AB amount of steel and export AQ amount of wheat and consume at point B. tariff imposition has made the country worse off because post-tariff consumption point B is lower than free trade consumption point D. this worsening of economic welfare is due to misallocation of resources due to tariff. Therefore, production at Q is not a pareto optimal point. From this discussion, it is clear that, tariff have led to misallocation of resources and deteriorated the country's economic welfare. This assumes that, tariff will not bring about any change in terms of trade.

Now, if we assume that tariff will turn the terms of trade in favour of tariff imposing country, i.e., price of steel will decline relative to price of wheat. The terms of trade line will be steeper than before and this is shown by QT'_1 linewhich is steeper than T_0T_0 line. This means that, the countrycould produce at Q and consume at E exporting QF amountof wheat and importing FE amount of steel. Point E is on the same indifference curve as point D. Therefore, the imposition of tariff have not resulted in any of economic welfare, compared to free trade equilibrium situation.

Tariff could also lead to an increase in economic welfare as compared to free trade. At terms of trade line QT_2, country would consume at point N on IC_2 while still producing at Q. and it will be exporting AQ amounting of wheat and importing AN amount of steel. The post tariff consumption point N represent a superior welfare position compared to free trade consumption point D on terms of trade line T_0T_0.

Thus, if tariff improves the TOT, tariff will raise level of economic welfare. If tariff produces no changes in terms of trade, the result is loss of economic welfare.

If the tariff importing country is a small country that, its reduced volume of import have no effect on the world demand for the imported products, then the internartional terms of trade would remain unchanged. Such a country would then suffer loss.

But if the tariff imposing country is a largerone, that its reduced import from the rest of the world would cause a substantial fall in demand for the imported product, the terms of trade would improve infavour of the tariff-imposing country. Such a large country will then enjoy lowerimport prices relative to export price and thereby enjoy favourable terms of trade.

4.6 Concepts of Game Theory

Technically, a *strategy* here is a plan for dealing with all possible actions of other players. As opposed to less sophisticated conceptions of human behavior, game theory is decidedly social. In human conflict situations there is rarely one context-independent best strategy. What works well depends on the actions of others. And since these actions depend on perceptions, game theory takes into account that agents expect each other to have certain interests, and to do their best to attain them.

In order not to confuse issues, there is an important distinction to be made between payoff (measured in points, dollars or the like) and the personal joy gained through a game. The game theoretical concepts described in the following make sense in relation to game-internal payoff only.

Four characteristics of games are of particular interest:1)The number of players, 2) the sum type,3) whether the game is repeated and 4) the existence and type of equilibrium.

Number of Players – Game theory works with either ***two-person games*** or games with more than two players, termed ***n-player games***. An important difference between the two types, apart from the complexity of the mathematics involved, is the fact that coalitions may form between players of n-person games affecting the game dynamics. Since we are concerned with opposing interests, a player in this perspective needs not be a single person but can be a nation, a football team or a pair of Bridge partners.

The most famous among the key two-person games is "The Prisoner's Dilemma"--"the game that launched a thousand studies". The game, explained below, is often considered a fundamental model for the study of conflict and its simplicity and potential scope has earned it a place in textbooks within a truly wide range of fields. Briefly, the Prisoner's Dilemma is a situation in which two people are faced with a temptation to act in their personal interest disregarding the interest of the other person. However, if they both choose this (individually rational) course of action they will both be worse off than if they had cooperated.

In Prisoner's Dilemma two people A and B, who are suspected of committing a crime together, are being questioned separately. They can choose to confess (strategy *C*) or deny (strategy *D*). The payoffs are as follows:

-If they both confess, they will each receive a moderate sentence.

-If they stand firm and both deny, there is insufficient evidence for a full conviction, so they will each receive a light sentence.

If one denies while the other confesses, the one who denies will receive a heavy sentence and the other will be set free for providing evidence against the other. The dilemma is whether an individual prisoner should confess or deny. As before, if we consider Prisoner A: if B chooses strategy *C*, then A has a higher payoff with strategy *C*. If B chooses strategy *D*, then A has a higher payoff with strategy *C*. Thus, strategy *C* is a dominant strategy for A, and, by symmetry, also a dominant strategy for B. This leads to a dominant strategy equilibrium at (*C, C*). Again, we find that the players choose an inferior strategy because they are not co-operating and do not trust each other.

Sum Type – A key to understanding game dynamics is considering the payoff sum. The crucial question is whether the sum is ***fixed*** or ***variable***. In the first case one player's loss is another's gain. A stand - alone game of chess where the loser pays the winner 10 dollars would qualify. In such a case there is no reason for negotiation since there is no sense in cooperating: Both players' self-interest dictates that they try to reduce the opponent's payoff. Such games are termed ***zero-sum***, as the total sum of the players' gains and losses equals zero. Let's imagine, however, that our chess-players enter a tournament with the additional special rule that each opponent pawn killed earns the killing player 1 dollar, paid by the

tournament sponsor. In this case the sum is not fixed; the game is ***non-zero sum*** (or variable sum), as the total sum of gains and losses experienced by the players is not necessarily zero. This calls for rather different strategies among the players and would inspire cooperation to a certain egree-for instance, by agreeing to perform a mutual sacrifice of all pawns before battling it out with the remaining pieces. The Prisoner's Dilemma is a non-zero sum game as the size of the combined pay-off depends on aggregate player choices.

Single-shot Games versus Repeated Games-The strategic dynamics may be quite different between games which are only played once (single-shot games) and games that are repeated. In single-shot games, players seek short-term gains while players of repeated games will be able to make short-term sacrifices in favor of perceived long-term opportunities. For instance, a single-shot Prisoner's Dilemma ends in mutual defection but a repeated version may not. The players in the repeated version operate under what Robert Axelrod (1984) has called "the shadow of the future": their actions in any given round will have consequences in later rounds. Thus, on every (if not universally) successful strategy is Tit-for-Tat, the prescription that one should start by cooperating and then do whatever the other player did in the previous round (Axelrod,1984). By punishing defectors while not angering vengeful opponents, such as other versions of itself, Tit-for-Tat can manage to generate the trust necessary for collectively successful play (the cooperate-cooperate instance shown above). Often, the implication of interacting repeatedly with the same people will be that reputation becomes highly important.

Equilibrium – In a standard one-round version of the Prisoner's Dilemma, rational players will not cooperate. Thus, they get a payoff that could have been larger (if they had trusted each other) but are stuck in a situation where neither player by changing his strategy can do any better. The Prisoner's Dilemma, then, has equilibrium (although a so-called deficient one since overall the players could do better); the game calls for particular strategies and players will not deviate from their set course. Equilibrium, then, may be thought of as a game state to which the game is likely to gravitate and once reached the players will generally not change their strategies. A game may have any number of equilibrium including none and these may be either of the pure strategy type where players play one particular strategy or of the mixed strategy type where players randomly pick a strategy each round. An example of the latter is rock-paper-scissors where rational players need to

play one of the three available strategies with the probability of 1/3.

4.7 Types of Games and Strategy

4.7.1Games with Dominant Strategy Equilibrium

The *cartel* is an example. There are two firms in the market, and they can choose to operate independently (strategy *I*) or form a cartel (strategy *C*). The payoffs are as follows:

- If they form a cartel, they agree to limit production, hence increasing price, so they both gain 8.
- If they both operate independently, they both gain 4.
- If they agree to form a cartel, thus increasing the price, but one firm betrays the other by producing more than agreed, then that firm gains a lot while the other loses a lot.

How should the two firms operate to maximize their gains? Consider Firm1: if Firm 2 chooses strategy *C*, then Firm 1 has a higher payoff with strategy *I*, if Firm 2 chooses strategy *I*, then Firm 1 has a higher pay off with strategy *I*.

Thus, strategy *I* is a dominant strategy for Firm 1, because it gives the higher payoff regardless of the other player's strategy. The same reasoning applies for Firm 2: if Firm 1 chooses strategy *C*, then Firm 2 has a higher payoff with strategy *I*, if Firm 1 chooses strategy *I*, then Firm 2 has a higher payoff with strategy *I*.

So strategy *I* is a dominant strategy for Firm 2 as well. This leads to a dominant strategy equilibrium at (4,4). If a certain strategy pays a player the highest payoff, regardless of the other player's strategies, then that strategy is known as a dominant strategy. If both players have dominant strategies, the point which they both choose is known as the dominant strategy equilibrium. We see from our example that the (C,C) strategy is Pareto Superior to(I,I). However, unless the players co-operate in choosing their strategies, they will choose the inferior (I,I). The dominant strategy equilibrium does not always provide the best result. If the players choose (C,C), either player can gain by moving to I unilaterally.

In other words, if they agree to form a cartel, either player can gain by reneging on the agreement. This is why cartels are considered unstable and easy to collapse. Both players try to maximize their own profit by defecting. However, as a result, both of them experience reduction of profit. Therefore, it is known as a "tragedy of commons". How do firms keep a cartel strong? Invoke severe punishments for firms that renege on the agreement. If the game is played repeatedly, a player that reneges is not likely to be trusted, so will not be able to form a cartel with others again.

4.8 Free Trade and Protection

Consider the game between the United States and Japan, each of who can choose free trade (strategy *F*) or protection (strategy *P*). The payoffs are as follows:

- If they both choose free trade, both countries gain by trade.
- If they both choose protection, there is no gain for either country.
- If only one country chooses protection, they will gain by protecting their Domestic market while still trading in the other country's market.

As before, to consider strategies, consider the United States: if Japan chooses strategy *F*, then U.S. has a higher payoff with strategy *P*. If Japan chooses strategy *P*, then U.S. has a higher payoff with strategy *P*. Thus, strategy *P* is a dominant strategy for the U.S., and, by symmetry, also a dominant strategy for Japan. This leads to dominant strategy equilibrium at (*P*,*P*). The tragedy here is that, in the absence of any other information, both countries will choose the inferior but still dominant (*P*,*P*) when they could both gain by moving to(*F*,*F*).

How can they reach (*F*,*F*)? Integration (co-operation) is one way and Negotiation (with penalties for reneging) is another way.

4.9 Tariff and Trade Policies

Strategic trade policies aim to promote exports or discourage imports in particular sectors, to increase a nation's welfare. While some policy makers advocate the policy, many economists have raised questions on the justification and validity of the policy. Among many strategic trade policies, this section analyses "industrial subsidy" using game theory.

An example is *Air bus and Boeing*. In this example, Boeing (American) and Airbus (European) are competing in a world market. They can choose to produce (*P*) or not (*N)*.

- If they both produce, competition will drive down the price and they will both lose.
- If neither produces, neither gains.
- If one produces and the other doesn't, the producing company takes the entire market share and the other company gets nothing.

This is similar to the previous example. Again, we find two Nash equilibrium (*P,N*) and (N,P). If we assume that Boeing is already in the market (in other words, has chosen strategy *P* already) and Airbus is considering entering it, how is the game played out? By the same process of backward induction as before, we find that Boeing chooses strategy *P* and Airbus chooses strategy *N*. In other words, it is not in Airbus's interests to enter the market.

Government Subsidy is another example. Suppose that the European government regards the aircraft industry as very important. To encourage Airbus to enter the market, the European government might subsidize production by, say, 25. This changes some payoffs, and changes the game's structure:

-If Boeing chooses strategy *P*, Airbus will choose strategy *P*.

-If Boeing chooses strategy *N*, Airbus will still choose strategy *P*.

Now Airbus has a dominant strategy *P*. Then, theoretically, Boeing calculates its payoff again and finds that strategy *N* is its best strategy. Although this looks attractive for Airbus, there are other factors to consider: if Airbus is subsidized by the European government, the U.S. government can retaliate by subsidizing Boeing. Then Boeing will keep producing (strategy *P*), which will incur losses to both producers. Both producers are then subsidized by their governments, and all the burden from the subsidy is borne by taxpayers. If Boeing is stable in the U.S. domestic market, it might be able to absorb the

competition from Airbus. In other words, its strategy *P* payoff might be greater than anticipated by Airbus. If Boeing's payoff from strategy *P* is positive, it will keep producing. To finance the subsidy, the European government must use consumers' money. How can we justify the transfer of money from consumers to subsidize Airbus?

Another example is the *monopolist and new entrant in the world market*. In this example, there is a monopolist in the market facing a potential new entrant. The monopolist can choose to fight (*F*) or acquiesce (*A*). The new entrant can choose to enter (*E*)or not (*N*).

The payoffs are as follows:

- If the new entrant doesn't enter the market, the monopolist will retain its position.
- If the new entrant enters and the monopolist fights, they will both lose market share.
- If the new entrant enters and the monopolist acquiesces, they both gain, but the monopolist's share is reduced.

We find that there is no dominant strategy for either player, but there are two Nash equilibrium (*F,N*) and (*A,E*). In this game, it is the new entrant who makes the first move-to enter or not. If it chooses strategy *E,* the monopolist has two choices strategies *F* and *A*, and will choose A for a payoff of 2. On the other hand, if the new entrant chooses strategy *N*, the monopolist again has two choices, both of which have the same payoff. Now, if the new entrant compares its payoffs for each of the monopolist's choices, it finds that its best payoff is 2, by entering the market and the monopolist acquiescing. If the government of the potential entrant considers the sector is important, the government can provide an incentive by subsidizing the entrant and guaranteeing positive profits when it enters the market.

Conclusion

Can government intervention raise national welfare by shifting oligopoly rents from foreign to domestic firms? In principle, government policies such as export subsidies can serve the strategic purpose of altering the subsequent incentives of firms, acting as a deterrent to foreign competitors. This seems to offer possible rationales for trade policies. The topic became especially 'hot' as the countries experienced so called competitiveness problems.

4.10 Strategic Game Theoritic approach to Tariff: Brenda Spencer Model

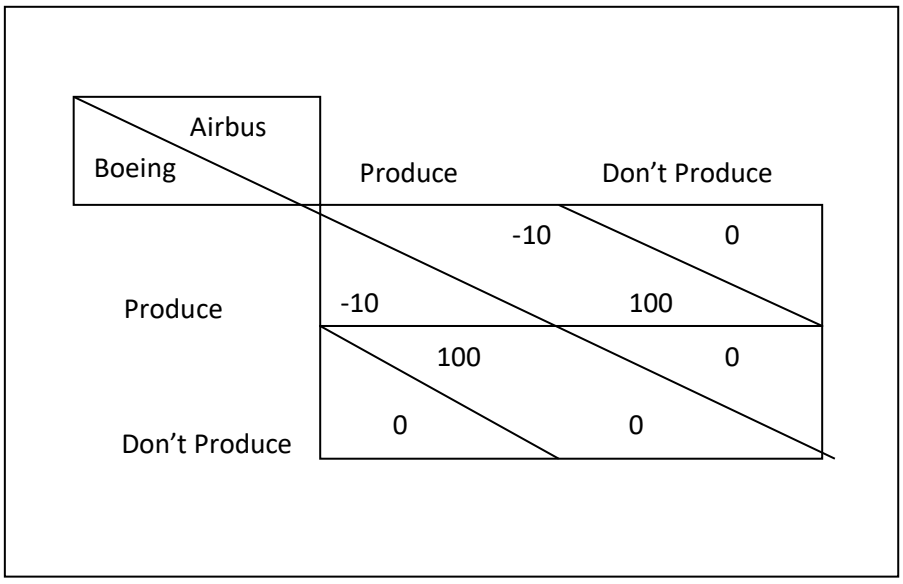
Game theoretic approach to tariff is used to examine strategic trade and industrial policies.

The trade war is considered to be a game between the two countries with following assumptions:

1. Countries trade only with each other.
2. Countries produce and consume only two goods.
3. The only way to restrict trade is an import tariff.
4. Countries are identical, except for differences in endowments.
5. Countries aim to maximize their increasing utility functions.
6. Perfect information exists.

Given these assumptions, we examine the effects of optimal tariffs and retaliation more formally by using a simple game theory set-up.

Suppose both Boeing and Airbus are deciding to produce new aircraft and because of huge cost of developing aircraft, a single producer have to have the entire world market to earn a profit .



Two firm competition and strategic trade policy

Figure 2.3

The case where both firm produce the aircraft and each loses $ 10 million is shown in the first raw and left column(top left hand corner).

If only Boeing produces the aircraft, Boieng makes a profit of $ 100 while Airbus make a 0 profit(the first raw and second column or top right hand corner). On the other hand, if only airbus produces the aircraft, airbus make a profit of $ 100, while Boieng makes a zero profit(bottom left hand corner. Finally, if neither firm produces the aircraft, each makes a zero profit (bottom right hand corner of the table).

Suppose Boieng enter the market first and earn a profit of $100 million, Airbus is out of market because it couldn't earn a profit. This is the case shown in first raw and second column(top right hand corner).

If Airbus enter the market, both firm incurr loss (first raw first column). Suppose European Government gives subsidy to Airbus of $ 15 million, then the Airbus will produce the aircraft though Boeing is already producing the aircraft, as $15 million subsidy to airbus will turn a loss of $10 into a profit of $ 5 million. Without subsidy, Boeing will then go from making a profit of $ 100 million (without Airbus in the market) to incurring a loss of $ 10 million afterwards. Because of it's unsubsidised loss, Boeing will then stop producing the aircraft and leave the entire market to Airbus which will then make a profit of $ 100 million without any further subsidy (the case of second raw first column).

The US Government can retaliate with a subsidy of its own to keep Boeing producing the aircraft. Moreover, the US Government is much less opposed to grant subsidy to firm than on European Government.

While the real world is much more complex than this, we can see how the nation would overcome a market disadvantage and acquire a strategic comparative advantage in higher field by using an industrial and strategic trade policy.

4.11 Questions

1. Discuss the implication of tariff under both partial and general equilibrium.
2. What are the various forms of Game?

3. Discuss the strategic game theory in relation to tariff: Brenda Spencer Model.

4.12 Key Words

Tariff	:	A levy on import and export
Strategy	**:**	A move by a player of the game
Pay Off	**:**	Yield from a move or strategy in a game
TOT	**:**	Terms of Trade

4.13 Suggested Readings

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UNIT-V

TRADE AND ECONOMIC GROWTH

Structure

5.0 Introduction

In this unit students will learn about the relaxation in the assumption of factor constancy and its subsequent outcomes. Students will particularly know about Ryvczynski Theorem as well as the Stolper-Samuelson theorem. Students will also learn about immiserising growth and finally technical changes.

5.1. Objectives

The learning objectives are :

- Growth in factor endowments and international trade, Rybczynski theorem
- Bhagwati's views on immiserising growth
- Technical change and international trade: Neutral, capital saving and labour saving technical progress and their impact on terms of trade.

5.2 Growth in factor endowments and international trade

The factor endowment theory holds that, countries are likely to be abundant in different types of resources. In economic reasoning, the simplest case for this distribution is the idea that countries will have different ratio of capital and labour. Factor endowments theory is used to determine comparative advantage. One of the famous theory of factor endowment in international trade is Heckscher-Ohlin theory. It states that, when two countries are involved in trade, each country will export commodity, intensive in relation abundant and cheap factor. On the other hand, the countries will import commodity, intensive in relatively scare and expensive factor.

Factor abundancy can be define in volume concept and factor price concept. According to Heckscher-Ohlin theory, a country is abundant when a price of factor is less. When the physical availability of factor is more, it cannot be said necessarily that the countryis abundant in factor. Heckscher and Ohlin has taken price of factor as a determinant of factor abundant.

Another important theorem of factor endowment is Rybzynski's theorem. Ohlin's factor equalization theorem is based on the assumption of constant factor supply. T.M. Rybczynski tried to examine this theorem by removing the underlying assumption.

Rybzynski's theorem seeks to examine the effect of change in factor supplies in one of the two trading countries in their trade relationships.

Rybzynski's theorem states that, in a two factor two-commodity economy, a rise in the supply of one factor keeping the supply of the other factor constant, leads to an increase in the output of the commodity that uses the increased factor intensively and also leads to a decline in the output of the other commodity.

5.3 Rybzynski Theorem

Rybezynski demonstrated in a paper published in 1955, the effect of change in one factor, keeping the other constant on output of the two commodities entering into international trade. This has come to be known as the Rybezynski theorem, the Rybeznski

theorem states that, in a two factors, two-commodity economy, a rise in the supply of one factor keeping the supply of the other factor constant, leads to an increase in the output of the commodity that uses the increased factor intensively and also leads to a decline in the output of the other commodity.

For example, if the supply of labour increases, the output of the labour-intensive commodity increases and the output of the capital-intensive commodity declines. On the contrary, if the supply of capital increases, the output of capital-intensive commodities increased and the output of the labour-intensive commodities declines.

Assumptions:

1. It is 2x2x2 model, i.e., there are two commodities two countries and two factor of production (labour and capital).
2. Production functions of both the commodities are different.
3. The factor intensity of each commodity is different.
4. Perfect competition in commodity and factor market.
5. Only the supply of one factor is changed while keeping that of the other as constant.

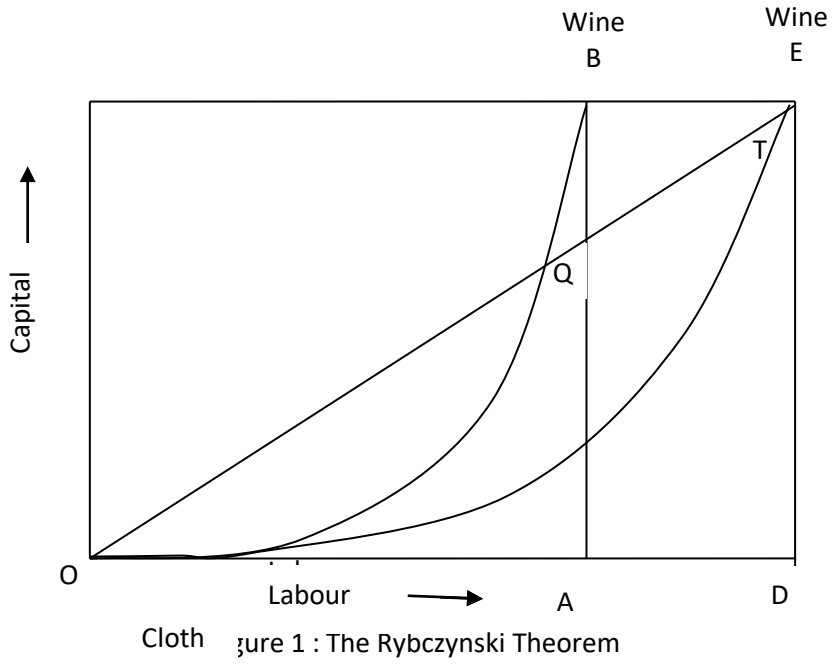

Figure 1 : The Rybczynski Theorem

Now, let us assume the supply of labour increases. This is shown by extending the size of the box by AD. So new box representing factor-endowments in this country is ODEC. Now, the point of origin for wine is E instead of B.

In the beginning, the country reaches an equilibrium point Q on the contract curve OQB. Which means factor-intensity in producing cloth is OQ, and that of wine is BQ. With the increase in labour upto AD further, labour supply being constant, the country tends to set new equilibrum point T on the new contract curve OTE.

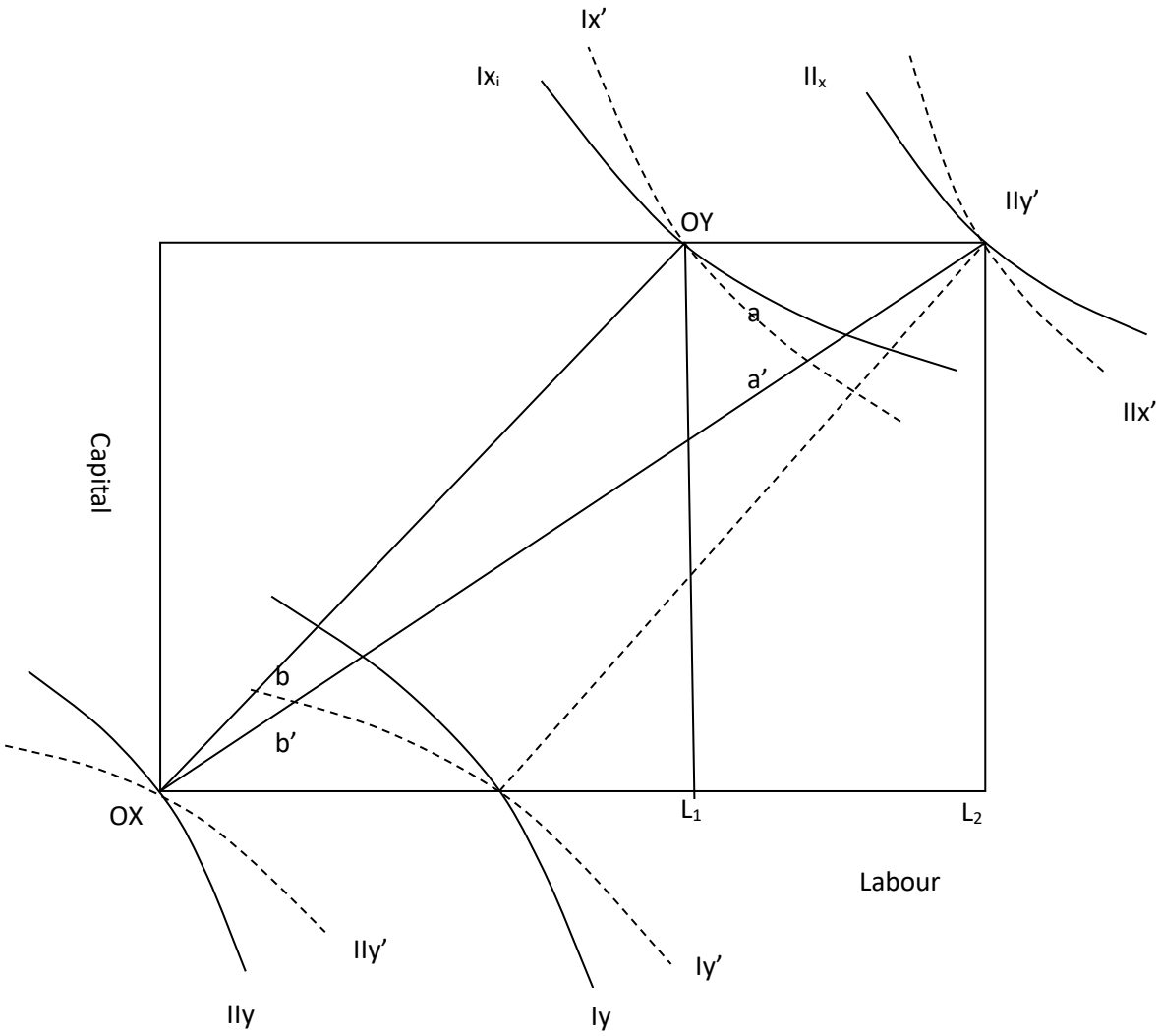

Fig. 1.1 Stolper and Somnelson box

5.4 Stolper-Samuelson Theroam

In the above diagram fig 1.1, stolper and samuelson box diagram is employed to show the effect of an increase in one factor labour(L), which is more intensively used in commodity x. In the diagram, due to increase in labour from L_1 to L_2 the origin for capital-intensive commodity Y moves from OY to OY^I. If the two commodites are equally intensive in the use of capital and labour an increase in labour will have unbiased expansion effect on the maximum possible output of both commodities. This situation is depicted by the same set

of isoquants for both industries, for, example, Ix and IIx for commodity x and Iy and IIy for commodity y. In this case, the distance between a and OY^I is equal to the distance between b and OX, indicating equi-expansion of the maximum possible output of x and y. on the other hand, if x is relatively more labour-intensive whereas Y is relatively more capital-intensive, the isoquant for the x are depicted by doted curves Ix and IIx, which are steeper than original curves, because of labour-intensive nature of production. Similarly, isoquant of Y and Iy^I and IIy^I which are more capital-intensive than the previous curves.

Under this condition, the distance betweeb a and oy is greater than the distance betweeb b^I and ox. Thus, the maximum possible output of x using the increased factor more intensively rise more than that of y using the same factor less intensive.

5.5 Bhagwati's view on immiserizing growth

The theory of immiserizing growth is related to the deterioration in the terms of trade of the country experiencing growth. According to Jagdish N Bhawati, under certain circumtances economic expansion and trade may harm the welfare of the developing countries. Immerising growth refers to the case where economic growth which may be due to the technical progress or factor accumulation leads to a deterioration in the terms of trade, which imposses a loss of real income outweighting the primary gain in real income due to growth itself. In other words, the concept of immerising growth is a situation in which a sustantial increase in the export of a commodity can depress its price in the international market to such an extent that, it harms the country's welfare because negative terms of trade outweights the positive effect of increased output.

Condition necessary for immiserizing growth to occur:

1. The country's growth must be biased towards the export sector.
2. The foreign demands for the country's export must be price inelastic, so that expansion in export supply leads to large drop in prices of export commodities.
3. The country must be heavily engaged in trade for the welfare so that the drop in the terms of trade is great enough to offset the gain from being able to supply more.

Assumptions:

1. There are two countries A and B.
2. There are two commodity, say X and Y.

3. X is an exportable and Y is importable.
4. Full-employment of resources.
5. Mobility of resources between different countries.

Given the above assumption, the case of immiserising growth is illustrated in below diagram fig 1.2. the figure represents a situation of underdeveloped country exporting primary products and importing industrial goods.

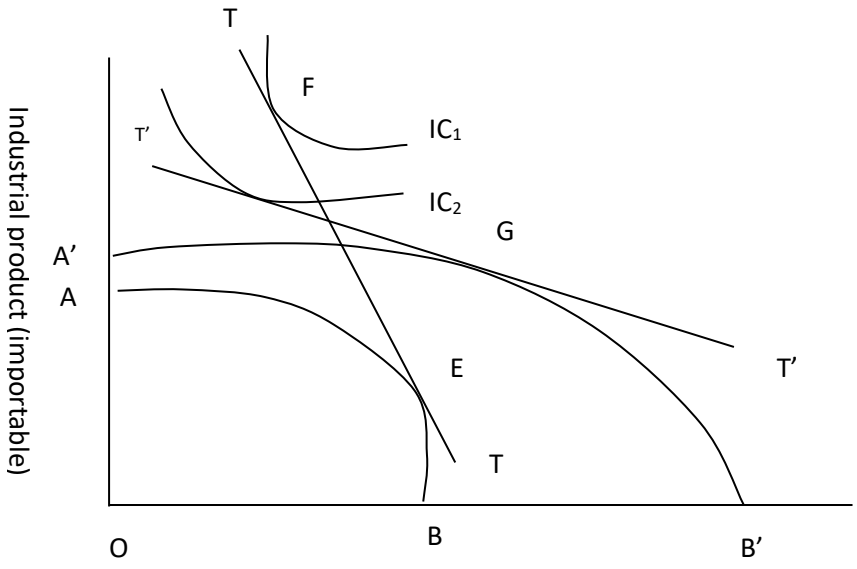

Figure 1.2

In the above diagram, fig 1.2, initially with the AB production possibility curve and TT terms of trade, the country is producing at point E and consuming at point F on the international terms of trade line TT. The level of welfare corresponding to this situation is indicated by the position of indifference curve IC_1. Now, when the contry's production capabilities increases strongly biased towardsprimary products, PPC shift from AB toA'B' and TOT line TT shift to T^lT^l. now, country is producing at point G and consuming at point H on IC_2.

Thus, due to increase in output or growth, the level of welfare decrease because earlier the country was consuming at point F on infifference curve IC_1 and now with the increased output, it is consuming at point H on IC_2. Thus, growth has deteriorated the level of welfare. This is known as immiserzing growth. The fall in the welfare level actually happens because foreign demands for the export is relatively inelastic due to which the increase in supply of primary product depresses price. In the international market, as a result, TOT deteriorated which ultimatly lead to fall in level of welfare.

5.6 Technical changes and international trade

Technical progress or changes consists of discovering new methods of production, developing new products and introducing new technique of marketing, management and organisation.

5.6.1 Neutral technical progress and trade

According to Hicks, technocal progress is neutral when the marginal product of labour and marginal product of capital increases in such a manner that the capital-labour ratio(k/L) remains the same.

Assumption

1. Economy experiences economic expansion due to technical progress.
2. It produce two commodities, say, X an d Y.
3. Production function for both commodities are homogeneous of degree one.
4. Factor supplies are unchanged.
5. There is perfect competition.

If the technical progress is of a neutral character and it takes place in export industry of the country, it will leads to a deterioration of terms of trade of the country. On the otherhand, if the neutral technical progress occur in the import-competing industry of the country, it will result in the improvement in the TOT of this country.

The impact of neutral technical progress in the export industry producing capital-intensive commodity Y upon the capital-labour ratio, factor and commodity prices, output and TOT is explained in below diagram fig 1.3.

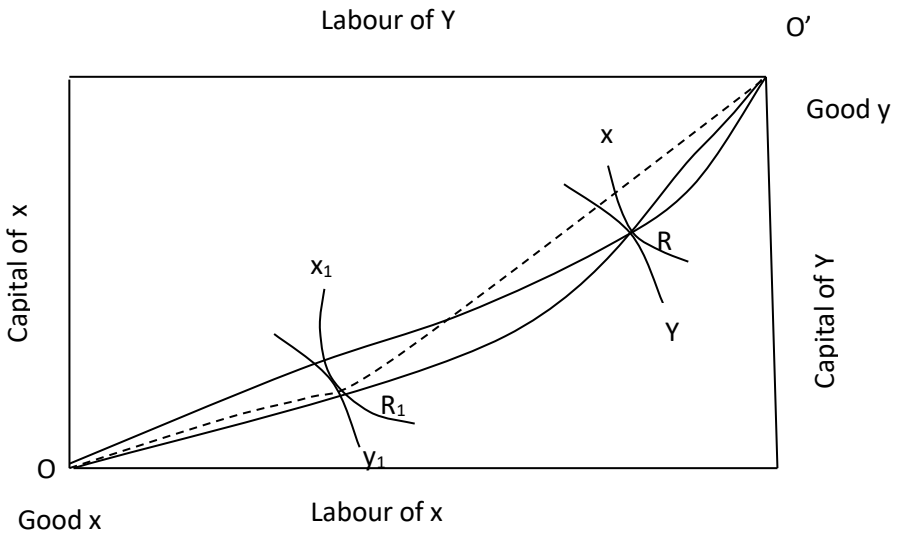

Figure 1.3

In the above box diagram, fig 1.3, O is the origin for good x and O^I is the origin for good Y. OO^I is their contract curve. Initially, the equilibrium is at point R, where the isoquants X and Y concerning the two commodities are tangent to each other. The K/L ratio in X at R is measured by the slope of line OR. The K/L ratio in Y at R is measured by the slope O^IR.

Now due to neutral technical progress in the capital-intensive industry Y, its isoquant shift to Y_I and is tangent to the new isoquant X_I of X at point R. As a result, output of Y increses from O^I R to $O^IR_1$and that of X decreases from OR to OR_I . With the increase in the supply of the exportable commodity Y, relative to the decrease in the output of the importable commodity X, the price of Y will fall and that of X will rise. As the price of export good Y fall relative to that of import-competing good X_I , there will be deterioration in the term of trade for this country. On contrary, if technical progress takes place in the import-competing industry, there will be an improvement in the TOT of the country.

5.6.2 Effect of labour using or capital saving technical progress on TOT:

Techinical progres is capital saving(or labour using) when it increase the marginal productivity of labour more than the maginal productivity of capital. The effect of capital saving technical progress in the export industry producing capital intensive commodity Y upon the output and TOT is explained with the help of below diagram.

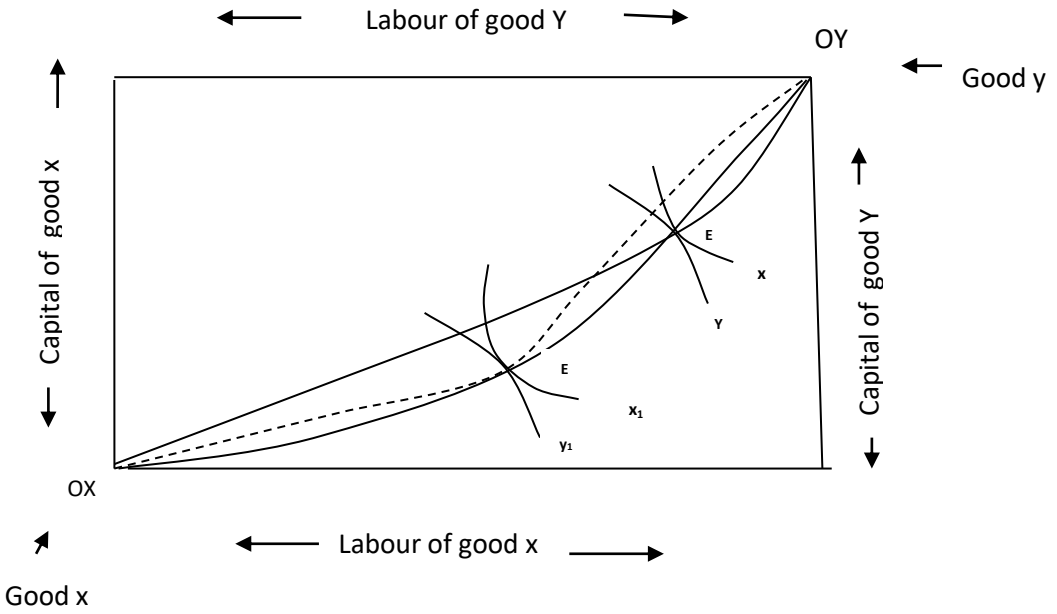

Figure 1.4

In the above diagram. OX is the origin of good X and OY is the origin of good Y. OXOY is their contract curve. Initially, the equilibrium is at point E where isoquant X and Y concerning two commodities are tangent to each other. The k/L ratio in X at point E is measured by the slope of line OXE and the k/L ratio in Y at E is measured by the slope of line OYE. At point E, OXE is the output of X and OYE is the output of Y.

Now, due to technical progress take place in capital-intensive industry Y, its isoquant shift to Y_I and is tangent to the new isoquant X_I of X at point E_I . As the technical progress is capital-saving, more labour will be transferred to the Y industry. As a result, the price of the importable commodity X will rise because its output has already fallen from OXE to OXE_I . On the other hand, the output of exportable commodity Y has increased from OYE to OYE1 thereby leading to fall in its price. Thus, the terms of trade have become unfavourable for the country.

5.6.3 Effect of capital-using or labour-saving technical progress

Technical progress is capital using or labour saving when it increses the productivity of capital more than the productivity of labour. The effect of country are explained in the following diagram.

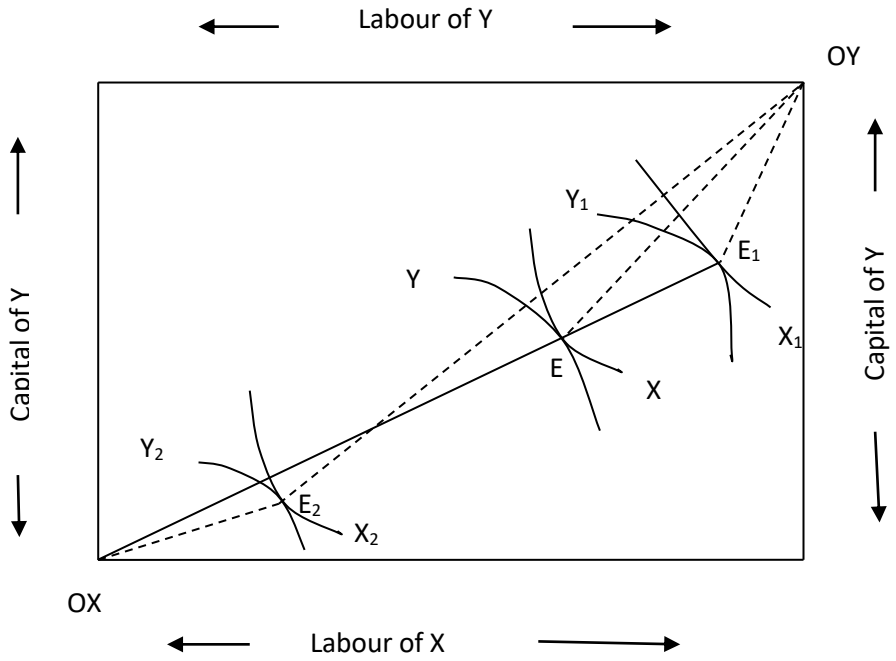

Figure 1.5

In the pre-technical progress situation, the equilibrium is at point E, where the isoquant X and Y are tangential. Here OXE is the output of X and OYE is the output of Y. if the capital-using technical progress is labour saving in Y industry and factor prices remains the same, than E1 will be new equilibrium where the isoquant X_I and Y_I are tangent. Thus, the output of X is higher and that of Y lower at E than at E1 i.e., $OXE_I > OXE$ and $OYE_I < OYE$.

In this situation the prices of the importable commodity X will fall because its output has increased. Thus, the terms of trade will improve for the country.

If the technical progress is capital-using in industry Y_I the new equilibrium point will be at point E_2 where the isoquants X_2 and Y_2 are tangential. As is evident from the figure, the output of Y is higher at E_2 than at E and that of X is lower i.e., $OYE_2 > OYE$ and $OXE_2 < OXE$. In this case, the price of exportable commodity X will rise because its output has fallen. As a result, the terms of trade will be unfavourable for the country.

5.7 Questions

1. Discuss Rybzynski Theorem.
2. Illustrate and explain Stolper-Samuelson theorem.
3. Discuss the implications of technological change on international trade

5.8 Key Words

Technical Progress	:	Change in Technology of factor –factor combination
Immiserizing Growth	**:**	When opening up of the economy leads to reduction in welfare
Endowment	:	Possession of factors of production

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UNIT -VI

BALANCE OF PAYMENT

Structure

6.1 Introduction

A Balance of Payment Account is a systematic record of all economic transactions between residents of a country and the rest of the world carried out in a specific period of time. In other words, 'Balance of Payment Account is a summary of international transactions of a country for a given period' (i.e., financial year) with rest of the world. It records a country's transactions with the rest of the world involving inflow and outflow of foreign exchange. In short, BOP Account is a summary statement of transactions in foreign exchange in a year. Simply put, BOP account is a statement of a country's sources and uses of foreign exchange in which main sources are: exports, transfers and remittances from abroad, borrowings from abroad, foreign investments whereas uses of foreign exchange are: imports, transfers to abroad, lending abroad and purchase of assets, etc.

6.2 Objectives

- To know the meaning of Balance of Payment
- To know the main components of Balance of Payments

- Importance of Balance of Payments : Current and Capital Account
- To Know the adjustment of Balance of Payment: Absorption and Monetary Approach

6.3 Meaning of Balance of Payment (BOP)

BOP account, like a typical business account, is based on double entry system which contains two sides—Credit side and Debit side. Any transaction which brings in foreign exchange (currency) is recorded on credit side whereas any transaction that causes a country to lose foreign exchange is recorded on debit side. For example, export is credit item as it brings in foreign exchange whereas import is a debit item since it causes outflow of foreign exchange. Similarly, borrowing from rest of the world (ROW) is a credit item while lending to ROW is a debit item. main purpose of BOP Account is to know international economic position of a country and to help the government make appropriate trade and payment policies.

6.3.1 Components of Balance of Payments

The main components of balance of payments can be discussed under following heads:

a) Current Account

Current account refers to an account which records all the transactions relating to export and import of goods and services and unilateral transfers during a given period of time. Current account contains the receipts and payments relating to all the transactions of visible items, invisible items and unilateral transfers. The main components of Current Account are:

i) Export and Import of Goods (Merchandise Transactions or Visible Trade):

A major part of transactions in foreign trade is in the form of export and import of goods (visible items). Payment for import of goods is written on the negative side (debit items) and receipt from exports is shown on the positive side (credit items). Balance of these visible exports and imports is known as balance of trade (or trade balance).

ii) Export and Import of Services (Invisible Trade):

It includes a large variety of non- factor services (known as invisible items) sold and purchased by the residents of a country, to and from the rest of the world. Payments

are either received or made to the other countries for use of these services. The s**ervices are generally of three kinds: a) shipping b) Banking c) Insurance**

iii) Unilateral or Unrequited Transfers to and from abroad (One sided Transactions):

Unilateral transfers include gifts, donations, personal remittances and other 'one-way' transactions. These refer to those receipts and payments, which take place without any service in return. Receipt of unilateral transfers from rest of the world is shown on the credit side and unilateral transfers to rest of the world on the debit side.

iv) Income receipts and payments to and from abroad:

The Income receipts and payments to and from abroad include investment income in the form of interest, rent and profits.

b) Capital Account

Capital account of BOP records all those transactions, between the residents of a country and the rest of the world, which cause a change in the assets or liabilities of the residents of the country or its government. It is related to claims and liabilities of financial nature. The main components of capital accounts are as follows:

i) Borrowings and lendings to and from abroad

This section includes all transactions relating to borrowings from abroad by private sector, government, etc. the receipts of such loans and repayment of loans by foreigners are recorded on the positive (credit) side. On the other hand the transactions of lending to abroad by private sector and government. These lending abroad and repayment of loans to abroad is recorded as negative or debit item.

ii) Investments to and from abroad

It includes the investments by rest of the world in shares of Indian companies, real estate in India, etc. Such investments from abroad are recorded on the positive (credit) side as they bring in foreign exchange. On the other hand investments made by Indian residents in shares of foreign companies, real estate abroad, etc. are recorded on the negative (debit) side as they lead to outflow of foreign exchange.

iii) Change in Foreign Exchange Reserves:

The foreign exchange reserves are the financial assets of the government held in the central bank. A change in reserves serves as the financing item in India's BOP. So, any withdrawal from the reserves is recorded on the positive (credit) side and any addition to these reserves is recorded on the negative

(debit) side. It must be noted that 'change in reserves' is recorded in the BOP account and not 'reserves'.

Table 6.1 Components of Balance of Payments in case of India

A. CURRENT ACCOUNT 1. Export 2. Imports 3. Trade Balance 4. Invisibles (net) a) Service b) Income c) Transfers 5. Goods and Service Balance 6. Current account balance
B. CAPITAL ACCOUNT 1. External Assistance (net) 2. External Commercial Borrowings 3. Short term Debt 4. Banking Capital 5. Foreign Investment a) FDI (net) b) Portfolio (net) 6. Other Flows (net)
C. CAPITAL ACCOUNT BALANCE Errors and Omissions
D. OVERALL BALANCE
E. RESERVE

6.4 Relative Importance of Current account and Capital Account

Current Account records all the actual transactions of goods and services which affect the income, output and employment of a country. So, it shows the net income generated in the foreign sector. In the current account, receipts from export of goods, services and

unilateral receipts are entered as credit or positive items and payments for import of goods, services and unilateral payments are entered as debit or negative items. The net value of credit and debit balances is the balance on current account. The surplus in current account arises when credit items are more than debit items. It indicates net inflow of foreign exchange. On the other hand deficit in current account arises when debit items are more than credit items. It indicates net outflow of foreign exchange.

In case of capital account, the transactions, which lead to inflow of foreign exchange (like receipt of loan from abroad, sale of assets or shares in foreign countries, etc.), are recorded on the credit or positive side of capital account. Similarly, transactions, which lead to outflow of foreign exchange (like repayment of loans, purchase of assets or shares in foreign countries, etc.) are recorded on the debit or negative side. The net value of credit and debit balances is the balance on capital account. The surplus in capital account arises when credit items are more than debit items. It indicates net inflow of capital. On the other hand the deficit in capital account arises when debit items are more than credit items. It indicates net outflow of capital, further current account and capital account, there is one more element in BOP, known as 'Errors and Omissions'. It is the balancing item, which reflects the inability to record all international transactions accurately.

6.5 Balance of Payments adjustments: Absorption and Monetary Approaches

6.5.1Absorption Approaches in adjustment of Balance of Payment

Sidney S. Alexander pioneered the development of the absorption to BOP adjustment in his article, "The effects of Devaluation on the Trade Balance" which appeared in I.M.F. Staff paper, in the year 1952. The absorption approach lies in seeing the BOP, not as a relation between the country's debits and credits on international account, but rather as an element in the relation between the aggregate receipts and expenditures of the economy. The theory states that if a country has a deficit in its balance of payments, it means that people are 'absorbing' more than they produce. It implies that domestic expenditure on consumption and investment is greater than national income. On the other hand if they have a surplus in the balance of payments, they are absorbing less. Expenditure on consumption and investment is less than national income. Here the BOP is defined as the difference between national income and domestic expenditure. The analysis can be explained in the following form

$Y = C + Id + G + X\text{-}M$ ----------*(1)*

Where Y is national income, C is consumption expenditure, I_d total domestic investment, G is autonomous government expenditure, X represents exports and M imports. The sum of $(C + I_d + G)$ is the total absorption designated as A, and the balance of payments (X – M) is designated as B. Thus Equation (1) becomes

$Y = A + B$

$Or\ B = Y - A$ ---------- *(2)*

It implies that BOP on current account is the difference between national income (Y) and total absorption (A). BOP can be improved by either increasing domestic income or reducing the absorption. For this purpose, Alexander advocates devaluation because it acts both ways.

First, devaluation increases exports and reduces imports, thereby increasing the national income. The additional income so generated will further increase income via the multiplier effect. This will lead to an increase in domestic consumption. Thus the net effect of the increase in national income on the balance of payments is the difference between the total increase in income and the induced increase in absorption, i.e.,

$\Delta B = \Delta Y - \Delta A$ ---------- *(3)*

Total absorption (ΔA) depends on the marginal propensity to absorb when there is devaluation. This is expressed as 'a'. Devaluation also directly affects absorption through the change in income which we write as D. Thus

$\Delta A = a\Delta Y + \Delta D$ ----------*(4)*

Substituting equation (4) in (3), we get

$\Delta B = \Delta Y - a\Delta Y - \Delta D$

$or\ \Delta B = (1 - a)\ \Delta Y - \Delta D$ ----------*(5)*

The equation points toward three factors which explain the effects of devaluation on BOP. They are:

(i) the marginal propensity to absorb 'a',

(ii) change in income (ΔY), and change in direct absorption (ΔD). It may be noted that since 'a' is the marginal propensity (MP) to absorb, (1 – a) is the propensity to hoard or save. These

factors, in turn, are influenced by the existence of unemployed or idle resources and fully employed resources in the devaluing country.

6.5.2 Monetary Approach in the Adjustment of Balance of Payment

The monetary approach to the balance of payments is associated with the names of R. Mundell and H. Johnson. The other writers who have made contribution to it include R. Dornbusch, M. Mussa, D. Kemp and J. Frankel. The basic premise of the approach is the recognition that the BOP disequilibrium is fundamentally a monetary phenomenon. It attempts to explain the BOP deficits or surpluses through demand for and supply of money.

Assumptions of Monetary Approach:

This approach rests upon the following main assumptions:

(i) There is the existence of a single price for identical products in different countries, after allowing the transport costs.
(ii) The level of output in a given country is exogenously determined.
(iii) There is full employment of resources in all the countries.
(iv) There is no possibility of sterilization of currency flows under a system of fixed exchange rates on account of single price assumption.
(v) The demand for money is a direct function of income and an inverse function of the rate of interest.
(vi) The supply of money is determined by the high powered money and money multiplier.
(vii) The demand for nominal money balances is stable.

The monetary approach, given the above assumptions, holds that the excess of money supply over money demand reflects the balance of payments deficit. The excessive money holdings are utilised by the people in the purchase of foreign goods and securities.

The excess supply of money may be offset by the central bank under a system of fixed exchange rates through the sale of foreign exchange reserves and the purchase of domestic

currency. As the excess supply conditions in the money market are removed, the balance of payments equilibrium gets restored.

On the opposite, if the supply of money falls short of the demand for money, the country will have a balance of payments surplus. In such a situation, people try to acquire the domestic- currency through the sale of goods and securities to the foreigners. For meeting the shortage of domestic currency, the central bank will buy excess foreign currency in addition to the purchase of domestic securities. Such measures will remove the BOP surplus and restore the BOP equilibrium.

The monetary approach to BOP can be expressed through the following relations:

The supply of money (M_s) consists of domestic component of the nation's monetary base (H) and international or foreign component of the nation's monetary base (F).

$M_s = H + F$

The demand for money (M_D) is a stable and direct function of income and inverse function of the rate of interest. The monetary equilibrium is determined by the equality between the demand for money and the supply of money.

$M_S = M_D$

$H + F = M_D$

$F = M_D - H$

From this relation, it follows that the excess of money demand over the domestic monetary base is offset by an inflow of reserves from abroad or international monetary base in the event of a BOP surplus. On the opposite, if there is a BOP deficit reflected by the excess of money supply over money demand, the adjustment can be possible through an outflow of foreign reserves.

The monetary approach also explains that the BOP disequilibria, under a flexible exchange system, are corrected immediately through automatic changes in exchange rate without any international flow of money or reserves. A deficit in the BOP resulting from the excess of money supply over money demand, causes an automatic depreciation in country's currency. This leads to a rise in domestic prices and also the demand for money.As a result, there is an absorption of the excess supply of money and the BOP deficit gets adjusted.

On the other hand, a surplus in the BOP, caused by the excess of demand for money over its supply, results automatically in the appreciation of nation's currency. It leads to a fall in domestic prices. As a consequence, the excess money demand and the BOP surplus get offset. The monetary approach to the BOP situation has an important policy implications. It suggests that the policies like devaluation can have effectiveness in the short period only if the monetary authority does not increase the supply of money to match exactly the increase in the demand for money resulting from devaluation or other adjustment policies.

The main criticism of monetary approach is as follows:

(i) Stability of Money Demand Functions:

This approach, assumes the demand function of money to be stable. Such an assumption may be valid in the long run. But there is a strong opinion among the economists that money demand function is unstable in the short period.

(ii) Assumption of Full Employment:

In this approach, an assumption has been taken that there is the existence of full employment. This assumption does not hold valid in actual life.

(iii) Invalidity of Single Price:

The monetary approach to BOP adjustment rests upon the assumption of single price for identical products. Even this assumption is not true. When the productive factors are diverted to sectors producing non-traded commodities, the excess demand for non-traded goods can spill over into the reduced supply of traded goods. That can cause an increase in imports. Consequently, the principle of single price for all traded goods stands violated.

(iv) Neglect of other Influences on Money Demand:

In this approach, the demand function for money is related only to income and rate of interest. In fact, the money demand function is related to several other variables connected with both domestic economy and foreign trade and exchange.

(v) Possibility of Sterilization of Currency:

The critics have not accepted the validity of the assumption of impossibility of sterilization of currency under a system of fixed exchange rates. They have referred to circumstances in which the sterilization of currency can become possible. In their opinion, the currency flow can become sterile, if the private sector is willing to adjust the composition of its wealth portfolio with regard to the relative importance of bonds and money balances.

Another situation in which sterilization of currency flow can be possible occurs if the government is prepared to have higher budget deficits whenever the country has to deal with the problem of BOP deficit.

(vi) Market Imperfections:

The principle of single price for identical products is vitiated by the market imperfections. The price differentials between different trading countries do exist on account of market imperfections and various restrictions or regulations enforced by the governments on the domestic and international trade.

(vii) Neglect of Monetary Lags:

The monetary approach is conceptually suited to long term balance of payments adjustment. The prolonged monetary lags between the recognition of the problem of BOP deficit and ultimate BOP adjustment have been generally neglected in this approach.

(viii) Neglect of Other Economic Policies:

In this approach, the emphasis is essentially upon the variation in credit flows. The BOP equilibrium can be achieved also through the alternative economic policies of expenditure-switching which can work through domestic real and money flows as well as the government budgetary variations.

Despite its weaknesses, the monetary approach is superior to the traditional price-specie flow theory of D. Hume. That theory had stressed upon the BOP adjustments through the gold flows and consequent effects upon prices, international trade and payments. The modern monetary approach, in contrast, suggests the correction of BOP deficits or surpluses through changes in domestic and international monetary base and their effects upon production, income and expenditure.

6.6 Lets Sum Up

Balance of payment is statements or a device for recording all the economic transaction within a given period between the resident of a one country to the rest of the world. These records include transactions made by individuals, companies and the government. Keeping a record of these transactions helps the country to monitor the flow of money and develop policies that would help in building a strong economy. In a perfect scenario, the Balance of Payments (BoP) should be zero. That is, the money coming in and the money going out should balance out. But that doesn't happen in most cases. A country's BoP statement correctly indicates

whether the country has a surplus or a deficit of funds. A BoP surplus indicates that a country's exports are more than its imports. A BoP deficit, on the other hand, indicates that a country's imports are more than exports. Both scenarios have short-term and long-term effects on the country's economy.

6.7 Question

1. Discuss the various components of balance of payment.
2. What is balance of payments? Explain the current and capital account of balance of payments.
3. What are the relative importance of current and capital account?
4. What is surplus and deficit in balance of payment?
5. Explain the mechanism of absorption approach in adjustment in balance of payment.
6. Explain the monetary approach in adjustment of BoP.

6.8 Key Words

Balance of Payment, Deficit and Surplus Balance of payment, Balance of Trade, Capital account, Current Account, Absorption and Monetary approach,

6.9 Suggested Readings

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UNIT VII

FOREIGN EXCHANGE MARKET

Structure

7.1 Introduction

Foreign exchange market is the market in which foreign currencies are bought and sold. The buyers and sellers include individuals, firms, foreign exchange brokers, commercial banks and the central bank. The transactions in this market are not confined to only one or few foreign currencies. In fact, there are a large number of foreign currencies which are traded, converted and exchanged in the foreign exchange market. Foreign exchange market is also described as an OTC (Over the counter) market as there is no physical place where the participants meet to execute their deals. It is more an informal arrangement among the banks and brokers operating in a financing centre purchasing and selling currencies, connected to each other by tele-communications like telex, telephone and a satellite communication network. The term foreign exchange market is used to refer to the wholesale a segment of the market, where the dealings take place among the banks. The retail segment refers to the dealings take place between banks and their customers. The retail segment refers to the dealings take place between banks and their customers. The retail segment is situated at a large number of places. They can be considered not as foreign exchange markets, but as the counters of such markets.

7.2 Objectives

- To know the meaning of foreign exchange market
- To know concept of fixed and floating exchange rate, its advantage and disadvantages
- To know how exchange rate, determine under purchasing power parity and interest rate parity
- To know the concept of interest arbitrage, hedging, premium and discount

7.3 Fixed and Floating exchange rate

The fixed and floating exchange rate system is discussed under following heads:

a) Fixed Exchange Rate

A fixed exchange rate is an exchange rate that does not fluctuate or that changes within a pre-determined rate at frequent intervals. Government or the central monetary authority intervenes in the foreign exchange market so that exchange rates are kept fixed at a stable rate. The rate at which the currency is fixed is called par value. If the rate of exchange is diverting from the equilibrium level than the government or the monetary authority of the country interfere in foreign exchange market and maintain the exchange rate fixed at equilibrium rate. The market intervention in such situation is called pegging. The pegging operation maintains the exchange rate at desired equilibrium level.

The fixed or pegged exchange rate can be explained graphically. Let us suppose that India's demand for US goods rises. This increased demand for imports causes an increase in the supply of domestic currency, rupee, in the exchange market to obtain US dollars. Let DD and SS be the demand and supply curves of dollar in Fig A. These two curves intersect at point A and the corresponding exchange rate is Rs. 40 = $1. Consequently, the supply curve shifts to S_1S_1 and cuts the demand curve DD at point B. This means a fall in the exchange rate.

To prevent this exchange rate from falling, the Reserve Bank of India will now demand more rupee in exchange for the US dollars. This will restrict the excess supply of rupee and there will be an upward pressure in exchange rate. Demand curve will now shift to DD_1. The end result is the restoration of the old exchange rate at point C.

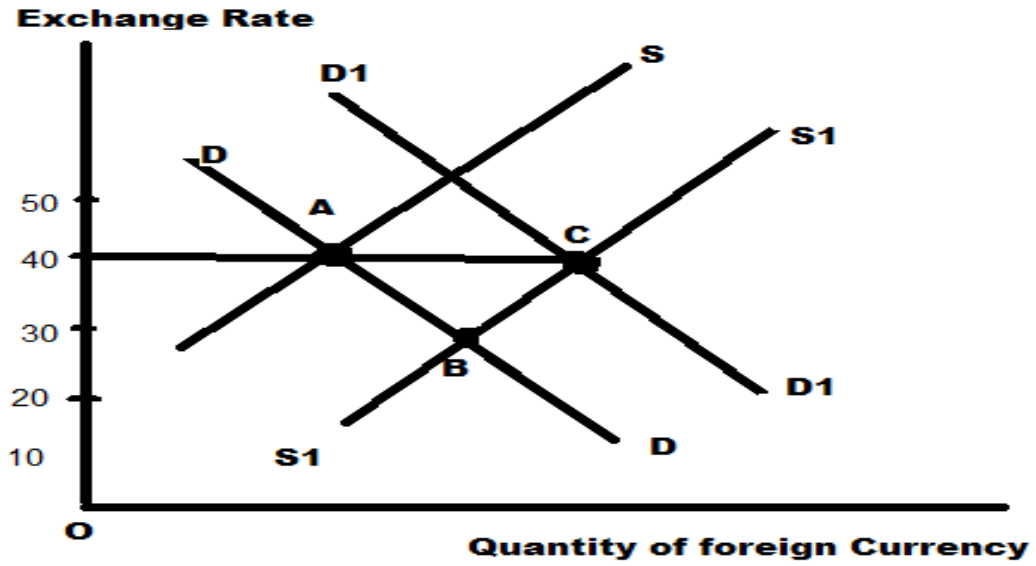


Figure A. Fixed Exchange Rate

Thus, it is clear that the maintenance of fixed exchange rate system requires that foreign exchange reserves are sufficiently available. Whenever a country experiences inadequate foreign currency reserves it won't be able to purchase domestic currency in sufficient quantities. Under the circumstance, the country will devalue its currency. Thus, devaluation means an official reduction in the value of one currency in terms of another currency.

7.3.1 Advantages and Disadvantages of Fixed Exchange Rate

The main advantages of the fixed exchange rate system can be discussed as follows:

(i) Reduce the Uncertainty and Risk:

The necessary condition for an orderly and steady growth of trade demands stability in exchange rate. Any undue fluctuations in exchange rate cause problems to the plans and programme of both exporters and imports. In other words, incomes of export-earners and the cost of imports of the importers tend to become uncertain if the exchange rate fluctuates. This

uncertainty can be removed by a fixed exchange rate method. Further, the risks associated with international trade and investment gets minimized largely if exchange rates are not allowed to vary.

(ii) Discourage Speculation:

As exchange rate remains unchanged for a fairly long period of time, people expect that such rate would not change in the immediate future. This then eliminates speculation in the foreign exchange market. Further, as there is stability in the exchange rate over long period, it eliminates the threat of speculation and also it discourages the flight of capital.

(iii) Prevention in Depreciation of Currency:

In poor developing countries, one experiences BOP difficulties of a permanent type. Under the circumstances, any frequent changes in exchange rate will tend to aggravate the BOP crisis, like continuous depreciation of home currency in terms of currencies of other countries. In other words, unstable exchange rates result in depreciation of currencies.

(iv) Adoption of Responsible Macroeconomic Policies:

Stable exchange rate system prevents government from adopting irresponsible macro-economic policies like devaluation of currencies. Above all, under the fixed exchange rate system, deflationary policies can even be pursued to tide over the BOP deficit, even without bringing any change in domestic policies.

(v) Attraction of Foreign Investment:

Exchange rate stability may encourage foreigners to perk their investible funds in a country. If the exchange rate changes rather frequently, it will deter them to invest in a country.

(vi) Anti-inflationary:

Fixed exchange rate system is anti-inflationary in character. If exchange rate is allowed to decline, import goods tend to become dearer. High cost import goods then fuels inflation. Such a situation can be prevented by making the exchange rate fixed.

Under fixed exchange rate, the main disadvantages are as follows:

(i) Speculation Encouraged:

Under a fixed rate system, if a country faces huge BOP deficit then the possibility of speculation gets brightened. If the speculators can guess that such BOP deficit will persist in the days ahead and the authority may go for a cut in foreign exchange rate then these people will be more enthusiastic to sell domestic currencies in the foreign exchange market. If such sale of home currencies continues for a longer period, the central bank will then be forced to reduce exchange rate, instead of keeping it at the old fixed rate. Under the circumstance, speculators go on buying home currencies where exchange rates have been reduced. This will make these people to earn profit. The Bretton Woods System of the IMF collapsed in 1971 because of such speculation made with the US dollars.

(ii) Adequacy of Foreign Exchange Reserves

For the effectiveness of a stable exchange rate, the necessary condition is the adequacy of holding, foreign exchange reserves. Poor developing countries find it difficult to maintain an adequate volume of foreign exchange reserves. Speculators then anticipate currency devaluation in advances if BOP needs to be corrected. Before 1970, fixed exchange rate, in fact, prevailed because of low volume of global trade and, hence, low volume of foreign exchange reserves.

(iii) Internal Objectives of Growth and Full Employment Sacrificed:

When countries experience large and persistent deficits or 'fundamental disequilibrium' in BOP, they are down with the foreign exchange reserves. Countries then opt for devaluation of their currencies and take some internal measures to reduce their deficits. These harsh internal measures tend to contract economies. But the fallouts of these measures are rising prices and rising unemployment, these in turn reduce economic growth.

(iv) International Competitive Environment bypassed:

The continuous changes in international competitive environment do not get reflected under the fixed exchange rate system. Thus, to make the home product more competitive in the foreign market, what is required is the change in domestic economic policies so that the country's export products get larger foothold in the foreign market. In other words, the fixed exchange rate system fails to gloss over the international competitive environment. This kind of exchange rate developed after the World War II. The International Monetary Fund set up by the Bretton Woods Agreement of 1944 came into operation in March 1947. The period 1947-1971 came to be known as 'fixed but adjustable exchange rate system' or 'par value system' or the 'pegged exchange rate system' or the 'Bretton Woods System'.As the Bretton Woods System collapsed, this exchange rate was abandoned in 1971. Several stop-gap measures were taken but uncertainty and confusion in the exchange rate systems continued. Ultimately, in 1973, the world's exchange rate system came to be known as the 'managed floating' in the sense that currencies tend to float more or less freely in the foreign exchange market.

b) Floating Exchange Rate System

Under the floating exchange rate, the exchange rate is allowed to vary to international foreign exchange market influences. Thus, government does not intervene. Rather, it is the market forces that determine the exchange rate. In fact, automatic variations in exchange rates consequent upon a change in market forces are the essence of freely fluctuating exchange rates. A deficit in the BOP account means an excess supply of the domestic currency in the world markets. As price declines, imbalances are removed. In other words, excess supply of domestic currency will automatically cause a fall in the exchange rate and BOP balance will be restored. Floating exchange rate mechanism has been explained in Fig. B where DD and SS are demand and supply curves. When Indians buy US goods, there arises supply of dollar and when US people buy Indian goods there occurs demand for rupee. Initial exchange rate—Rs. 40 = $1—is determined by the intersection of DD and SS curves in both the figure (a) and (b) below

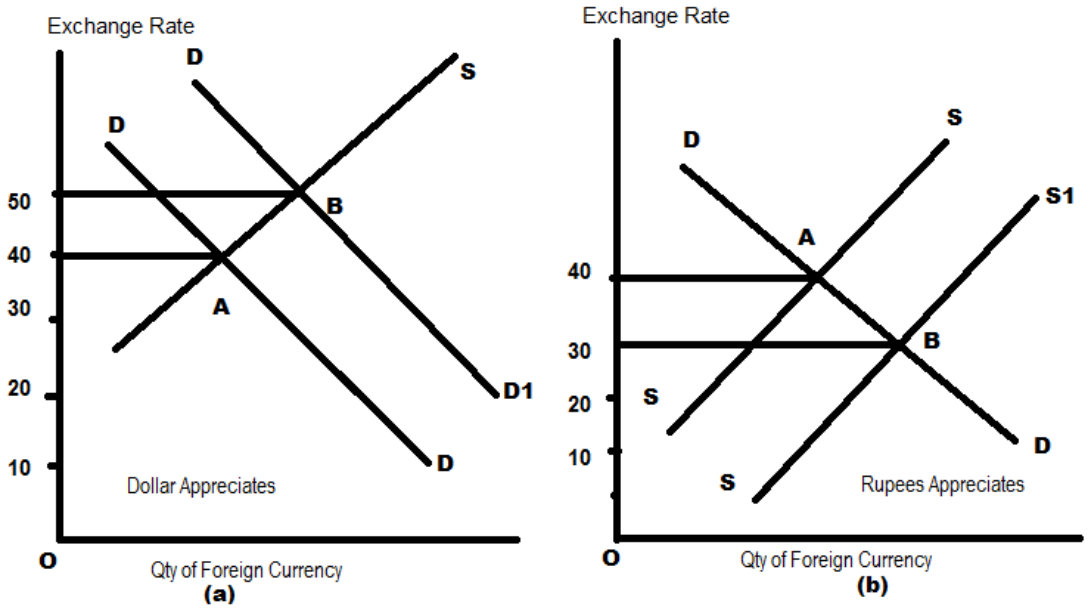


Figure B. Flexible Exchange Rate

An increase in demand for India's exportable means an increase in the demand for Indian rupee. Consequently, demand curve shifts to $DD_1$and the new exchange rate rises to Rs. 50 = $1. At this new exchange rate, dollar appreciates while rupee depreciates in value (figure a).

The figure (b) shows that the initial exchange rate is Rs. 40 = $1. Supply curve shifts to SS_1 in response to an increase in demand for US goods. SS_1 curve intersects the demand curve DD at point B and exchange rate drops to Rs. 30 = $1. This means that dollar depreciates while Indian rupee appreciates. Under the floating exchange rate system, exchange rate between different currencies, like the prices of commodities are freely determined by market forces, that is, by demand and supply forces.

With the change in economic conditions underlying demand and supply, the exchange rate will automatically change without any intervention by the Government. That is why, it is called floating or variable exchange rate system.

It has the following merits:

1. Problems of undervaluation and overvaluation can be avoided:

The advocates of floating exchange rates contend that under it the problems of undervaluation and overvaluation of currencies which are found in the fixed exchange rate

system are avoided. Whenever there is deficit in balance of payments implying overvaluation of the national currency under the floating exchange rates, it will depreciate (that is, its value will fall) which on the one hand will make exports cheaper and thereby encourage them and on the other will make the imports costlier than before which will tend to discourage them. Thus, increase in exports and decline in imports as a result of depreciation will lead to the automatic correction in the balance of payments. On the other hand, whenever there is surplus in the balance of payments, the exchange rate will appreciate which will tend to reduce exports and raise imports. This again will tend to automatically restore the balance of payments equilibrium. This is how the floating exchange system works to ensure the equilibrium in the balance of payments.

2. Promotes Growth of Multilateral Trade:

The advocates of floating exchange rates system are strongly of the view that as unlike fixed exchange rates system, this does not create serious and difficult problems; it will ensure rapid growth of multilateral world trade. Further, they point out that promotion of world trade under the floating exchange rates would not interfere in any way the adoption of policies to achieve domestic economic stability.

3. Floating Exchange Rates does not necessarily show large fluctuations:

It has been pointed out in defense of the floating exchange rates that the problems of undervalued or overvalued currency found under the fixed exchange rate regime are not found in the floating exchange rate system. Further, it is contended that exchange rates being floating does not necessarily mean there will be large fluctuations in them. Even under floating exchange system there need not be large fluctuations in exchange rates.

4. It Frees the Government from Problems of Balance of Payments:

A great merit of floating exchange rates is that it frees the Government from problems of balance of payments. As has been seen above, the fixed exchange rates system leads either to deficit or surplus in balance of payments. Under this system the Government remains preoccupied with the questions of devaluation or revaluation of their currencies. Since

floating exchange rates work automatically to restore balance of payments equilibrium, the Government need not pay any attention to the balance of payments.

Demerits of Floating Exchange Rate System:

The main demerits of floating exchange rate system are as follws:

1. Floating Exchange Rates create a situation of instability and uncertainty:

An important argument against floating exchange rates is that too frequent fluctuations in exchange rate under it create uncertainty about the exact amount of receipts and payments in foreign exchange transactions. This instability hampers foreign trade and capital movements between the countries.

2. Dampening Effect on Foreign Trade:

Under the floating exchange rates, the price of foreign exchange or international value of the national currency is quite uncertain. As a result, they are unable to take proper decisions regarding exports and imports of goods. Obviously, this has a dampening effect on the volume and growth of foreign trade.

3. Widespread speculation with a de-stabilizing effect:

The system of floating exchange rates has been opposed on the ground that under it there is widespread speculation regarding exchange rates of currencies which has a large destabilising effect on these rates. Friedman, on the other hand, contend that speculation has a stabilising influence on exchange rates. However, whether or not speculation has a destabilising or stabilising effect is a highly controversial issue in economics which has so far remained unresolved.

4. Provides an inflationary bias to an economy:

Another shortcoming of the flexible, exchange rates is that they have an inflationary impact on the economy. It has been pointed out that whenever due to deficit in balance of payments, the currency depreciates and the prices of imports go up. The higher prices of imported materials raise the prices of industrial products and thus generate cost-push inflation.

7.4 Purchasing Power Parity

The purchasing power parity theory was systematically developed by Gustav Cassel a Swedish economist. The theory states that the equilibrium rate of exchange is determined by equality of purchasing power of two inconvertible paper currencies which implies that the rate of exchange between two paper currencies is determined by the internal price level of the two currencies. It implies that the exchange rate between two countries should be equal to the ratio of the two countries price level of a fixed basket of goods and services. The main basis of purchasing power parity theory is the law of one price. In the absence of transaction cost and other costs the competitive market force will act in such a way that the price identical product of the will be same for the two country.

The Purchasing power parity can be explained with the help of an example, if by spending Rs. 50/- we can buy an amount of goods in India as we can buy with £1 in England the rate of exchange between England and India will be Rs. 50/- to £1. This is easily seen if we reflect on the fact that the price paid in a foreign currency is ultimately a price for foreign commodities, a price which must stand in a certain relation to the prices of commodities on the home market. Thus, we arrive at the conclusion that the rate of exchange between two currencies must stand essentially on the internal purchasing powers of these currencies.

The theory of purchasing power can be presented in two version, these are as follows:

a) The Absolute Version:

The absolute version of purchasing power parity states that the exchange rate should reflect the relation between the internal purchasing power of the various national currency

units. It implies that the exchange rate should equal the ratio of outlay required to purchase a particular sets of goods at home compared with what it would buy abroad.

Thus the absolute version of purchasing power can be written as

$$ExchangeRate = \frac{Numberofcurrency A}{Oneunitofcurrency B} \frac{IpofB}{IpofA}$$

Where *Ip* stands for internal purchasing power, which is the reciprocal of the index of general price level. The right hand side of the equation shows the foreign exchange rate and B stands for the foreign money.

b) The Relative version:

The relative version of explain the changes in the equilibrium rate of exchange between two countries. Thus the relative version of purchasing power states that the changes in equilibrium rate of exchange will be governed by changes in the ratio of their respective purchasing power.

Symbolically,

$$R1 = R.\frac{Pb1/Pb0}{Pa1/Pa0}$$

Where,

R1 is the rate of exchange in the current period

R0 is the base rate or old equilibrium rate

Pb1 stands for price index of country b in current period

Pb0 stands for price index of the country b in base period

Pa1 stands for price index of the country a in current period

Pa0 is price index of country a in base period.

7.5 Interest Rate Parity Theory

Interest Rate Parity (IRP) is a theory in which the differential between the interest rates of two countries remains equal to the differential calculated by using the forward exchange rate and the spot exchange rate techniques. Interest rate parity connects interest, spot exchange, and foreign exchange rates. It plays a crucial role in Forex (foreign exchange) markets. According to this theory, there will be no arbitrage in interest rate

differentials between two different currencies and the differential will be reflected in the discount or premium for the forward exchange rate on the foreign exchange.

The theory also stresses on the fact that the size of the forward premium or discount on a foreign currency is equal to the difference between the spot and forward interest rates of the countries. The interest rate parity plays an important role in foreign exchange market by connecting interest rate, spot exchange rate and foreign exchange rates.

The formulas to calculate the interest rate parity are as follows:

$$F_0 = S_0 \mathrm{X} \left[\frac{1 + i_c}{1 + i_b}\right]$$

where, F_0 is forward rate

S_0 is spot rate

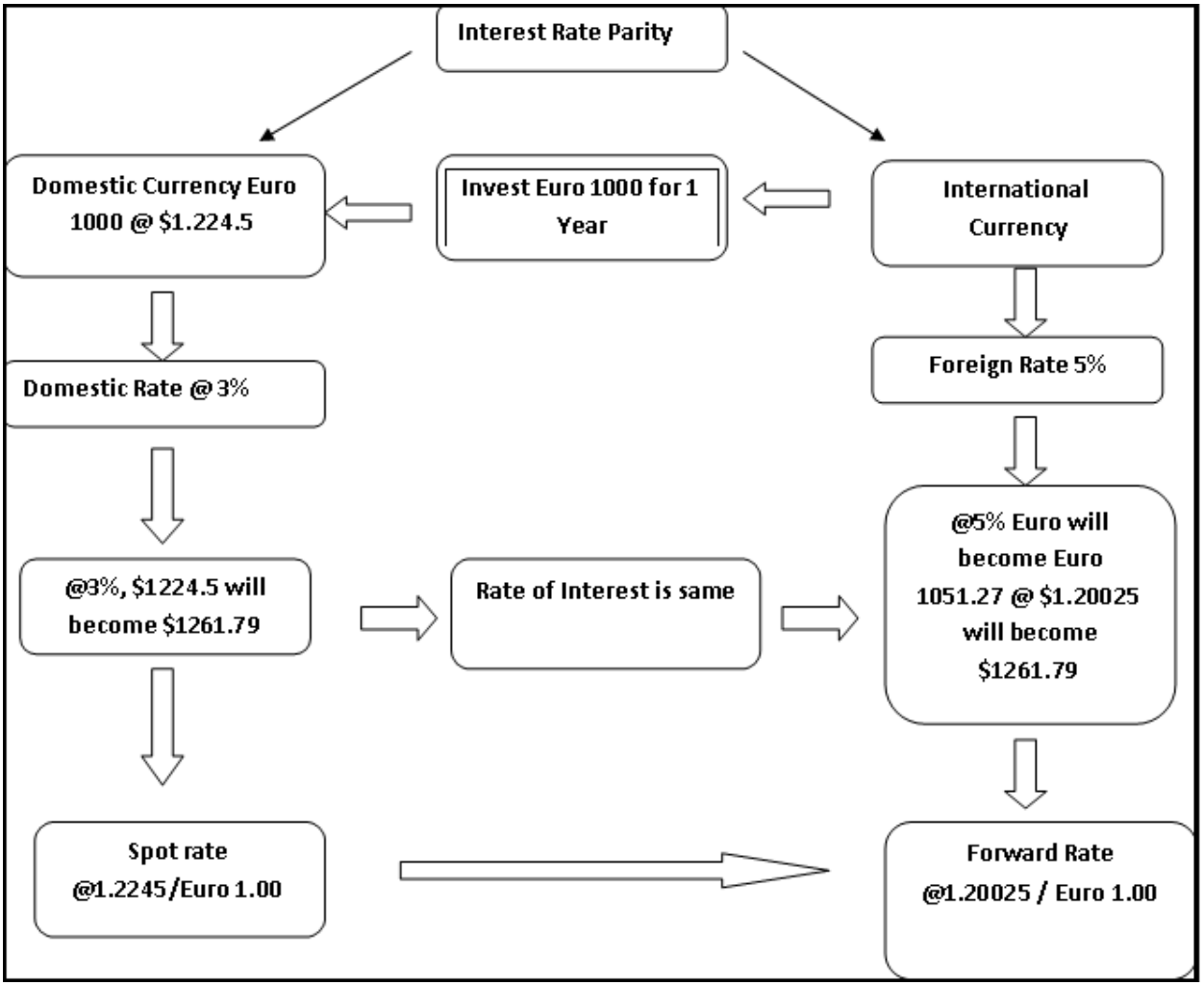
$i_c$is interest rate in country c

i_b is interest rate in country b

The interest rate parity theory can be explained with the help of an example. An investor wants to invest of 1000 Euro for one year, than he left with two options as shown in the figure C.

Figure C: Interest Rate Parity

Case I: Home Investment



In the US, let the spot exchange rate be $1.2245 / €1. So, investor get an exchange for €1000 @ $1.2245 = $1224.50. Now he can invest this money $1224.50 at the rate of 3% for 1 year which yields $1261.79 at the end of the year.

Case II: International Investment

The investor can also invest €1000 in an international market, where the rate of interest is 5.0% for 1 year. So, €1000 @ of 5% for 1 year = €1051.27. Let the forward exchange rate be $1.20025 / €1. So, he can buy forward 1 year in the future exchange rate at $1.20025/€1 since the investor need to convert the €1000 back to the domestic currency, i.e., the U.S. Dollar.

Then, he can convert € 1051.27 @ $1.20025 = $1261.79. Thus, when there is no **arbitrage,** the Return on Investment (ROI) is equal in both cases, regardless the choice of investment method.

The Arbitrage is the activity of purchasing shares or currency in one financial market and selling it at a premium (profit) in another.

Covered Interest Rate Parity (CIRP)

According to Covered Interest Rate theory, the exchange rate forward premiums (discounts) nullify the interest rate differentials between two countries. In other words, covered interest rate theory says that the difference between interest rates in two countries is nullified by the spot/forward currency premiums so that the investors could not earn an arbitrage profit. . The covered interest rate parity situation means there is no opportunity for arbitrage using forward contracts, which often exists between countries with different interest rates. The formula of covered interest rate parity is

$$(\mathbf{1} + \boldsymbol{i_d}) = \frac{\boldsymbol{F}}{\boldsymbol{S}} * \left(\mathbf{1} + \boldsymbol{i_f}\right)$$

Where, i_d is the interest rate in the domestic currency or the base currency

i_f is the interest rate in the foreign currency

S is the current spot exchange rate

F is the forward foreign exchange rate

After rearranging the above formula, it can be written as

$$F = S * \frac{(1 + \boldsymbol{i_d})}{(1 + \boldsymbol{i_f})}$$

Covered interest rate parity is a no-arbitrage condition that could be used in the foreign exchange markets to determine the forward foreign exchange rate. The condition also states that investors could hedge foreign exchange risk or unforeseen fluctuations in exchange rates (with forward contracts). Consequently, the foreign exchange risk is said to be covered.

Uncovered Interest Rate Parity (UIP)

Uncovered interest rate parity (UIP) theory states that the difference in interest rates between two countries will equal the relative change in currency foreign exchange rates over the same period. It is one form of interest rate parity (IRP) used alongside covered interest rate parity. If the uncovered interest rate parity relationship does not hold, then there is an opportunity to make a risk-free profit using currency arbitrage or Forex arbitrage. Uncovered Interest Rate theory says that the expected appreciation (or depreciation) of a particular currency is nullified by lower (or higher) interest. The formula for uncovered interest rate parity is

$$\boldsymbol{F0 = S0\frac{1 + i_c}{1 + i_b}}$$

Where,

*F*0=Forward rate

*S*0=Spot rate

ic=Interest rate in country *c*

ib=Interest rate in country *b*

Implications of IRP Theory

If IRP theory holds, then it can negate the possibility of arbitrage. It means that even if investors invest in domestic or foreign currency, the ROI will be the same as if the investor had originally invested in the domestic currency.

- When domestic interest rate is below foreign interest rates, the foreign currency must trade at a forward discount. This is applicable for prevention of foreign currency arbitrage.
- If a foreign currency does not have a forward discount or when the forward discount is not large enough to offset the interest rate advantage, arbitrage opportunity is available for the domestic investors. So, domestic investors can sometimes benefit from foreign investment.
- When domestic rates exceed foreign interest rates, the foreign currency must trade at a forward premium. This is again to offset prevention of domestic country arbitrage.
- When the foreign currency does not have a forward premium or when the forward premium is not large enough to nullify the domestic country advantage, an arbitrage

opportunity will be available for the foreign investors. So, the foreign investors can gain profit by investing in the domestic market.

7.6 Let Us Sum Up

The foreign exchange market is merely a part of the money market in the financial centers. It is a place where foreign moneys are bought and sold. The buyers and sellers of claim on foreign money and the intermediaries together constitute a foreign exchange market. It is not restricted to any given country or a geographical area. Thus, the foreign exchange market is the market for a national currency (foreign money) anywhere in the world, as the financial centres of the world are united in a single market. There is a wide variety of dealers in the foreign exchange market. The most important among them are the banks. Banks dealing in foreign exchange have branches with substantial balances in different countries. Through their branches and correspondents, the services of such banks, usually called "Exchange Banks," are available all over the world. These banks discount and sell foreign bills of exchange, issue bank drafts, effect telegraphic transfers and other credit instruments, and discount and collect amounts on the basis of such documents. Other dealers in foreign exchange are bill brokers who help sellers and buyers in foreign bills to come together. They are intermediaries and unlike banks are not direct dealers. Acceptance houses are another class of dealers in foreign exchange. They help effect foreign remittances by accepting bills on behalf of customers. The central bank and treasury of a country are also dealers in foreign exchange. Both may intervene in the market occasionally. Today, however, these authorities manage exchange rates and implement exchange controls in various ways.

7.7 Questions

1. What is foreign exchange markets?
2. What is fixed and floating exchange market? What are its main advantages and disadvantages?
3. How foreign exchange rate determined with help of purchasing power parity?
4. Discuss the interest rate parity theorem.
5. Write short note on:
    a. Interest arbitrage
    b. Hedging

c. Premium and discount

7.8 Suggested Reading

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UNIT VIII
THEORY OF REGIONAL BLOCKS

Structure

8.1 Introduction

The term regional blocks are generally the association of nations at a governmental level to promote trade within the block and defend its members against global competition. Trade bloc can be stand-alone agreements between several countries or part of regional organization. On the level of economic integration, the trade block can be classified as preferential trading areas, free trade areas, custom unions, common market, economic and monetary unions etc,.

8.2 Objectives

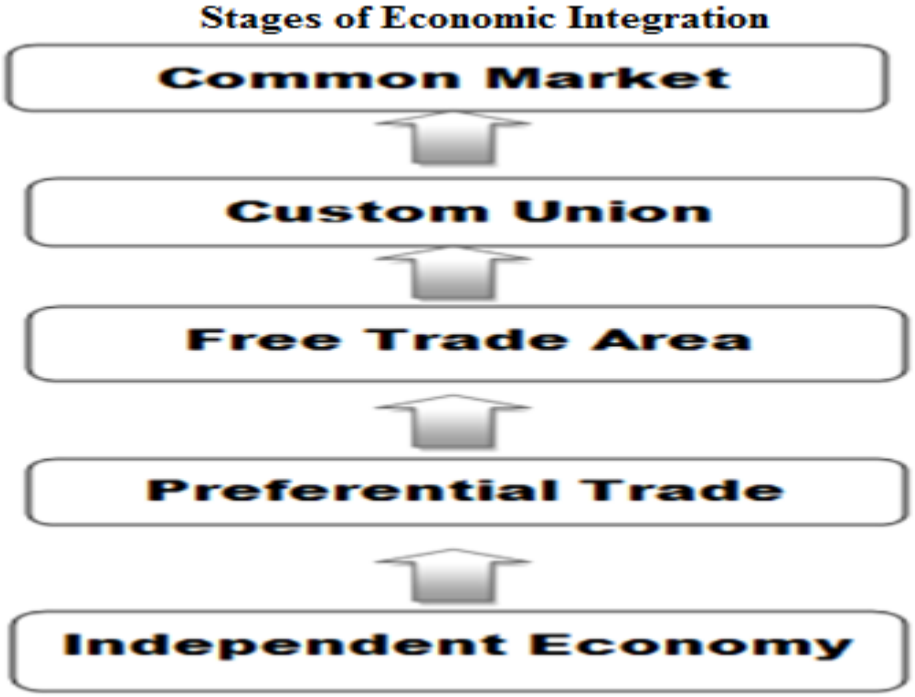
- To know the meaning and concept of Regional Block

- To understand the stages of regional integration
- To know the meaning of trade creation and trade diversion
- To know the concept of custom union and common market

8.3 Stages of Economic Integration

In the process of economic integration, there are several stages, from a very loose association of countries in a *preferential trade area*, to *complete* economic integration, where the economies of member countries are completely integrated. A regional trading bloc is a group of countries within a geographical region that protect themselves from imports from non-members in other geographical regions, and who look to trade more with each other. Over the years, regional trading blocs are increasingly shaping the pattern of world trade - a phenomenon often referred to as *regionalism*. The various stages of economic integration can be explained with the help of flow chart in the figure 8.1. In the bottom, it comes the domestic economy, followed by preferential trade, free trade area, custom union and then common market. The stages of economic integration can be explained with help of the table.

Figure 8.1 Stages of Economic Integration



8.3.1 Preferential Trade Area

Preferential Trade Areas (PTAs) exist when countries within a geographical region agree to reduce or eliminate tariff barriers on selected goods imported from other members of the area. This is often the first small step towards the creation of a trading bloc. Agreements may be made between two countries (bi-lateral), or several countries (multi-lateral).

8.3.2 Free Trade Area

Free Trade Areas (FTAs) are created when two or more countries in a region agree to reduce or eliminate barriers to trade on all goods coming from other members. The North Atlantic Free Trade Agreement (NAFTA) is an example of such a free trade area, and includes the USA, Canada, and Mexico.

8.3.3 Customs Union

A customs union involves the removal of tariff barriers between members, together with the acceptance of a common (unified) external tariff against non-members. Countries that export to the customs union only need to make a single payment (duty), once the goods have passed through the border. Once inside the union goods can move freely without additional tariffs. The tariff revenue is then shared between members, with the country that collects the duty retaining a small share.

8.3.4 Common Market

A common (or single) market is the most significant step towards full economic integration. In the case of Europe, the single market is officially referred as the 'internal market'. The main feature of a common market is the extension of free trade from just tangible goods, to include all economic resources. This means that all barriers are eliminated to allow the free movement of goods, services, capital, and labour among the partner nations. In addition, as well as removing tariffs, non-tariff barriers are also reduced and eliminated. For a common market to be successful there must also be a significant level of harmonization of micro-economic policies, and common rules regarding product standards, monopoly power and other anti-competitive practices. There may also be common policies that affecting key industries, such as the Common Agricultural Policy (CAP) and Common Fisheries Policy (CFP).

8.4 Trade Creation and Trade Diversion

The pioneering study of the theory of customs unions was made by Jacob Viner. Considering a a simple model, Viner showed that while forming a customs union, it could have welfare increasing effects in some circumstances as well as welfare-reducing effects in others. Viner introduced the key concepts of trade creation and trade diversion. They may be illustrated by Table 8.1, which shows the production cost of a homogeneous commodity say for example commodity X in three countries. For simplicity we ignore the cost such as transportation cost, mark-ups, etc., so that production cost is only the cost in the model which completely determines the supply price of the good, and tariffs are the only source of divergence between price and cost.

Table 8.1 Production cost of commodity X in three countries

Country	Production Cost
A	**Rs. 50**
B	**Rs. 40**
C	**Rs. 30**

First, let us assume that Country A imposed a non-discriminatory tariff of100 per cent on commodity X from country B and C. Now the Consumers in country A would be faced with a choice between home-produced goods at a price of Rs 50 or either the goods imports from country B at a price of Rs 80, and it imports the product from country C at a price of Rs 60. If country A now forms a customs union with B, while maintaining the same 100per cent of tariff on imports from C, than consumers in country A will face a choice between home-produced goods at a price of Rs 50, imports from B at a price of Rs 40, and imports from C at a price of Rs60. Country A would then import the good from B, and the price in A's home market would be Rs 40, rather than producing the good itself at a cost of Rs.50 in resources, country A will now import a unit of the good for exports using resources costing Rs.40, and so will make a welfare gain. This is an example of trade creation, the replacing of relatively high-cost domestic production with lower cost imports from the trading partner country.

Now let us assume that before the union country A levies a tariff of Rs.50 per cent, and that it is non-discriminatory. Then consumers in A would be faced with a choice between

home-produced goods at a price of Rs.50, imports from B at a price of Rs. 60, and imports from Cat a price of 45. A would import the good from the lower-cost source, country C, and the price in A's home market would be Rs.45.Suppose again that A and B form a customs union. Consumers in A will be faced with the choice of paying Rs.50 for the home-produced good, Rs.40 for imports from B, and Rs.45 for imports from C. Country A will now import X from B, and the price in A's market will be 40. Imports will be switched from the low-cost supplier, C to the high-cost supplier, B. Country A now has to use domestic resources to produce exports with a value of Rs.40 in order to import 1 unit from B, whereas before joining the customs union it only had to produce exports with a value of Rs.30 to import 1 unit from C. This is an example of trade diversion. The trade diversion takes place when a country switches its source of imports from a more efficiently-producing country to a less efficiently-producing country because of the customs union. This will lead to a lowering of welfare, as it entails a less efficient allocation of resources. In Vinerian model trade creation is always welfare increasing, while trade diversion always leads to a reduction in welfare. But if we relax the assumption that demand is perfectly price inelastic then this simple one-to-one correspondence disappears.

The trade creation and trade diversion arise because formation of the union leads to a fall in the price faced by consumers in A. If demand is not perfectly inelastic then this fall in price will lead to an increase in consumption, and this is a source of welfare gain. Such consumption gains enhance the welfare-increasing effects of trade creation. They will however offset the welfare-reducing effects of trade diversion, and may even result in trade diversion leading to an increase in welfare. A further complication is that when we allow the possibility of increasing production costs in A and B then it is quite possible for trade creation and trade diversion to occur simultaneously, since A may import from both B and C before the union is formed.

8.5 Theory of custom Union

Before the development of the theory of customs union by J. Viner, there was a general belief that customs union raises the level of welfare as customs union is a movement towards free trade at least within a specific area. Viner pointed out that the conclusion concerning increase in welfare due to customs union is not necessarily true. He analyzed the production effects of customs union through the concepts of trade creation and trade

diversion. The works of the writers like Meade, Lipsey, Lancaster and many others analyzed the consumption effects. H.G. Johnson followed a partial equilibrium approach to investigate fully the effects of a customs union by incorporating both the production and consumption effects.

8.5.1 Partial Equilibrium Analysis of Customs Union:

A custom union is an organization that includes two or more countries. They abolish tariff and other trade restrictions among themselves and adopt a common external tariff against the non-member countries. The static effects of a customs union in a partial equilibrium system, on the lines suggested by Viner, Meade, Lipsey and Johnson, can be studied on the basis of the assumptions given below:

(i) The customs union includes two countries—the home country A and the partner country B.
(ii) The rest of the world is denoted by a third country, say country C.
(iii) The customs union imposes a common external tariff.
(iv) There is an absence of any other type of trade restriction.
(v) The customs union imposes only a specific tariff.
(vi) The three countries produce only one commodity says, X.
(vii) The home country A was the highest cost country and the country C was the least cost country before the formation of the customs union.
(viii) The supply curves are perfectly elastic in countries A and C.
(ix) The production is governed by constant returns to scale.
(x) There is perfect competition in both product and factor markets.
(xi) The supply of productive inputs is fixed.
(xii) There is a state of full employment of resources.
(xiii) The techniques of production are given and constant.
(xiv) The transport costs are absent.
(xv) The home country is originally having balance of trade equilibrium, i.e., exports equal imports.

The effects of customs union on production, consumption and trade, given the above assumptions, can be explained in terms of trade creation and trade diversion due to customs union. They are as follows:

(a) Trade Creation:

The formation of customs union involves the abolition of tariff among the member countries and imposition of common tariff against the rest of the world. These can be explained with the help of table 8.2. Supposed that the home country A is the least efficient country and its unit cost of producing a watch is Rs. 1000. Its partner country B, which is more efficient, the unit cost of production of that watch is Rs. 800. The rest of the world is represented by country C and also the non member country in our case, which is the most efficient and the average cost of producing the same watch is Rs. 700 in that country. Now, before the formation of custom union, the home country A imposes 100 percent tariff on all imports, the unit costs in B and C and the cost of watch become Rs. 1600 and Rs. 1400 respectively. In such case, it is desirable for the home country A to produce the commodity domestically. If the customs union is formed and duty is removed on imports from B but it remains in the case of country C, the partner country B becomes the least cost country. Now the home country will prefer to import watches from B rather than produce it domestically. So the formation of customs union has resulted in the trade creation.

Table 8.2: A Case of Trade Creation

Country	**A**	**B**	**C**
Cost (Rs)	1000	800	700
Cost (Rs) with Imposition of 100% import duty	1000	1600	1400
Cost (Rs) after Custom Union formed	1000	800	1400

(b) Trade Diversion:

In case of trade diversion, before the formation of custom union, given commodity (in our case is watch) was imported from the most efficient and least cost country that is country C. After the custom union was formed, as duty is removed from import from the partner country B, while it remains enforced on imports from C, the former becomes the least cost

country. In such a situation, the home country A will start importing watches from the partner country B rather than non-member country C. Thus there is diversion of trade from outside country C to the partner country B after the formation of the customs union. It may be explained through the Table 8.3.

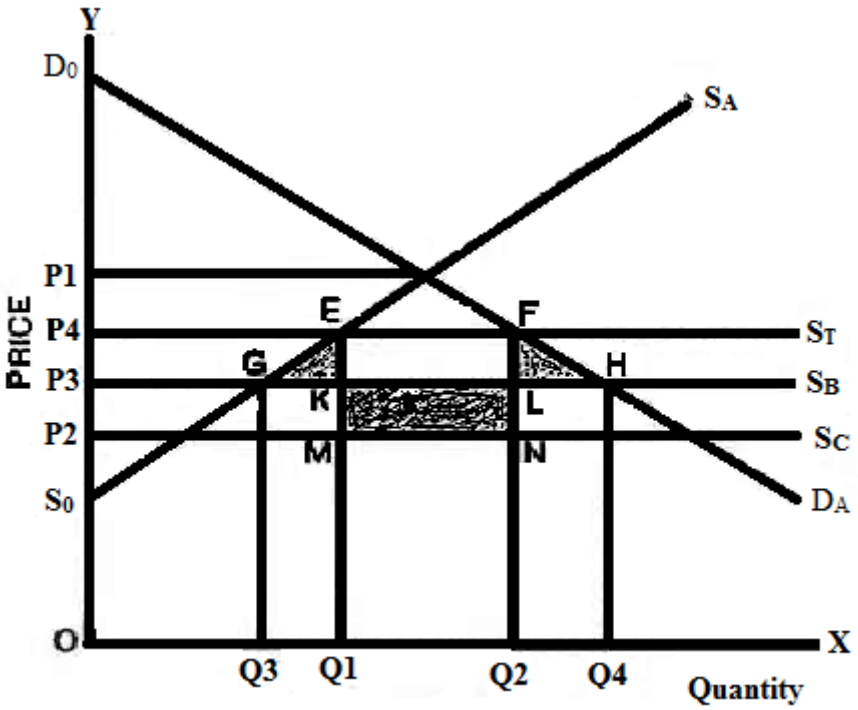
Table 8.3

Country	**A**	**B**	**C**
Cost (Rs)	**1000**	**800**	**600**
Cost (Rs) with Imposition of 100% import duty	**1000**	**1200**	**900**
Cost (Rs) after Custom Union formed	**1000**	**800**	**900**

Table 8.3 shows that the unit costs of watch in the home country (A), partner country (B) and non-member country (C) before the formation of the customs union were Rs. 1000, Rs. 800 and Rs. 600 respectively. Thus country C was the least cost or the most efficient country and the home country A was the highest cost country. As the home country imposes 50 percent duty on all imports, the unit costs in A, B and C become Rs. 1000, Rs. 1200 and Rs. 900 respectively. Since country C is the least cost country, watches will be imported by A from country C.

After the formation of the customs union, the import duty is abolished on imports from B, while it remains in case of non-member country C. The unit costs, in this situation, are Rs. 1000, Rs. 800 and Rs. 900 in case of A, B and C respectively. As a consequence, country A will prefer to import watches from country B (partner country) rather than the outside country C. Thus the formation of customs union results in the diversion of trade from an outside country to the partner country. This is called as the trade diversion.

The partial equilibrium effects of the formation of the customs union can be analyzed with the help of Fig. 8.1.



In Fig. 8.1, quantity of the commodity (watches) is measured along the horizontal axis and price along the vertical axis. D_A and S_A are the demand and supply curves respectively of the home country A. S_B and S_C are the perfectly elastic supply curves of countries B and C respectively. The selling price of country A is OP_1 whereas the selling prices of countries B and C are respectively OP_3 and OP_2. Thus country C is the most efficient and the home country A is the least efficient. Before the formation of the customs union, country A imposes P_2P_4 per unit tariff on all imports. Now the tariff-ridden price for country C is OP_2 + P_2P_4 = OP_4. It is still lower than A's selling price OP_1. Country B is out of picture because its selling price inclusive of tariff is even higher than A's selling price. Country A will enter into trade with country C.

At the tariff-ridden price OP_4, the domestic production by country A is OQ_1 and the demand is OQ_2 so that the quantity imported from country C is Q_1Q_2. The consumer's surplus in this trade equilibrium is D_0FP4 and producer's surplus is S_0EP_4. The revenue receipts of the government in country A are EFLK. The measure of welfare before the formation of the customs union is D_0FP_4 + S_0EP_4 + EFLK = $D_0FLKE\ S_0$. If customs union is formed and the tariffs are removed in case of partner country B, while the tariff continue to remain exist in case of the non-member country C. As the selling price OP_3 of country B is lower than that of country C, the home country will import watches from the partner country B and country C

gets eliminated from trade. The main effects after the formation of customs union are as follows:

a. Price Effect:

As compared to the tariff-ridden price OP_4, there is a fall in the selling price to OP_3 after the customs union is formed.

b. Production Effect:

Before the formation of the custom union, the domestic production in country A was OQ_1. After the customs union is formed, the domestic production falls from OQ_1 to OQ_3. This fall in output is met through imports. The overall import is Q_3Q_4 which is more than the earlier imports Q_1Q_2. The increase in imports Q_1Q_3 that offsets the fall in domestic production is termed as Trade Creation Effect I.

c. Consumption Effect:

Before the formation of customs union, the quantity demanded was OQ_2 and afterwards it is OQ_4. Thus the demand for watches rises by Q_2Q_4. This additional demand is met through imports from the partner country B. Thus the increase in consumption Q_2Q_4 is the consumption effect. It is referred as Trade Creation Effect II. Jacob Viner had over-looked it but the writers like Meade, Gehrels, Lipsey and Johnson have recognized it.

d. Revenue Effect:

Before the formation of the customs union, the government in country A was obtaining revenues from tariff to the tune of EFNM. After the formation of customs union, since imports are being made from the partner country B, the government does not receive any revenues. Thus there is loss in government revenues to the extent of EFNM. Given the trade creation effects (a) and (b) the total trade creation effect is ($Q_1Q_3 + Q_2O_4$).

e. Welfare Effect:

The welfare effect due to trade creation can be assessed as below:

Gain in Consumer's Surplus = P_4FHP_3

Loss in Producer's Surplus = P_4EGP_3

Loss in Government Revenues = EFLK

Welfare Effect = $P_4FHP_3 – P_4EGP_3 – EFLK = \Delta EKG + \Delta FLH$

While the trade creation results in a gain in welfare, the diversion of trade from a non-member country (C) to the member country (B) after the formation of customs union, involves some loss in welfare. The reason for it is that the trade gets diverted from a more efficient or low cost country C to the less efficient or high cost country B. Before the

formation of customs union, the home country A was importing Q_1Q_2 quantity of the commodity from the non-member country C. After the formation of customs union, the quantity imported is Q_3Q_4 out of which Q_3Q_1 and Q_2Q_4 can be identified as trade creation effect and the remaining quantity imported Q_1Q_2 is the trade diversion effect.

Before the formation of the customs union, the payment for importing Q_1Q_2 quantity was Q_1EFQ_2. Out of it the revenue receipts to the government of the home country amounted to ($P_2P_4 \times Q_1Q_2$ = EMNF). So the actual payment to country C for the import of Q_1Q_2 quantity of watches was Q_1MNQ_2. After the formation of the customs union, the same quantity Q_1Q_2 is being imported from the partner country B on account of trade diversion. Since no tariff is applicable to B, the total payment to it due to import amounts to $OP_3 \times Q_1Q_2 = KQ_1 \times Q_1Q_2 = Q_1KLQ_2$.Thus there is a larger external payment for importing the same quantity after the formation of the customs union to the extent of $Q_1KLQ_2 - Q_1MNQ_2$ = KMNL which is shown through shaded area in Fig. 8.1. This represents a loss or reduction in welfare. From this, it follows that trade diversion causes a reduction in welfare. The simple reason for the decline in welfare is that the imports are made from less efficient (high cost) partner country B rather than more efficient (low cost) non-member country C.

f. Net Welfare Effect of Custom Union:

The trade creation results in an increase in welfare. It is depicted by areas ΔEKG and ΔFLH in Fig. 18.1. The trade diversion, on the contrary, causes a reduction in welfare. In Fig. 18.1, it has been shown by the area KMNL. Therefore the formation of customs union may either cause a net increase or reduction in welfare.

(i) If KMNL = (ΔEKG + ΔFLH), there is neither an increase nor a decrease in net welfare.

(ii) If KMNL < (ΔEKG + ΔFLH), the formation of customs union results in a net increase in welfare of the home country A.

(iii) If KMNL > (ΔEKG + ΔFLH), the formation of customs union leads to a net loss in welfare in country A.

8.6 Common market

A common market is a formal agreement where a group is formed among several countries in which each member country adopts a common external tariff. In a common market, countries also allow free trade and free movement of labor and capital among the members in the group. The trade arrangement is used to promote free trade and free movement of production factors. The most famous example of a common market is the

European Common Market, which aims to provide the free movement of goods, capital, services, and labor within the European Union.

8.6.1 Conditions required for Common Market

To be defined as a common market, the following conditions must be satisfied:

1. Tariffs, quotas, and all barriers regarding importing and exporting goods and services among members of the common market are eliminated.
2. Common trade restrictions such as tariffs on other countries are adopted by all members of the common market.
3. Production factors such as labour and capital are able to move freely without restriction among member countries.

If one of the conditions is not satisfied, the resulting market is not a common market. For example, if production factors such as labour and capital are not able to move freely without restriction among member countries, it would be defined as a customs union. The main benefits of common market are as follows:

1. Free movement of people, goods, services, and capital

In addition to the removal of tariffs among member countries, the key benefits of a common market include the free movement of people, goods, services, and capital. Therefore, a common market is often regarded as a "single market" as it allows the free movement of production factors without the obstruction created by national borders.

2. Efficiency in production

For an economy, a common market facilitates efficiency among members – factors of production become more efficiently allocated resulting in stronger economic growth. As the market becomes more efficient, inefficiency companies will eventually shut down due to fiercer competition. The companies that remain typically benefit from economies of scale and increased profitability, and innovate more to compete in a more intense competitive landscape.

The main drawbacks of common market are as follows:

1. Decline in competitiveness

The transition to a common market comes with a few drawbacks. For one, companies that have previously been protected and subsidized by the government may struggle to remain afloat in a more competitive landscape. The migration of production factors to other countries may hinder the economic growth of that country and lead to increased unemployment.

2. Trade diversion

Trade diversion occurs when efficient non-members are crowded out of the common market. Furthermore, a country may exhibit depressed wages if it faces an influx in the migration of production factors where supply exceeds demand.

8.7. Let Us Sum Up

All the countries in the world don't follow the uniform trade policy, on the other hand several forms of regional integration have come into existence by removing trade barriers among the trading or partner countries and imposing barriers or tax on non-trading or non-partner countries. The most common form of international economic integration are free trade area, common market and custom unions.

8.8 Key Words

Regional Bloc, Custom Union, Free Trade Area, Common Market, European Common Market, Trade Creation and Trade Diversion

8.9 Questions

1. Explain the different stages of regional integration.
2. Explain the concept of trade creation and trade diversion.
3. Explain the partial equilibrium analysis of trade creation and trade diversion.
4. Write short note on:
    a. Custom Union
    b. Common Market
    c. Free Trade Area

d. Preferential Trading

5. What are the main conditions required for creation of common market.

8.10 Suggested Readings

Mannur H G , International Economcs, Vikash Publishing House

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UNIT- IX
INTERNATIONAL TRADE AND MONETARY ORDER

Structure

9.0 Introduction

If you walk into a supermarket and can buy South American bananas, Brazilian coffee and a bottle of South African wine, you are experiencing the effects of international trade. International trade allows us to expand our markets for both goods and services that otherwise may not have been available to us. It is the reason why you can pick between a Japanese, German or American car. As a result of international trade, the market contains greater competition and therefore more competitive prices, which brings a cheaper product home to the consumer. International trade is the exchange of goods and services between countries. This type of trade gives rise to a world economy, in which prices, or supply and demand, affect and are affected by global events. Political change in Asia, for example, could result in an increase in the cost of labor, thereby increasing the manufacturing costs for an American sneaker company based in Malaysia, which would then result in an increase in the price that you have to pay to buy the tennis shoes at your local mall. A decrease in the cost of labor, on the other hand, would result in you having to pay less for your new shoes. Trading globally gives consumers and countries the opportunity to be exposed to goods and services not available in their own countries. Almost every kind of product can be found on the international market: food, clothes, spare parts, oil, jewelry, wine, stocks, currencies, and water. Services are also traded: tourism, banking, consulting and transportation. A product that is sold to the global market is an export, and a product that is bought from the global market is an import. Imports and exports are accounted for in a country's current account in the balance of payments.

International monetary system refers to a system that forms rules and standards for facilitating international trade among the nations. It helps in reallocating the capital and investment from one nation to another. It is the global network of the government and financial institutions that determine the exchange rate of different currencies for international trade. It is a governing body that sets rules and regulations by which different nations exchange currencies with each other. With the growing complexity in the international trade and financial market, the international monetary system is necessary to assign a standard value of the international currencies. The rules and regulations set by the international monetary system to regulate and control the exchange value of the currencies are agreed upon by the respective governments of the nations. Thus, the government’s stand may affect the decision making of the international monetary system. For example, change in the trade

policy of a government may affect the international trade of goods and services. International monetary system motivates and encourages the nations to participate in the international trade to improve their Balance of Payment (BOP) and minimize the trade deficit. It has grown over the years as a single architectural body with a vision to integrate the global economy. Some of the important achievements of the international monetary system over the years have been the establishment of World Bank and International Monetary Fund in the year 1944.

9.1 Objectives

- To study about Trade and Gold standard
- To understand the reason behind the collapse of the Gold Standard in the inter-war period;
- To study about Bretton - Woods System
- To know about IMF and World Bank
- To know about the fixed exchange rate and its working
- To study the collapse of the Bretton- Woods System and emergence of the floating exchange rate system
- To study the Multilateralism - GATT and WTO regime

9.2 Trade and Gold standard

9.2.1 What is the Gold Standard?

The gold standard can refer to several things, including a fixed monetary regime under which the government's currency is fixed and may be freely converted into gold. It can also refer to a freely competitive monetary system in which gold or bank receipts for gold act as the principal medium of exchange; or to a standard of international trade, wherein some or all countries fix their exchange rate based on the relative gold parity values between individual currencies.

9.2.2 Breaking Down of Gold Standard

The gold standard developed a nebulous definition over time, but is generally used to describe any commodity-based monetary regime that does not rely on un-backed fiat money,

or money that is only valuable because the government forces people to use it. Beyond that, however, there are major differences.

Some gold standards only rely on the actual circulation of physical gold coins and bars, or bullion, but others allow other commodity or paper currencies. Recent historical systems only granted the ability to convert the national currency into gold, thereby limiting the inflationary and deflationary ability of banks or governments.

9.2.3 Why Gold?

Most commodity-money advocates choose gold as a medium of exchange because of its intrinsic properties. Gold has non-monetary uses, especially in jewelry, electronics and dentistry, so it should always retain a minimum level of real demand. It is perfectly and evenly divisible without losing value, unlike diamonds, and does not spoil over time. It is impossible to perfectly counterfeit and has a fixed stock there is only so much gold on Earth, and inflation is limited to the speed of mining.

9.2.4 Advantages and Disadvantages of the Gold Standard

Various advantages of gold standard are as follows:

Simplicity: Gold standard is considered to be a very simple monetary standard. It avoids the complicacies of other standards and can be easily understood by the general public.

Public Confidence: Gold standard promotes public confidence because- (a) gold is universally desired because of its intrinsic value, (b) all kinds of no-gold money, (paper money, token coins, etc.) are convertible into gold, and (c) total volume of currency in the country is directly related to the volume of gold and there is no danger of over-issue currency.

Automatic Working: Under gold standard, the monetary system functions automatically and requires no interference of the government. Given the relationship between gold and quantity of money, changes in gold reserves automatically lead to corresponding changes in the supply of money. Thus, the disequilibrium conditions of adverse or favourable balance of payment on the international level or of inflation or deflation on the domestic level are automatically corrected.

Price Stability: Gold standard ensures internal price stability. Under this monetary system, gold forms the currency base and the prices of gold do not fluctuate much because of the stability in the monetary gold stock of the world and also because the annual production of gold is only a small fraction of world's total existing stock of monetary gold. Thus, the price system which is founded on relatively stable gold base will be more or less stable than under any other monetary standard.

Exchange Stability: Gold standard ensures stability in the rate of exchange between countries. Stability of exchange rate is necessary for the development of international trade and the smooth flow of capital movements among countries. Fluctuations in the exchange rate adversely affect the foreign trade.

Various disadvantages of gold standard are as follows:

Not Always Simple: Gold standard in all its forms is not as simple. The gold coin standard and, to some extent, gold bullion standard may be regarded as simple to understand. But, the gold exchange standard which relates the currency unit of a country to that of the other is by no means simple to be comprehended by a common man.

Lack of Elasticity: Under the gold standard, the monetary system lacks elasticity. Under this standard, money supply depends upon the gold reserves and the gold reserves cannot be easily increased. So money supply is not flexible enough to be changed to meet the changing requirements of the country.

Costly and Wasteful: Gold standard is a costly standard because the medium of exchange consists of expensive metal. It is also a wasteful standard because there is a great wear and tear of the precious metal when gold coins are actually in circulation.

Fair-Weather Standard: The gold standard has been regarded as a fair-weather standard because it works properly in normal or peaceful time, but during the periods of war or economic crisis, it invariably fails. During abnormal periods, those who have gold try to hoard it and those who have paper currency cry for its conversion into gold. In order to protect the falling gold reserves, the monetary authority prefers to suspend the gold standard.

Sacrifice of Internal Stability: The gold standard sacrifices domestic price stability in order to ensure international exchange rate stability. In fact, under gold standard, inflation and deflation respectively are the necessary companions to a favourable and an unfavourable balance of payments. Give the world's total monetary gold stock, an individual country's monetary gold stock, and consequently, the money supply and the internal price level,

changes by the inflow or outflow of gold as a result of international trade. Thus the presence of external trade almost guarantees price instability under gold standard mechanism.

Not Automatic: The automatic working of the gold standard requires the mutual cooperation of the participating countries. But, during the World War I, because of the lack of international cooperation, all types of countries, those receiving gold as well as those losing gold, found it necessary to abandon the gold standard to prevent disastrous inflation on the one hand and even more disastrous deflation and unemployment on the other.

Deflationary: According to Mrs. Joan Robinson, gold standard generally suffers from an inherent bias towards deflation. Under this standard, the gold losing country is under the compulsion to contract money supply in proportion to the fall in gold reserves.

But the gold gaining country, on the other hand, may not increase its money supply in proportion to the increase in gold reserves. Thus, the gold standard, which necessarily produces deflation in the gold losing country, may not generate inflation in gold receiving country.

Economic Dependence: Under gold standard, the problems of one country are passed on to the other countries and it is difficult for an individual country to follow independent economic policy.

Unsuitable for Developing Countries: Gold standard is particularly not suitable to the developing economies which have adopted a policy of planned economic development with an objective to secure self-sufficiency.

9.2.5 Classical Gold Standard Era

The classical gold standard began in England in 1819 and spread to France, Germany, Switzerland, Belgium and the United States. Each government pegged its national currency to a fixed weight in gold. For example, by 1879, U.S. dollars were convertible to gold at a rate of $20.67 per ounce. These parity rates were used to price international transactions. Other countries later joined to gain access to Western trade markets.

There were many interruptions in the gold standard, especially during wartime, and many countries experimented with bimetallic (gold and silver) standards. Governments frequently spent more than their gold reserves could back, and suspensions of national gold standards were extremely common. Moreover, governments struggled to correctly peg the relationship between their national currencies and gold without creating distortions.

As long as governments or central banks retained monopoly privileges over the supply of national currencies, the gold standard proved an ineffective or inconsistent restraint on fiscal policy. The gold standard slowly eroded during the 20th century. This began in the United States in 1933, when Franklin Delano Roosevelt signed an executive order criminalizing the private possession of monetary gold.

After World War II, the Bretton Woods agreement forced Allied countries to accept the U.S. dollar as a reserve rather than gold, and the U.S. government pledged to keep enough gold to back its dollars. In 1971, the Nixon administration terminated the convertibility of U.S. dollars to gold, creating a fiat currency regime.

Check your Progress/ Self Assessment Questions

Why most commodity-money advocates choose gold as a medium of exchange?

What are the most important advantages to using the gold standard?

9.3 Collapse of the Gold Standard in the Inter-war Period

Before World War I, gold standard worked efficiently and remained widely accepted. It succeeded in ensuring exchange stability among the countries. But with the starting of the war in 1914, gold standard was abandoned everywhere mainly because of two reasons: (a) to avoid adverse balance of payments and (b) to prevent gold exports falling into the hands of the enemy.

After the war in 1918, efforts were made to revive gold standard and, by 1925, it was widely established again. But, the great depression of 1929-33 ultimately led to the breakdown of the gold standard which disappeared completely from the world by 1937. The gold standard failed because the rules of the gold standard game were not observed.

1.3.1 Reasons of the decline of the gold standard

A. Violation of Rules of Gold Standard

The successful working of the gold standard requires the observance of the basic rules of the gold standard:

(a) There should be free movement of gold between countries;

(b) There should be automatic expansion or contraction of currency and credit with the inflow and outflow of gold;

(c) The governments in different countries should help facilitate the gold movements by keeping their internal price system flexible in their respective economies.

After World War I, the governments of gold standard countries did not want their people to experience the inflationary and deflationary tendencies which would result by following the gold standard.

B. Restrictions on Free Trade:

The successful working of gold standard requires free and uninterrupted trade of goods between the countries. But during interwar period, most of the gold standard countries abandoned the free trade policy under the impact of narrow nationalism and adopted restrictive policies regarding imports.

This resulted in the reduction in international trade and thus the breakdown of the gold standard.

C. Inelastic Internal Price System:

The gold standard aimed at exchange stability at the expense of the internal price stability. But during the inter-war period, the monetary authorities sought to maintain both exchange stability as well as price stability.

This was impossible because exchange stability is generally accompanied by internal price fluctuations.

D. Unbalanced Distribution of Gold:

A necessary condition for the success of gold standard is the availability of adequate gold stocks and their proper distribution among the member countries.

But in the inter-war period, countries like the U.S.A. and France accumulated too much gold, while countries of Eastern Europe and Germany had very low stocks of gold. This shortage of gold reserves led to the abandonment of the gold standard.

E. External Indebtedness:

Smooth working of gold standard requires that gold should be used for trade purposes and not for the movement of capital. But during the inter-war period, excessive international indebtedness led to the decline of gold standard.

There were three main reasons for the excessive movement of capital between countries:

(a) After World War I, the victor nations forced Germany to pay war reparation in gold,

(b) There was movement of large amounts of short-term capital (often called as refugee capital) from one country to another in search of security,

(c) There was plenty of borrowing by the underdeveloped countries from the advanced countries for investment purpose.

F. Excessive Use of Gold Exchange Standard:

The excessive use of gold exchange standard was also responsible for the break-down of gold standard. Many small countries which were on gold exchange standard kept their reserves in London and New York.

But, rumors of war and abnormal conditions forced the depositing countries to withdraw their gold reserves. This led to the abandonment of the gold standard.

G. Absence of International Monetary Centre:

Movement of gold involves cost. Before 1914, such movement was not needed because London was working as the international monetary centre and the countries having deposit accounts in the London banks adjusted their adverse balance of payments through book entries.

But during inter-war period, London was fast losing its position as an international financial centre. In the absence of such a centre, every country had to keep large stocks of gold with them and large movements of gold had to take place.

This was not proper and easily manageable. Thus, gold standard failed due to the absence of inter-national financial centre after World War I.

H. Lack of Co-operation:

Economic co-operation among the participating countries is a necessary condition for the success of gold standard. But after World War I, there was complete absence of such co-operation among the gold standard countries, which led to the downfall of the gold standard.

I. Political Instability:

Political instability among the European countries also was responsible for the failure of gold standard. There were rumors of war, revolutions, political agitations, fear of transfer of funds to other countries. All these factors threatened the safe working of the gold standard and ultimately led to its abandonment.

J. Great Depression:

The world-wide depression of 1929-33 probably gave the final blow to the gold standard. Falling prices and wide-spread unemployment were the fundamental features of depression which forced the countries to impose high tariffs to restrict imports and thus international trade. The great depression was also responsible for the flight of capital.

K. Rise of Economic Nationalism:

After the World War I, a wave of economic nationalism swept the European countries. With an objective to secure self-sufficiency, each country followed protectionism and thus imposed restrictions on international trade. This was a direct interference in the working of the gold standard.

Check your Progress/ Self Assessment Questions

What are the two main reasons for abandoned of gold standard everywhere during the starting of war in 1914?

Political instability among which countries was responsible for the failure of gold standard?

9.4 Bretton Woods System

The 1944 Bretton Woods agreement established a new global monetary system. It replaced the gold standard with the U.S. dollar as the global currency. By so doing, it established America as the dominant power in the world economy. After the agreement was signed, America was the only country with the ability to print dollars. The agreement created the World Bank and the International Monetary Fund. These U.S.-backed organizations would monitor the new system.

9.4.1 The Bretton Woods Agreement

The Bretton Woods agreement was created in a 1944 conference of all of the World War II allied nations. It took place in Bretton Woods, New Hampshire. Under the agreement, countries promised that their central banks would maintain fixed exchange rates between their currencies and the dollar. How exactly would they do this? If a country's currency value became too weak relative to the dollar, the bank would buy up its currency in foreign exchange markets. That would lower the currency's supply and raise its price. If its currency became too high, the bank would print more. That would increase the supply and lower its price. Members of the Bretton Woods system agreed to avoid trade wars. For example, they wouldn't lower their currencies strictly to increase trade. But they could regulate their currencies under certain conditions. For example, they could take action if foreign direct investment began to destabilize their economies. They could also adjust their currency values to rebuild after a war.

9.4.2 How It Replaced the Gold Standard

Before Bretton Woods, most countries followed the gold standard. That meant each country guaranteed that it would redeem its currency for its value in gold. After Bretton Woods, each member agreed to redeem its currency for U.S. dollars, not gold. Why dollars? The United States held three-fourths of the world's supply of gold. No other currency had enough gold to back it as a replacement. The dollar's value was 1/35 of an ounce of gold. Bretton Woods allowed the world to slowly transition from a gold standard to a U.S. dollar standard. The dollar had now become a substitute for gold. As a result, the value of the dollar began to increase relative to other currencies. There was more demand for it, even though it’s worth in gold remained the same. This discrepancy in value planted the seed for the collapse of the Bretton Woods system three decades later.

9.4.3 Why it was needed

Until World War I, most countries were on the gold standard. But they went off so they could print the currency needed to pay for their war costs. It caused hyperinflation, as the supply of money overwhelmed the demand. The value of money fell so dramatically that, in some cases, people needed wheelbarrows full of cash just to buy a loaf of bread. After the war, countries returned to the safety of the gold standard. All went well until the Great

Depression. After the 1929 stock market crash, investors switched to forex trading and commodities. It drove up the price of gold, resulting in people redeeming their dollars for gold. The Federal Reserve made things worse by defending the nation's gold reserve by raising interest rates. It's no wonder that countries were ready to abandon a pure gold standard. The Bretton Woods system gave nations more flexibility than a strict adherence to the gold standard. It also provided less volatility than a currency system with no standard at all. A member country still retained the ability to alter its currency's value if needed to correct a "fundamental disequilibrium" in its current account balance.

9.4.4 Role of the IMF and World Bank

The Bretton Woods system could not have worked without the IMF. Member countries needed it to bail them out if their currency values got too low. They'd need a kind of global central bank they could borrow from in case they needed to adjust their currency's value and didn't have the funds themselves. Otherwise, they would just slap on trade barriers or raise interest rates. The Bretton Woods countries decided against giving the IMF the power of a global central bank. This power involved printing money as needed. Instead, they agreed to contribute to a fixed pool of national currencies and gold to be held by the IMF. Each member of the Bretton Woods system was then entitled to borrow what it needed, within the limits of its contributions. The IMF was also responsible for enforcing the Bretton Woods agreement. The World Bank, despite its name, was not the world's central bank. At the time of the Bretton Woods agreement, the World Bank was set up to lend to the European countries devastated by World War II. Now the purpose of the World Bank is to loan money to economic development projects in emerging market countries.

9.4.5 The Collapse of the Bretton Woods System

In 1971, the United States was suffering from massive stagflation. That's a deadly combination of inflation and recession. It was partly a result of the dollar's role as a global currency. In response, President Nixon started to deflate the dollar's value in gold. Nixon revalued the dollar to 1/38 of an ounce of gold, then 1/42 of an ounce. But the plan backfired. It created a run on the U.S. gold reserves at Fort Knox as people redeemed their quickly devaluing dollars for gold. In 1973, Nixon unhooked the value of the dollar from gold

altogether. Without price controls, gold quickly shot up to $120 per ounce in the free market. The Bretton Woods system was over.

A floating exchange rate is a regime where the currency price of a nation is set by the forex market based on supply and demand relative to other currencies. This is in contrast to a fixed exchange rate, in which the government entirely or predominantly determines the rate.

Check your Progress/ Self Assessment Questions

In which year Bretton Woods agreement established a new global monetary system?

What is Stagflation?

9.5 IMF and World Bank

9.5.1 The International Monetary Fund (IMF)

The International Monetary Fund (IMF)is an organization of 189 countries, working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world. Created in 1945, the IMF is governed by and accountable to the 189 countries that make up its near-global membership. The IMF's primary purpose is to ensure the stability of the international monetary system—the system of exchange rates and international payments that enables countries (and their citizens) to transact with each other. The Fund's mandate was updated in 2012 to include all macroeconomic and financial sector issues that bear on global stability.

9.5.1.1 Working of IMF

The IMF’s fundamental mission is to ensure the stability of the international monetary system. It does so in three ways: keeping track of the global economy and the economies of member countries; lending to countries with balance of payments difficulties; and giving practical help to members.

A. Economic Surveillance

The IMF oversees the international monetary system and monitors the economic and financial policies of its 189 member countries. As part of this process, which takes place both

at the global level and in individual countries, the IMF highlights possible risks to stability and advises on needed policy adjustments.

Learn how the IMF helped Vietnam.

(https://www.imf.org/en/Countries/VNM/vietnam-raising-millions-out-of-poverty)

B. Lending

The IMF provides loans to member countries experiencing actual or potential balance of payments problems to help them rebuild their international reserves, stabilize their currencies, continue paying for imports, and restore conditions for strong economic growth, while correcting underlying problems.

Learn how the IMF helped Ireland.

(https://www.imf.org/en/~/link.aspx?_id=DE6407B06AA04ECABB671100BD16E453&_z=z)

C. Capacity Development

The IMF works with governments around the world to modernize their economic policies and institutions, and train their people. This helps countries strengthen their economy, improve growth and create jobs.

Learn how the IMF helped Colombia.

(https://www.imf.org/en/Countries/COL/working-together-colombia-and-the-imf)

9.5.1.2 Organizational Structure of IMF

The IMF has a management team and 17 departments that carry out its country, policy, analytical, and technical work. One department is charged with managing the IMF's resources. This section also explains where the IMF gets its resources and how they are used.

A. Management: The IMF has a Managing Director, who is head of the staff and Chairperson of the Executive Board. The Managing Director is appointed by the Executive Board for a renewable term of five years and is assisted by a First Deputy Managing Director and three Deputy Managing Directors.

B. Staff: The IMF's employees come from all over the world; they are responsible to the IMF and not to the authorities of the countries of which they are citizens. The IMF staff is organized mainly into area; functional; and information, liaison, and support responsibilities.

C. IMF Resources: Most resources for IMF loans are provided by member countries, primarily through their payment of quotas.

D. Quotas: Quota subscriptions are a central component of the IMF's financial resources. Each member country of the IMF is assigned a quota, based broadly on its relative position in the world economy.

E. Special Drawing Rights (SDR): The SDR is an international reserve asset, created by the IMF in 1969 to supplement its member countries' official reserves.

F. Gold: Gold remains an important asset in the reserve holdings of several countries, and the IMF is still one of the world's largest official holders of gold.

Borrowing Arrangements: While quota subscriptions of member countries are the IMF's main source of financing, the Fund can supplement its quota resources through borrowing if it believes that they might fall short of members' needs.

9.5.1.3 Governance of IMF

A. Governance Structure: The IMF has evolved along with the global economy throughout its 70-year history, allowing the organization to retain a central role within the international financial architecture.

B. Country Representation: Unlike the General Assembly of the United Nations, where each country has one vote, decision making at the IMF was designed to reflect the relative positions of its member countries in the global economy. The IMF continues to undertake reforms to ensure that its governance structure adequately reflects fundamental changes taking place in the world economy.

C. Accountability: Created in 1945, the IMF is governed by and accountable to the 189 countries that make up its near-global membership. Decision making at the IMF was designed to reflect the relative positions of its member countries in the global economy.

D. Transparency: The IMF has policies in place to ensure that meaningful and accurate information—both about its own role in the global economy and the economies of its member countries—is provided in real time to its global audiences.

E. Corporate Giving: The IMF Giving Together campaign guides the IMF's humanitarian and community outreach efforts.

9.5.2 World Bank

The World Bank Group consists of five organizations:

A. The International Bank for Reconstruction and Development

The International Bank for Reconstruction and Development (IBRD) lends to governments of middle-income and creditworthy low-income countries.

B. The International Development Association

The International Development Association (IDA) provides interest-free loans- called credits- and grants to governments of the poorest countries. Together, IBRD and IDA make up the World Bank.

C. The International Finance Corporation

The International Finance Corporation (IFC) is the largest global development institution focused exclusively on the private sector. We help developing countries achieve sustainable growth by financing investment, mobilizing capital in international financial markets, and providing advisory services to businesses and governments.

D. The Multilateral Investment Guarantee Agency

The Multilateral Investment Guarantee Agency (MIGA) was created in 1988 to promote foreign direct investment into developing countries to support economic growth, reduce poverty, and improve people's lives. MIGA fulfills this mandate by offering political risk insurance (guarantees) to investors and lenders.

E. The International Centre for Settlement of Investment Disputes

The International Centre for Settlement of Investment Disputes (ICSID) provides international facilities for conciliation and arbitration of investment disputes.

9.5.2.1 Functioning of World Bank

The World Bank Group has set two goals for the world to achieve by 2030:

A. End extreme poverty by decreasing the percentage of people living on less than $1.90 a day to no more than 3%.

B. Promote shared prosperity by fostering the income growth of the bottom 40% for every country.

The World Bank is a vital source of financial and technical assistance to developing countries around the world. We are not a bank in the ordinary sense but a unique partnership to reduce poverty and support development. The World Bank Group comprises five institutions managed by their member countries. Established in 1944, the World Bank Group

is headquartered in Washington, D.C. We have more than 10,000 employees in more than 120 offices worldwide.

9.5.2.2 Financial Products and Services

The World Bank provide low-interest loans, zero to low-interest credits, and grants to developing countries. These support a wide array of investments in such areas as education, health, public administration, infrastructure, financial and private sector development, agriculture, and environmental and natural resource management. Some of our projects are co-financed with governments, other multilateral institutions, commercial banks, export credit agencies, and private sector investors. The World Bank also provide or facilitate financing through trust fund partnerships with bilateral and multilateral donors. Many partners have asked the Bank to help manage initiatives that address needs across a wide range of sectors and developing regions.

9.5.2.3 Innovative Knowledge Sharing

The World Bank offer support to developing countries through policy advice, research and analysis, and technical assistance. Our analytical work often underpins World Bank financing and helps inform developing countries' own investments. In addition, the World Bank support capacity development in the countries we serve. The World Bank also sponsor, host, or participate in many conferences and forums on issues of development, often in collaboration with partners. To ensure that countries can access the best global expertise and help generate cutting-edge knowledge, the Bank is constantly seeking to improve the way it shares its knowledge and engages with clients and the public at large.

9.5.2.4 History of the World Bank

The World Bank was created in 1944 out of the Bretton Woods agreement, which was secured under the auspices of the United Nations in the latter days of World War II because many European and Asian countries were going to need financing to fund post-war reconstruction efforts. The bank is headquartered in Washington, D.C., and currently has more than 10,000 employees in more than 120 offices worldwide. It has expanded from a

single institution to a group of five unique and cooperative institutional organizations. The first organization is the International Bank for Reconstruction and Development (IBRD), an institution that provides debt financing to governments that are considered middle income. The second organization within the World Bank is the International Development Association (IDA), a group that gives interest-free loans to the governments of poor countries. The International Finance Corporation (IFC), the third organization, focuses on the private sector and provides developing countries with investment financing and financial advisory services. The fourth part of the World Bank is the Multilateral Investment Guarantee Agency (MIGA), an organization that promotes foreign direct investments in developing countries. The fifth organization is the International Centre for Settlement of Investment Disputes (ICSID), an entity that provides arbitration on international investment disputes.

Check your Progress/ Self Assessment Questions

International Monetary Fund (IMF) is an organization of how many nations?

How many organizations are there in The World Bank Group?

9.6 Fixed Exchange Rate and its Working

A fixed exchange rate is a regime applied by a government or central bank ties the country's currency official exchange rate to another country's currency or the price of gold. The purpose of a fixed exchange rate system is to keep a currency's value within a narrow band.
Fixed rates provide greater certainty for exporters and importers. Fixed rates also help the government maintain low inflation, which, in the long run, keep the interest rates down and stimulates trade and investment. Most major industrialized nations have had floating exchange rate systems, where the going price on the foreign exchange market (forex) sets its currency price. This practice began for these nations in the early 1970s while developing economies continue with fixed rate systems.

9.6.1 Fixed Exchange Rate Bretton Woods Background

From the end of World War II to the early 1970s, the Bretton Woods Agreement pegged the exchange rates of participating nations to the value of the U.S. dollar, which was fixed to the price of gold. When the United States' postwar balance of payments surplus turned to a deficit in the 1950s and 1960s, the periodic exchange rate adjustments permitted under the agreement ultimately proved insufficient. In 1973, President Richard Nixon removed the United States from the gold standard, ushering in the era of floating rates.

9.6.2 The Beginnings of the Monetary Union

The European Exchange Rate Mechanism (ERM) was established in 1979 as a precursor to monetary union and the introduction of the euro. Member nations, including Germany, France, the Netherlands, Belgium, Spain, and Italy, agreed to maintain their currency rates within plus or minus 2.25 % of a central point. The United Kingdom joined in October 1990 at an excessively strong conversion rate and was forced to withdraw two years later. The original members of the euro converted from their home currencies at their then-current ERM central rate as of Jan. 1, 1999. The euro itself trades freely against other major currencies while the currencies of countries hoping to join trade in a managed float known as ERM II.

9.6.3 Disadvantages of Fixed Exchange Rates

Developing economies often use a fixed-rate system to limit speculation and provide a stable system. A stable system allows importers, exporters, and investors to plan without worrying about currency moves. However, a fixed-rate system limits a central bank's ability to adjust interest rates as needed for economic growth. A fixed-rate system also prevents market adjustments when a currency becomes over or undervalued. Effective management of a fixed-rate system also requires a large pool of reserves to support the currency when it is under pressure. An unrealistic official exchange rate can also lead to the development of a parallel, unofficial, or dual, exchange rate. A large gap between the official and unofficial rates can divert hard currency away from the central bank, which can lead to forex shortages and periodic large devaluations. These can be more disruptive to an economy than the periodic adjustment of a floating exchange rate regime.

Check your Progress/ Self Assessment Questions

European Exchange Rate Mechanism (ERM) was established in which year?

When the United Kingdom joined ERM?

9.7 Collapse of the Bretton- Woods System and emergence of the floating exchange rate system

A floating exchange rate is a regime where the currency price of a nation is set by the forex market based on supply and demand relative to other currencies. This is in contrast to a fixed exchange rate, in which the government entirely or predominantly determines the rate.

9.7.1 How a Floating Exchange Rate Works

Floating exchange rate systems mean long-term currency price changes reflect relative economic strength and interest rate differentials between countries. Short-term moves in a floating exchange rate currency reflect speculation, rumors, disasters, and every day supply and demand for the currency. If supply outstrips demand that currency will fall, and if demand outstrips supply that currency will rise. Extreme short-term moves can result in intervention by central banks, even in a floating rate environment. Because of this, while most major global currencies are considered floating, central banks and governments may step in if a nation's currency becomes too high or too low. A currency that is too high or too low could affect the nation's economy negatively, affecting trade and the ability to pay debts. The government or central bank will attempt to implement measures to move their currency to a more favorable price.

9.7.2 Floating Versus Fixed Exchange Rates

Currency prices can be determined in two ways: a floating rate or a fixed rate. As mentioned above, the floating rate is usually determined by the open market through supply and demand. Therefore, if the demand for the currency is high, the value will increase. If demand is low, this will drive that currency price lower. A fixed or pegged rate is determined by the government through its central bank. The rate is set against another major world currency (such as the U.S. dollar, euro, or yen). To maintain its exchange rate, the government will buy and sell its own currency against the currency to which it is pegged. Some countries that choose to peg their currencies to the U.S. dollar include China and Saudi Arabia. The currencies of most of the world's major economies were allowed to float freely following the collapse of the Bretton Woods system between 1968 and 1973.

9.7.3 History of Floating Exchange Rates via the Bretton Woods Agreement

The Bretton Woods Conference, which established a gold standard for currencies, took place in July 1944. A total of 44 countries met, with attendees limited to the Allies in World War II. The Conference established the International Monetary Fund (IMF) and the World Bank, and it set out guidelines for a fixed exchange rate system. The system established a gold price of $35 per ounce, with participating countries pegging their currency to the dollar. Adjustments of plus or minus one percent were permitted. The U.S. dollar became the reserve currency through which central banks carried out intervention to adjust or stabilize rates. The first large crack in the system appeared in 1967, with a run on gold and an attack on the British pound that led to a 14.3 % devaluation. President Richard Nixon took the United States off the gold standard in 1971. By late 1973, the system had collapsed, and participating currencies were allowed to float freely.

9.7.4 Failed Attempt to Intervene in a Currency

In floating exchange rate systems, central banks buy or sell their local currencies to adjust the exchange rate. This can be aimed at stabilizing a volatile market or achieving a major change in the rate. Groups of Central Banks, such as those of the G-7 nations (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States), often work together in coordinated interventions to increase the impact. An intervention is often short-term and does not always succeed. A prominent example of a failed intervention took place in 1992 when financier George Soros spearheaded an attack on the British pound. The currency had entered the European Exchange Rate Mechanism (ERM) in October 1990; the ERM was designed to limit currency volatility as a lead-in to the euro, which was still in the planning stages. Soros believed that the pound had entered at an excessively high rate, and he mounted a concerted attack on the currency. The Bank of England was forced to devalue the currency and withdraw from the ERM. The failed intervention cost the U.K. Treasury a reported £3.3 billion. Soros, on the other hand, made over $1 billion. Central banks can also intervene indirectly in the currency markets by raising or lowering interest rates to impact the flow of investors' funds into the country. Since attempts to control prices within tight bands have historically failed, many nations opt to free float their currency and then use economic tools to help nudge it one direction or the other if it moves too far for their comfort.

Check your Progress/ Self Assessment Questions

What is floating exchange rate?

How the central banks adjust the exchange rate under floating exchange rate systems?

9.8 Multilateralism - GATT and WTO regime

Multilateralism is a process of organizing relations between groups of three or more states. Beyond that basic quantitative aspect, multilateralism is generally considered to comprise certain qualitative elements or principles that shape the character of the arrangement or institution. Those principles are an indivisibility of interests among participants, a commitment to diffuse reciprocity, and a system of dispute settlement intended to enforce a particular mode of behaviour.

9.8.1 General Agreement on Tariffs and Trade (GATT)

General Agreement on Tariffs and Trade (GATT) set of multilateral trade agreements aimed at the abolition of quotas and the reduction of tariff duties among the contracting nations. When GATT was concluded by 23 countries at Geneva, in 1947 (to take effect on Jan. 1, 1948), it was considered an interim arrangement pending the formation of a United Nations agency to supersede it. When such an agency failed to emerge, GATT was amplified and further enlarged at several succeeding negotiations. It subsequently proved to be the most effective instrument of world trade liberalization, playing a major role in the massive expansion of world trade in the second half of the 20th century. By the time GATT was replaced by the World Trade Organization (WTO) in 1995, 125 nations were signatories to its agreements, which had become a code of conduct governing 90 percent of world trade. GATT's most important principle was that of trade without discrimination, in which each member nation opened its markets equally to every other. As embodied in unconditional most-favored nation clauses, this meant that once a country and its largest trading partners had agreed to reduce a tariff, that tariff cut was automatically extended to every other GATT member. GATT included a long schedule of specific tariff concessions for each contracting nation, representing tariff rates that each country had agreed to extend to others. Another fundamental principle was that of protection through tariffs rather than through import quotas or other quantitative trade restrictions; GATT systematically sought to eliminate the latter. Other general rules included uniform customs regulations and the obligation of each

contracting nation to negotiate for tariff cuts upon the request of another. An escape clause allowed contracting countries to alter agreements if their domestic producers suffered excessive losses as a result of trade concessions. GATT's normal business involved negotiations on specific trade problems affecting particular commodities or trading nations, but major multilateral trade conferences were held periodically to work out tariff reductions and other issues. Seven such "rounds" were held from 1947 to 1993, starting with those held at Geneva in 1947 (concurrent with the signing of the general agreement); at Annecy, France, in 1949; at Torquay, Eng., in 1951; and at Geneva in 1956 and again in 1960–62. The most important rounds were the so-called Kennedy Round (1964–67), the Tokyo Round (1973–79), and the Uruguay Round (1986–94), all held at Geneva. These agreements succeeded in reducing average tariffs on the world's industrial goods from 40 percent of their market value in 1947 to less than 5 percent in 1993. The Uruguay Round negotiated the most ambitious set of trade-liberalization agreements in GATT's history. The worldwide trade treaty adopted at the round's end slashed tariffs on industrial goods by an average of 40 percent, reduced agricultural subsidies, and included groundbreaking new agreements on trade in services. The treaty also created a new and stronger global organization, the WTO, to monitor and regulate international trade. GATT went out of existence with the formal conclusion of the Uruguay Round on April 15, 1994. Its principles and the many trade agreements reached under its auspices were adopted by the WTO.

9.8.2 World Trade Organization (WTO)

The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations. At its heart are the WTO agreements, negotiated and signed by the bulk of the world's trading nations and ratified in their parliaments. The goal is to ensure that trade flows as smoothly, predictably and freely as possible. There are a number of ways of looking at the World Trade Organization. It is an organization for trade opening. It is a forum for governments to negotiate trade agreements. It is a place for them to settle trade disputes. It operates a system of trade rules. Essentially, the WTO is a place where member governments try to sort out the trade problems they face with each other. The WTO was born out of negotiations, and everything the WTO does is the result of negotiations. The bulk of the WTO's current work comes from the 1986–94 negotiations called the Uruguay Round and earlier negotiations under the General Agreement on Tariffs and Trade (GATT). The WTO is currently the host to new negotiations, under the

'Doha Development Agenda' launched in 2001. Where countries have faced trade barriers and wanted them lowered, the negotiations have helped to open markets for trade. But the WTO is not just about opening markets, and in some circumstances its rules support maintaining trade barriers — for example, to protect consumers or prevent the spread of disease. At its heart are the WTO agreements, negotiated and signed by the bulk of the world's trading nations. These documents provide the legal ground rules for international commerce. They are essentially contracts, binding governments to keep their trade policies within agreed limits. Although negotiated and signed by governments, the goal is to help producers of goods and services, exporters, and importers conduct their business, while allowing governments to meet social and environmental objectives. The system's overriding purpose is to help trade flow as freely as possible — so long as there are no undesirable side effects — because this is important for economic development and well-being. That partly means removing obstacles. It also means ensuring that individuals, companies and governments know what the trade rules are around the world, and giving them the confidence that there will be no sudden changes of policy. In other words, the rules have to be 'transparent' and predictable. Trade relations often involve conflicting interests. Agreements, including those painstakingly negotiated in the WTO system, often need interpreting. The most harmonious way to settle these differences is through some neutral procedure based on an agreed legal foundation. That is the purpose behind the dispute settlement process written into the WTO agreements.

Check your Progress/ Self Assessment Questions

When GATT was concluded?

In which year Doha Development Agenda was launched?

9.9 Let Us Sum Up

In this unit we were able to understand about Gold Standard with the reasons for its breaking down with its advantages and disadvantages followed by collapse of the Gold Standard in the inter-war period. Then we have discussed about Bretton Woods System, how it replaced the Gold Standard and why it was needed. We have also discussed about the role of the IMF and World Bank and the collapse of the Bretton Woods System. We have understand about IMF and World Bank followed by Fixed Exchange Rate and its working, the beginnings of the Monetary Union and disadvantages of Fixed Exchange Rates. Then we have analyzed about Collapse of the Bretton- Woods System and emergence of the floating

exchange rate system, how a floating exchange rate works, how it differ from fixed exchange rates. Finally we have discussed about Multilateralism with special reference to GATT and WTO regime in the present unit.

9.10 Key Terms

Gold Standard: The gold standard can refer to several things, including a fixed monetary regime under which the government's currency is fixed and may be freely converted into gold. It can also refer to a freely competitive monetary system in which gold or bank receipts for gold act as the principal medium of exchange; or to a standard of international trade, wherein some or all countries fix their exchange rate based on the relative gold parity values between individual currencies.

International Monetary Fund (IMF): It is an organization of 189 countries, working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world. Created in 1945, the IMF is governed by and accountable to the 189 countries that make up its near-global membership.

International Bank for Reconstruction and Development: The International Bank for Reconstruction and Development (IBRD) lends to governments of middle-income and creditworthy low-income countries.

International Development Association: The International Development Association (IDA) provides interest-free loans- called credits- and grants to governments of the poorest countries. Together, IBRD and IDA make up the World Bank.

International Finance Corporation: The International Finance Corporation (IFC) is the largest global development institution focused exclusively on the private sector. We help developing countries achieve sustainable growth by financing investment, mobilizing capital

in international financial markets, and providing advisory services to businesses and governments.

Multilateral Investment Guarantee Agency: The Multilateral Investment Guarantee Agency (MIGA) was created in 1988 to promote foreign direct investment into developing countries to support economic growth, reduce poverty, and improve people's lives. MIGA fulfills this mandate by offering political risk insurance (guarantees) to investors and lenders.

International Centre for Settlement of Investment Disputes: The International Centre for Settlement of Investment Disputes (ICSID) provides international facilities for conciliation and arbitration of investment disputes.

Fixed Exchange Rate: It is a regime applied by a government or central bank ties the country's currency official exchange rate to another country's currency or the price of gold. The purpose of a fixed exchange rate system is to keep a currency's value within a narrow band.

Floating Exchange Rate: It is a regime where the currency price of a nation is set by the forex market based on supply and demand relative to other currencies. This is in contrast to a fixed exchange rate, in which the government entirely or predominantly determines the rate.

Multilateralism: It is a process of organizing relations between groups of three or more states. Beyond that basic quantitative aspect, multilateralism is generally considered to comprise certain qualitative elements or principles that shape the character of the arrangement or institution. Those principles are an indivisibility of interests among participants, a commitment to diffuse reciprocity, and a system of dispute settlement intended to enforce a particular mode of behaviour.

9.11 Answer to 'Check Your Progress'

Q. Why most commodity-money advocates choose gold as a medium of exchange?

A. Most commodity-money advocates choose gold as a medium of exchange because of its intrinsic properties.

Q. What are the most important advantages to using the gold standard?

A. There are many advantages to using the gold standard are price stability and it can also reduce the uncertainty in international trade.

Q. What are the two main reasons for abandoned of gold standard everywhere during the starting of war in 1914?

A. The two reasons are (a) to avoid adverse balance of payments and (b) to prevent gold exports falling into the hands of the enemy.

Q. Political instability among which countries was responsible for the failure of gold standard?

A. Political instability among the European countries also was responsible for the failure of gold standard.

Q. In which year Bretton Woods agreement established a new global monetary system?

A. Bretton Woods agreement established a new global monetary system in the year 1944.

Q. What is Stagflation?

A. It is a deadly combination of inflation and recession.

Q. International Monetary Fund (IMF) is an organization of how many nations?

A. It is an organization of 189 nations created in 1945.

Q. How many organizations are there in The World Bank Group?

A. The World Bank Group consists of five organizations.

Q. European Exchange Rate Mechanism (ERM) was established in which year?

A. European Exchange Rate Mechanism (ERM) was established in 1979.

Q. When the United Kingdom joined ERM?

A. The United Kingdom joined ERM in October 1990

Q. What is floating exchange rate?

A. A floating exchange rate is a regime where the currency price of a nation is set by the forex market based on supply and demand relative to other currencies.

Q. How the central banks adjust the exchange rate under floating exchange rate systems?

A. In floating exchange rate systems, central banks buy or sell their local currencies to adjust the exchange rate.

Q. When GATT was concluded?

A. GATT was concluded in 1947

Q. In which year Doha Development Agenda was launched?

A. Doha Development Agenda was launched in the year 2001.

9.12 Questions and Answers

9.12.1 Short-Answer Questions

Q. What is the Gold Standard?

A. The gold standard can refer to several things, including a fixed monetary regime under which the government's currency is fixed and may be freely converted into gold. It can also refer to a freely competitive monetary system in which gold or bank receipts for gold act as the principal medium of exchange; or to a standard of international trade, wherein some or all countries fix their exchange rate based on the relative gold parity values between individual currencies.

Q. What is Bretton Woods Agreement?

A. The Bretton Woods agreement was created in a 1944 conference of all of the World War II allied nations. It took place in Bretton Woods, New Hampshire. Under the agreement, countries promised that their central banks would maintain fixed exchange rates between their currencies and the dollar. How exactly would they do this? If a country's currency value became too weak relative to the dollar, the bank would buy up its currency in foreign exchange markets. That would lower the currency's supply and raise its price. If its currency became too high, the bank would print more. That would increase the supply and lower its price. Members of the Bretton Woods system agreed to avoid trade wars. For example, they wouldn't lower their currencies strictly to increase trade. But they could regulate their currencies under certain conditions. For example, they could take action if foreign direct investment began to destabilize their economies. They could also adjust their currency values to rebuild after a war.

Q. Explain the roles of the IMF and World Bank in the enforcement of Bretton Woods Agreements.

The Bretton Woods system could not have worked without the IMF. Member countries needed it to bail them out if their currency values got too low. They'd need a kind of global central bank they could borrow from in case they needed to adjust their currency's value and didn't have the funds themselves. Otherwise, they would just slap on trade barriers or raise interest rates. The Bretton Woods countries decided against giving the IMF the power of a global central bank. This power involved printing money as needed. Instead, they agreed to contribute to a fixed pool of national currencies and gold to be held by the IMF. Each member of the Bretton Woods system was then entitled to borrow what it needed, within the

limits of its contributions. The IMF was also responsible for enforcing the Bretton Woods agreement. The World Bank, despite its name, was not the world's central bank. At the time of the Bretton Woods agreement, the World Bank was set up to lend to the European countries devastated by World War II. Now the purpose of the World Bank is to loan money to economic development projects in emerging market countries.

Q. What are the reasons for the collapse of the Bretton Woods System?

In 1971, the United States was suffering from massive stagflation. That's a deadly combination of inflation and recession. It was partly a result of the dollar's role as a global currency. In response, President Nixon started to deflate the dollar's value in gold. Nixon revalued the dollar to 1/38 of an ounce of gold, then 1/42 of an ounce. But the plan backfired. It created a run on the U.S. gold reserves at Fort Knox as people redeemed their quickly devaluing dollars for gold. In 1973, Nixon unhooked the value of the dollar from gold altogether. Without price controls, gold quickly shot up to $120 per ounce in the free market. The Bretton Woods system was over.

A floating exchange rate is a regime where the currency price of a nation is set by the forex market based on supply and demand relative to other currencies. This is in contrast to a fixed exchange rate, in which the government entirely or predominantly determines the rate.

Q. What are the organization that consists of the World Bank Group?

A. The World Bank Group of the following five organizations:

1. The International Bank for Reconstruction and Development
2. The International Development Association
3. The International Finance Corporation
4. The Multilateral Investment Guarantee Agency
5. The International Centre for Settlement of Investment Disputes

Q. What are two goals set by the World Bank to be achieved by 2030?

A. The World Bank Group has set two goals for the world to achieve by 2030:

1. End extreme poverty by decreasing the percentage of people living on less than $1.90 a day to no more than 3%.
2. Promote shared prosperity by fostering the income growth of the bottom 40% for every country.

Q. Briefly discuss about the history of the World Bank.

A. The World Bank was created in 1944 out of the Bretton Woods agreement, which was secured under the auspices of the United Nations in the latter days of World War II because many European and Asian countries were going to need financing to fund post-war

reconstruction efforts. The bank is headquartered in Washington, D.C., and currently has more than 10,000 employees in more than 120 offices worldwide. It has expanded from a single institution to a group of five unique and cooperative institutional organizations. The first organization is the International Bank for Reconstruction and Development (IBRD), an institution that provides debt financing to governments that are considered middle income. The second organization within the World Bank is the International Development Association (IDA), a group that gives interest-free loans to the governments of poor countries. The International Finance Corporation (IFC), the third organization, focuses on the private sector and provides developing countries with investment financing and financial advisory services. The fourth part of the World Bank is the Multilateral Investment Guarantee Agency (MIGA), an organization that promotes foreign direct investments in developing countries. The fifth organization is the International Centre for Settlement of Investment Disputes (ICSID), an entity that provides arbitration on international investment disputes.

Q. What are the disadvantages of fixed exchange rates?

A. Developing economies often use a fixed-rate system to limit speculation and provide a stable system. A stable system allows importers, exporters, and investors to plan without worrying about currency moves. However, a fixed-rate system limits a central bank's ability to adjust interest rates as needed for economic growth. A fixed-rate system also prevents market adjustments when a currency becomes over or undervalued. Effective management of a fixed-rate system also requires a large pool of reserves to support the currency when it is under pressure. An unrealistic official exchange rate can also lead to the development of a parallel, unofficial, or dual, exchange rate. A large gap between the official and unofficial rates can divert hard currency away from the central bank, which can lead to forex shortages and periodic large devaluations. These can be more disruptive to an economy than the periodic adjustment of a floating exchange rate regime.

Q. Explain the working of floating exchange rate.

A. Floating exchange rate systems mean long-term currency price changes reflect relative economic strength and interest rate differentials between countries. Short-term moves in a floating exchange rate currency reflect speculation, rumors, disasters, and every day supply and demand for the currency. If supply outstrips demand that currency will fall, and if demand outstrips supply that currency will rise. Extreme short-term moves can result in intervention by central banks, even in a floating rate environment. Because of this, while most major global currencies are considered floating, central banks and governments may step in if a nation's currency becomes too high or too low. A currency that is too high or too

low could affect the nation's economy negatively, affecting trade and the ability to pay debts. The government or central bank will attempt to implement measures to move their currency to a more favorable price.

Q. How floating exchange rate differ from fixed exchange rate?

A. Currency prices can be determined in two ways: a floating rate or a fixed rate. As mentioned above, the floating rate is usually determined by the open market through supply and demand. Therefore, if the demand for the currency is high, the value will increase. If demand is low, this will drive that currency price lower. A fixed or pegged rate is determined by the government through its central bank. The rate is set against another major world currency (such as the U.S. dollar, euro, or yen). To maintain its exchange rate, the government will buy and sell its own currency against the currency to which it is pegged. Some countries that choose to peg their currencies to the U.S. dollar include China and Saudi Arabia. The currencies of most of the world's major economies were allowed to float freely following the collapse of the Bretton Woods system between 1968 and 1973.

9.12.2 Long-Answer Questions

Q. What are the advantages of Gold Standard?

A. **Various advantages of gold standard are as follows:**

1. Simplicity: Gold standard is considered to be a very simple monetary standard. It avoids the complicacies of other standards and can be easily understood by the general public.

2. Public Confidence: Gold standard promotes public confidence because- (a) gold is universally desired because of its intrinsic value, (b) all kinds of no-gold money, (paper money, token coins, etc.) are convertible into gold, and (c) total volume of currency in the country is directly related to the volume of gold and there is no danger of over-issue currency.

3. Automatic Working: Under gold standard, the monetary system functions automatically and requires no interference of the government. Given the relationship between gold and quantity of money, changes in gold reserves automatically lead to corresponding changes in the supply of money. Thus, the disequilibrium conditions of adverse or favourable balance of payment on the international level or of inflation or deflation on the domestic level are automatically corrected.

4. Price Stability: Gold standard ensures internal price stability. Under this monetary system, gold forms the currency base and the prices of gold do not fluctuate much because of the stability in the monetary gold stock of the world and also because the annual production of gold is only a small fraction of world's total existing stock of monetary gold. Thus, the price system which is founded on relatively stable gold base will be more or less stable than under any other monetary standard.

5. Exchange Stability: Gold standard ensures stability in the rate of exchange between countries. Stability of exchange rate is necessary for the development of international trade and the smooth flow of capital movements among countries. Fluctuations in the exchange rate adversely affect the foreign trade.

Q. What are the disadvantages of Gold Standard?

A. Various disadvantages of gold standard are as follows:

1. Not Always Simple: Gold standard in all its forms is not as simple. The gold coin standard and, to some extent, gold bullion standard may be regarded as simple to understand. But, the gold exchange standard which relates the currency unit of a country to that of the other is by no means simple to be comprehended by a common man.

2. Lack of Elasticity: Under the gold standard, the monetary system lacks elasticity. Under this standard, money supply depends upon the gold reserves and the gold reserves cannot be easily increased. So money supply is not flexible enough to be changed to meet the changing requirements of the country.

3. Costly and Wasteful: Gold standard is a costly standard because the medium of exchange consists of expensive metal. It is also a wasteful standard because there is a great wear and tear of the precious metal when gold coins are actually in circulation.

4. Fair-Weather Standard: The gold standard has been regarded as a fair-weather standard because it works properly in normal or peaceful time, but during the periods of war or economic crisis, it invariably fails. During abnormal periods, those who have gold try to hoard it and those who have paper currency cry for its conversion into gold. In order to protect the falling gold reserves, the monetary authority prefers to suspend the gold standard.

5. Sacrifice of Internal Stability: The gold standard sacrifices domestic price stability in order to ensure international exchange rate stability. In fact, under gold standard, inflation and deflation respectively are the necessary companions to a favourable and an unfavourable balance of payments. Give the world's total monetary gold stock, an individual country's

monetary gold stock, and consequently, the money supply and the internal price level, changes by the inflow or outflow of gold as a result of international trade. Thus the presence of external trade almost guarantees price instability under gold standard mechanism.

6. Not Automatic: The automatic working of the gold standard requires the mutual cooperation of the participating countries. But, during the World War I, because of the lack of international cooperation, all types of countries, those receiving gold as well as those losing gold, found it necessary to abandon the gold standard to prevent disastrous inflation on the one hand and even more disastrous deflation and unemployment on the other.

7. Deflationary: According to Mrs. Joan Robinson, gold standard generally suffers from an inherent bias towards deflation. Under this standard, the gold losing country is under the compulsion to contract money supply in proportion to the fall in gold reserves.

But the gold gaining country, on the other hand, may not increase its money supply in proportion to the increase in gold reserves. Thus, the gold standard, which necessarily produces deflation in the gold losing country, may not generate inflation in gold receiving country.

8. Economic Dependence: Under gold standard, the problems of one country are passed on to the other countries and it is difficult for an individual country to follow independent economic policy.

9. Unsuitable for Developing Countries: Gold standard is particularly not suitable to the developing economies which have adopted a policy of planned economic development with an objective to secure self-sufficiency.

Q. What are the primary reasons of the decline of the gold standard?

A. The primary reasons for the decline of the gold standard are as follows:

1. Violation of Rules of Gold Standard: The successful working of the gold standard requires the observance of the basic rules of the gold standard: (a) There should be free movement of gold between countries; (b) There should be automatic expansion or contraction of currency and credit with the inflow and outflow of gold; (c) The governments in different countries should help facilitate the gold movements by keeping their internal price system flexible in their respective economies. After World War I, the governments of gold standard countries did not want their people to experience the inflationary and deflationary tendencies which would result by following the gold standard.

2. Restrictions on Free Trade: The successful working of gold standard requires free and uninterrupted trade of goods between the countries. But during interwar period, most of the gold standard countries abandoned the free trade policy under the impact of narrow nationalism and adopted restrictive policies regarding imports. This resulted in the reduction in international trade and thus the breakdown of the gold standard.

3. Inelastic Internal Price System: The gold standard aimed at exchange stability at the expense of the internal price stability. But during the inter-war period, the monetary authorities sought to maintain both exchange stability as well as price stability. This was impossible because exchange stability is generally accompanied by internal price fluctuations.

4. Unbalanced Distribution of Gold: A necessary condition for the success of gold standard is the availability of adequate gold stocks and their proper distribution among the member countries. But in the inter-war period, countries like the U.S.A. and France accumulated too much gold, while countries of Eastern Europe and Germany had very low stocks of gold. This shortage of gold reserves led to the abandonment of the gold standard.

5. External Indebtedness: Smooth working of gold standard requires that gold should be used for trade purposes and not for the movement of capital. But during the inter-war period, excessive international indebtedness led to the decline of gold standard.

6. Excessive Use of Gold Exchange Standard: The excessive use of gold exchange standard was also responsible for the break-down of gold standard. Many small countries which were on gold exchange standard kept their reserves in London and New York. But, rumors of war and abnormal conditions forced the depositing countries to withdraw their gold reserves. This led to the abandonment of the gold standard.

7. Absence of International Monetary Centre: Movement of gold involves cost. Before 1914, such movement was not needed because London was working as the international monetary centre and the countries having deposit accounts in the London banks adjusted their adverse balance of payments through book entries. But during inter-war period, London was fast losing its position as an international financial centre. In the absence of such a centre, every country had to keep large stocks of gold with them and large movements of gold had to take place. This was not proper and easily manageable. Thus, gold standard failed due to the absence of inter-national financial centre after World War I.

8. Lack of Co-operation: Economic co-operation among the participating countries is a necessary condition for the success of gold standard. But after World War I, there was

complete absence of such co-operation among the gold standard countries, which led to the downfall of the gold standard.

9. Political Instability: Political instability among the European countries also was responsible for the failure of gold standard. There were rumors of war, revolutions, political agitations, fear of transfer of funds to other countries. All these factors threatened the safe working of the gold standard and ultimately led to its abandonment.

10. Great Depression: The world-wide depression of 1929-33 probably gave the final blow to the gold standard. Falling prices and wide-spread unemployment were the fundamental features of depression which forced the countries to impose high tariffs to restrict imports and thus international trade. The great depression was also responsible for the flight of capital.

11. Rise of Economic Nationalism: After the World War I, a wave of economic nationalism swept the European countries. With an objective to secure self-sufficiency, each country followed protectionism and thus imposed restrictions on international trade. This was a direct interference in the working of the gold standard.

Q. Explain the working of IMF.

A. IMF's fundamental mission is to ensure the stability of the international monetary system. It does so in three ways: keeping track of the global economy and the economies of member countries; lending to countries with balance of payments difficulties; and giving practical help to members.

1. Economic Surveillance: The IMF oversees the international monetary system and monitors the economic and financial policies of its 189 member countries. As part of this process, which takes place both at the global level and in individual countries, the IMF highlights possible risks to stability and advises on needed policy adjustments.

2. Lending: The IMF provides loans to member countries experiencing actual or potential balance of payments problems to help them rebuild their international reserves, stabilize their currencies, continue paying for imports, and restore conditions for strong economic growth, while correcting underlying problems.

3. Capacity Development: The IMF works with governments around the world to modernize their economic policies and institutions, and train their people. This helps countries strengthen their economy, improve growth and create jobs.

Q. Explain multilateralism in the context of GATT and WTO regime.

A. Multilateralism is a process of organizing relations between groups of three or more states. Beyond that basic quantitative aspect, multilateralism is generally considered to comprise certain qualitative elements or principles that shape the character of the arrangement or institution. Those principles are an indivisibility of interests among participants, a commitment to diffuse reciprocity, and a system of dispute settlement intended to enforce a particular mode of behaviour. General Agreement on Tariffs and Trade (GATT) set of multilateral trade agreements aimed at the abolition of quotas and the reduction of tariff duties among the contracting nations. When GATT was concluded by 23 countries at Geneva, in 1947 (to take effect on Jan. 1, 1948), it was considered an interim arrangement pending the formation of a United Nations agency to supersede it. When such an agency failed to emerge, GATT was amplified and further enlarged at several succeeding negotiations. It subsequently proved to be the most effective instrument of world trade liberalization, playing a major role in the massive expansion of world trade in the second half of the 20th century. The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations. At its heart are the WTO agreements, negotiated and signed by the bulk of the world's trading nations and ratified in their parliaments. The goal is to ensure that trade flows as smoothly, predictably and freely as possible. There are a number of ways of looking at the World Trade Organization. It is an organization for trade opening. It is a forum for governments to negotiate trade agreements. It is a place for them to settle trade disputes. It operates a system of trade rules. Essentially, the WTO is a place where member governments try to sort out the trade problems they face with each other. The WTO was born out of negotiations, and everything the WTO does is the result of negotiations. The bulk of the WTO's current work comes from the 1986–94 negotiations called the Uruguay Round and earlier negotiations under the General Agreement on Tariffs and Trade (GATT). The WTO is currently the host to new negotiations, under the 'Doha Development Agenda' launched in 2001. Where countries have faced trade barriers and wanted them lowered, the negotiations have helped to open markets for trade.

9.13 Suggested Readings

Cherunilam Francis, *International Economics*, McGraw Hill, New Delhi

Acharyya Rajat, *Trade and Environment*, Oxford, New Delhi

Salvatore Dominick, *International Economics - Trade and Finance*, Wiley, New Delhi

Krugman Paul, et.al. *International Economics*, Pearson, New Delhi

Mannur H.G., *International Economics*, S. Chand, New Delhi

Soderston, Bo, *International Economics*, The Macmillan Press Ltd., London

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UNIT-X
PROBLEMS OF POLICY IN AN OPEN ECONOMY

Structure

10.0 Introduction

In international trade, when we discuss about the policy, it refers to monetary policy which is the policy implemented by a central bank of a country that controls either the interest rate payable on very short term borrowing or the money supply (credit), often targeting inflation or the interest rate in the market to insure price and general trust in the currency. Further goals of a monetary policy are usually to contribute to the stability of gross domestic product, to achieve and maintain low unemployment, and to maintain predictable exchange rates of the country with other currencies of the world. Theoretically, monetary policy is referred to as being either expansionary or contractionary policy. Expansionary policy occurs when a monetary authority uses its tools to stimulate the economy. An expansionary policy maintains short-term interest rates at a lower than usual rate or increases

the total supply of money in the economy more rapidly than usual. It is traditionally used to try to combat unemployment in a recession by lowering interest rate in the hope that less expensive credit will entice businesses into expanding. This increases aggregate, which boosts short-term growth as measured by GDP. Expansionary monetary policy usually diminishes the value of the currency relative to other currencies. The opposite of expansionary monetary policy is contractionary monetary policy, which maintains short-term interest rates higher than usual or which slows the rate of growth in the money supply or even shrinks it. This slows short-term economic growth and lessens inflation. Contractionary monetary policy can lead to increased unemployment and depressed borrowing and spending by consumers and businesses, which can eventually result in an economic recession if implemented too vigorously. In reality as the global economy has become more integrated, the external effects of changes in the economic conditions and monetary policies of major countries have become greater than ever before. These effects are greater particularly in small open economies. In the years since the global financial crisis, major economies have been implementing accommodative macroeconomic policy to cope with their economic sluggishness. However, most of them have failed to emerge from their low growth trends due to structural factors.

Today, monetary decisions take into account of a wider range of factors, such as very short-term, short-term, long-term interest rates, velocity of money in circulation both in domestic and international, exchange rates, bonds and equities and other financial derivatives like swaps, future contacts etc.

10.1 Objectives

By the time you complete the study of this unit, you should be able to do the followings:

- To explain the issues of policy instruments
- To analyse Tinbergen concepts on targets and instruments
- To explain internal and external balance and swan diagram
- To comprehend the flexible exchange rate and its problems in maintenance of monetary and fiscal policies
- To discuss the problems in maintenance of current and capital accounts balance

10.2 Issues of policy instruments

Macroeconomic policy instruments are macroeconomic quantities that can be directly controlled by an economic policy maker. Instruments can be divided into two subsets: (i) monetary policy instruments and (ii) fiscal policy instruments. Monetary policy is conducted by the central bank of a country or of a supranational region. Fiscal policy is conducted by the executive and legislative branches of the government and deals with managing a nation's budget.

Monetary policy instruments are used for managing short-term rates, and changing reserve requirements for commercial banks. Monetary policy can be either expansive for the economy (short-term rates low relative to the inflation rate) or restrictive for the economy (short-term rates high relative to the inflation rate). Historically, the major objective of monetary policy had been to use these policy instruments to manage or curb domestic inflation.

Fiscal policy consists in managing the national budget and its financing so as to influence economic activity. This entails the expansion or contraction of government expenditures related to specific government programs such as building roads or infrastructure, military expenditures and social welfare programmes. It also includes the raising of taxes to finance government expenditures and the raising of debt to bridge the gap between revenues and expenditures related to the implementation of government programmes. Raising taxes and reducing the budget deficit is deemed to be a restrictive fiscal policy as it would reduce aggregate demand and slow down gross domestic product growth. Lowering taxes and increasing the budget deficit is considered an expansionary fiscal policy that would increase aggregate demand and stimulate the economy. Jan Tinbergen classified some macroeconomic variables as targets and some others as instruments.

Check your Progress 1

1. Mark True (T) or False (F):
   (vi) Macroeconomic policy instruments are macroeconomic quantities that can be directly controlled by an economic policy maker.
   (vii) Monetary policy instruments are used for managing long-term rates.
   (viii) Instruments can be divided into two subsets: (i) monetary policy instruments and (ii) fiscal policy instruments.
   (ix) Fiscal policy is carried out by the monetary authority of a country and deals with managing a nation's budget.
   (x) The major objective of monetary policy had been to use these policy instruments to manage or curb domestic inflation.
   (xi) In the developing countries, all the measures of terms of trade are practiced for gains from trade.
2. Explain the importance of fiscal policy in about five sentences.
   ……
   ……..

10.2.1 Tinbergen on Targets and Instruments

Tinbergen's contributions to econometrics are the introductions of the concepts of "targets" and "instruments." The "targets" are defined in terms of the policy maker's goals or objectives. For example, a given level of aggregate output might be a target. With the help of the model, this in turn would show what values of the "instruments" would lead to the achievement of that goal. His notion of 'targets' and 'instruments' is basic to the conceptual framework that economists have used to bring economic analysis to bear on practical issues of how central banks can and/or should conduct monetary policy. The desire to provide normative guidance to public policy is a fundamental theme that has motivated much of monetary economics, almost since the inception of the subject as a recognizable field of economic inquiry. The connection is readily understandable. Because "money" in any modern economy is a commodity either provided by government or, at the least, provided by the private sector under authority and conditions set by government, the link connecting monetary influences on economic activity to specific actions by identifiable public institutions is immediate and direct. Investigating how those public institutions' actions which

affect the principal dimensions of macroeconomic activity has traditionally constituted the heart of what monetary economics is all about. As long as some macroeconomic outcomes are clearly preferable to others that is, stable prices rather than inflation, for example, or prosperity rather than widespread unemployment such as, the question of what government actions are more likely to lead to more desirable outcomes is not just natural but inevitable. Targets and instruments of monetary policy have evolved in response to the desire to bring monetary economics even closer to the actual operations of the central bank.

Following the vocabulary made familiar in a broader policy context by Jan Tinbergen and others at the outset of the post World War II period, research on the subject has proceeded from the distinction between prices or quantities that a monetary authority can uniquely determine, directly through its own operations (the "instruments" of monetary policy), and those aspects of economic activity that it intends for its operations, along with other elements of public policy as well as independent forces, to affect (the "targets"). In addition, because of the role often advocated in the specific context of monetary policy for economic variables that neither fall under the central bank's direct control nor possess social significant on their own - the leading example, of course, is the stock of money or its rate of growth - the literature has also emphasized yet a third category of prices or quantities now commonly understood as "intermediate targets."

General Statement of Problem:

It is easiest to understand the use of any given intermediate target variable for monetary policy as a two-stage procedure. In the first stage, the central bank determines the value of the intermediate target which would be consistent with the desired ultimate policy objective under a variety of ex-ante assumptions, for example zero values for all relevant disturbances. At the second stage, the central bank proceeds, in some ex-post assumptions, to treat achieving this value of the intermediate target if doing so were the objective governing policy. In practice many central banks have implemented intermediate target strategies at least approximately according to this two-stage manner. The distinction between the "ex-ante" assumptions employed in the first stage of this process and whatever makes the second stage "ex-post" is clearly crucial. Since the passage of time per-se is not a significant issue here, the literature analyzing the intermediate target problem has largely focused on the availability of new information as time passes. The key role of the intermediate target

variable, then, is to provide a rule for processing and acting on this new information. The most obvious context in which this kind of segmented information flow arises is an inherently dynamic system in which the relevant economic behavior exhibits leads and lags distributed through time. For example, if people demand money for transactions purposes, and tend on average to accumulate money in advance of actual spending, then in general the observed value of the money stock at any time conveys information about the future strength of aggregate demand. Similarly, in models in which some individuals' or businesses' ability to spend depends in part on their ability to borrow, and loan transactions tend to precede actual spending, the observed volume of credit conveys information about the future state of aggregate demand. In either case, such information is at least potentially useful whenever monetary policy actions affect economic behavior with a lag. An endogenous variable like the money stock can also provide such useful information, even in the absence of behavioral economic lags, if there are lags in the availability of relevant data. For example, in a context in which disturbances to economic behavior are serially correlated, observations of the recent values of key endogenous variables convey information that is potentially useful for anticipating future outcomes. If observations of endogenous financial variables like money (or credit, or interest rates) are available on a more timely basis than observations of variables like income and prices - as is the case in most economies - then the information given by those financial variables in general has a role to play in setting the optimal value of the policy instrument. Equivalently, if observations of financial variables are available continuously throughout the "period" of analysis but observations of variables like income and prices are not, and if it is possible for the central bank to adjust the value of its policy instrument as time passes within the period, then again these available observations in general have a role to play in the policy making process.

Instrument problems:

A central bank operating in a modern fractional reserve banking system typically has several different tools at its disposal for affecting private economic and financial behavior. In most economies these include the ability to determine what reserves banks and other depository institutions must hold in relation to their deposits, to vary the supply of such reserves by buying and selling securities (usually government securities) for the central bank's own account, to lend reserves directly to banks, to set minimum conditions for

particular kinds of credit transactions (for example, stock market margin requirements), and to regulate a variety of aspects of ordinary banking and other financial activities.

Among these several devices, the buying and selling of securities usually called "open market operations" is typically the primary focus of the monetary policy function. The "instrument problem" of monetary policy arises because of the need to specify how the central bank will conduct its open market operations. In particular, the instrument problem is the choice of a variable to be set directly by the central bank via buying and selling securities, and hence the value of which is to serve as the principal guide in carrying out that buying and selling function. Because open market operations are in essence a trading activity, the instrument variable used may be either a quantity or a price. The central bank may buy or sell a specified amount of securities, thereby inelastically providing or withdrawing that amount of bank reserves. Alternatively, it may buy or sell whatever amount of securities other traders in the market want to transact at a specified price, thereby elastically letting "the market" determine the quantity of reserves to be held at that price. Beyond this more fundamental choice, of course, it is also necessary for the central bank to decide exactly which quantity variable it is setting (for example, total reserves, non-borrowed reserves, the monetary base, reserves or the monetary base adjusted for changes in reserve requirements, and so on), or, alternatively, just which price variable (for example, the interest rate on overnight interbank reserve borrowings, the treasury bill rate, and so forth).

Whether to key open market operations to a quantity or a price is an issue of first-order importance in normative monetary economics, and has been so for a long time. The optimal choice between quantity and price in this context depends both on familiar parameters describing economic behavior and on the relative magnitudes of the different sources of uncertainty affecting the economy. In the context of the instrument problem - in contrast to the intermediate target problem, the choice between exogenously setting a monetary quantity and exogenously setting an interest rate to the relative magnitudes of the unpredictable elements of the nonbank public's behavior in the market for goods and services and the market for financial assets, respectively.

The Intermediate Target Problem:

A potentially important problem inherent in the entire mode of analysis is that what most people mean by "money" in discussions of monetary policy is not a quantity set directly by the central bank. Under the kind of fractional reserve banking system in use in almost all modern economies in the western world, most of the money used by the public, either as a means of payment or as a liquid store of value represents the liabilities of private depository institutions. Although the central bank can influence the money-creating activities of these institutions, that influence is not the same as its being able to set the money stock exogenously, as if money were a genuine policy instrument. Instead, the quantity variable which the central bank can set directly, if it chooses, is at best some measure of its own liabilities for example, bank reserves or the monetary base (reserves plus currency). One solution to this problem, of course, is simply to define "money' so that it is potentially exogenous that is, to define money as some measure of the central bank's direct liabilities regardless of common usage. In that case "money demand" functions represent the derived demand for central bank liabilities, based on the underlying fractional reserve system (and, if the measure used is the monetary base, on the public's demand for currency), and the analysis can proceed just as before. Nevertheless, this confounding of the respective portfolio behavior of the banking system and the non-bank public runs counter to the rich and long-standing tradition of distinct analysis of money demand behavior (meaning that of the nonbank public) and money supply behavior (meaning that of the banking system). In addition, keeping the two analytically separate in this context as well is more consistent with the principle of distinguishing among the respective implications of disturbances to the economy arising from different sources.

A simple example:

A very simple three-equation model will illustrate many of the foregoing points. Equation (1), below, is the accounting definition. Net National Product (NNP) equals consumption plus net private domestic investment plus government purchases plus exports minus imports. Equation (2), below, is the consumer behavior equation mentioned earlier, specifying that consumption is a linear function of disposable income and lagged consumption plus a random disturbance. A third equation is needed to relate disposable income to NNP. Assume an economy in which (a) the whole of government revenue is raised

by an income tax whose yield is a linear function of NNP; (b) there are no transfer payments; and (c) all business income is paid out to individuals, so that disposable income is also a linear function of NNP which is expressed by Equation (3). The three structural equations of this model are as follows:

$$Y = C + I + G, \qquad \text{……..(1)}$$

$$C = a + \beta D + \gamma C_{t-1} + u \qquad \text{……..(2)}$$

$$D = Y(1 - m) - H \qquad \text{……..(3)}$$

This model specifies that there are three endogenous variables (Y = NNP, C = consumption and D = disposable income); and that there are four exogenous variables (I = net private domestic investment, G = government purchases plus exports less imports, H = the fixed part of tax revenues independent of NNP, and m = the marginal tax rate on NNP). Lagged consumption is denoted by C_{t-i} and α, β, and γ are three unknown parameters; and u is a random disturbance with zero mean. All these quantities are expressed in billions of real (i.e., deflated) dollars per year, except for m, β, and γ, which are pure numbers between 0 and 1. The reduced form of this model is obtained by solving the three structural equations for Y, D and C.

Note that the model and its reduced form are linear in endogenous variables, but not in all variables because of the term containing Y and m in equation (3). If in the reduced form one substitutes estimated values for the three structural parameters, zero for the disturbance u, and numerical values for the five predetermined variables for a certain year, one obtains estimates of the expected values of the three jointly dependent variables Y, D, and C for that year, conditional on the chosen values of the predetermined variables. Therefore, the future forecasting of an economy can be done by using the targets and instruments of Jan Tinbergen.
Problems of Volatility and Instability:

Another set of issues that arises when the central bank uses some measure of money as an intermediate target, especially in the context of reserves as the exogenous policy instrument, is the prospect of excessive volatility of interest rates. In simple models like those analyzed above, there is no apparent reason why interest rate volatility should be a policy concern. In fact, however, most central banks have historically sought to minimize interest rate volatility, and it is not difficult to posit richer models of income determination in which interest rate volatility can matter. In a one-period context, interest rate volatility simply means the variance of the interest rate or, more generally, of the entire constellation of

interest rates - around the corresponding expected value(s). Here, the connection to the choice of policy instrument is clear enough. Under an interest rate instrument, whatever interest rate the central bank sets exogenously has zero variance in this sense. Under a reserves instrument, the variance is non-zero.

In a dynamic context, the question is both richer and more subtle. Here, the issue is not just the within-period variance of any interest rate around its expected value but the movements of interest rates from one time period to the next, including whatever deterministic component renders each period's expected value not the same as the prior period's realization. Although the best way in distinguishing these two senses of interest rate volatility, central banks have typically exhibited concern for both. However, interest rate volatility is likely to be greater under an interest rate instrument or some other policy strategy is not clear a priori. Using a reserves instrument, or using money as an intermediate target, exposes each period's interest rate to a variety of shocks. By contrast, if use of an interest rate instrument leads to increased variation in price inflation, and if realized inflation affects the central bank's subsequent setting of the interest rate as is the case, for example if the inflation rate exhibits inertia and the interest rate that matters for economic activity is the real interest rate, then the period-to-period variance of (nominal) interest rates may be greater under an interest rate instrument. More generally, any monetary policy system that results in a volatile inflation rate is likely to increase the period-to-period volatility of nominal interest rates. Finally, in a dynamic context the extent of period-to-period interest rate volatility also depends on the objective specifying how rapidly the central bank seeks to restore income (or prices, or money) to the corresponding targeted path once a departure from that path has occurred.

Check your Progress 2

1. Mark True (T) or False (F):
    (i) The "targets" are defined in terms of the policy maker's goals or objectives.
    (ii) The "instrument problem" of monetary policy arises because of the need to specify how the central bank will conduct its open market operations.
    (iii) The open market operations are in essence a trading activity.

(iv) The exogenous policy instrument is the prospect of necessary stability of interest rates.

(v) Interest rate volatility means the variance of the interest rate or the entire constellation of interest rates

2. Explain the three structural equations of this model in about five sentences. ……
……..

10.2.2 Internal and external balance

The choice of policy instruments for achieving internal and external balance are direct controls, expenditure changing and switching policies by a nation. Direct controls refer to government restriction such as quotas, tariffs, production and distribution controls and price controls. Expenditure changing policies may be both monetary and fiscal policies. These policies seek to achieve internal and external balance by altering the aggregate level of demand for goods and services, both in domestic and foreign goods, by increasing or reducing the expenditure in the country. Similarly, expenditure switching policies seek at changing expenditure between domestic and foreign goods through devaluation of currency. Therefore, to understand the effects of monetary and fiscal policies on internal and external balances under fixed and floating exchange rate system, it is important to understand the challenges. It is a fact that under the fixed exchange rate system, a nation faces two challenges of maintaining both internal and external balance. However, a major problem is that while restructuring monetary and fiscal policies of a nation for internal balance, it may widen external imbalance and vice versa. The effects of monetary and fiscal policies on the balance of payments are quite similar except for their effects on interest rates. An expansionary fiscal policy pushes up interest rate because increase in expenditure and income increases the demand for money, where the supply of money remains constant, this will lead to increase in interest rate. Similarly, an expansionary monetary policy brings down interest rate because of increase in money supply.

10.2.3 Swan diagram

Swan diagram analyses the economic effects of two kinds of policies (i) those that affect the overall level of domestic expenditure such as fiscal deficit; and (ii) those that affect

the relative demand for domestic and foreign goods. The Swan diagram was developed by Trever Swan, an Australian economist who analysed the expenditure-changing and expenditure-switching policies for adjusting the internal demand and to affect a balance in external account and its impact on the balance of payments and the level of employment of a nation. The two main assumptions of the model are (i) There are no restrictions, tariff or non-tariff, upon trade and (ii) There is an absence of capital movements. The simultaneous existence of internal and external disequilibria can be shown by Swan as follows:

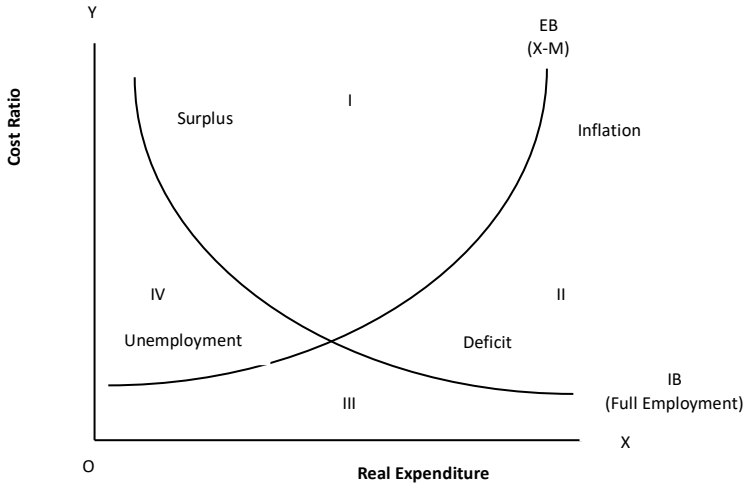

Fig. 10.1

In the fig. 10.1, the OX axis measures the real expenditure and OY the cost ratio which is the ratio of international prices to the domestic prices. The IB curve stands for internal balance which slopes downward from left to right. It indicates that a lower the cost ratio which limits export and import substituting production, the higher must be the real expenditure to maintain full employment. Positions to the right and above the IB curve represent inflation with domestic real expenditure excessively high relatively to export and import substitution production, and below and to the left of IB curve indicates the unemployment. The EB curve, on the other hand represents the external balance which is the difference between exports and imports. It slopes upwards from left to right. Below and to the right of EB curve, there is payment deficit whereas above and to the left indicates payment surplus. In other words, the fig.1 presents four quadrants such as quadrant I shows the inflation and balance of payments surplus, quadrant II- the inflation and balance of payment deficit, quadrant III- the unemployment and balance of payments deficit and quadrant IV – the unemployment and balance of payments surplus. The complete equilibrium occurs only at one point where the two curves intersect each other. In quadrant II and IV where the internal

inflation and external deficit and unemployment and external surplus respectively co-exist, the movement towards equilibrium can be achieved through expenditure- changing policies. In quadrant II, a contraction and in quadrant IV, an expansion in real expenditure will help restore the balance. In quadrant I and III, there is a coincidence of surplus and inflation and deficit and unemployment respectively. The alteration in the cost ratio through expenditure-switching policies like exchange, depreciation and appreciation are likely to bring the system in a state of balance. The expenditure-changing policies can be split up into monetary and fiscal policies. The fiscal policies which can be represented by the national budget whether, deficit or surplus can have its effect upon both internal and external balances. The monetary policy can influence the balances in two ways. Firstly, the variations in interest rates affect business investment which through multiplier, also affect the consumption spending. Secondly, the interest rate variations cause movements in short term capital and can influence the balance of payments situations in the country.

The use of monetary and fiscal policies for the achievement of internal and external balances can be shown graphically as follows:

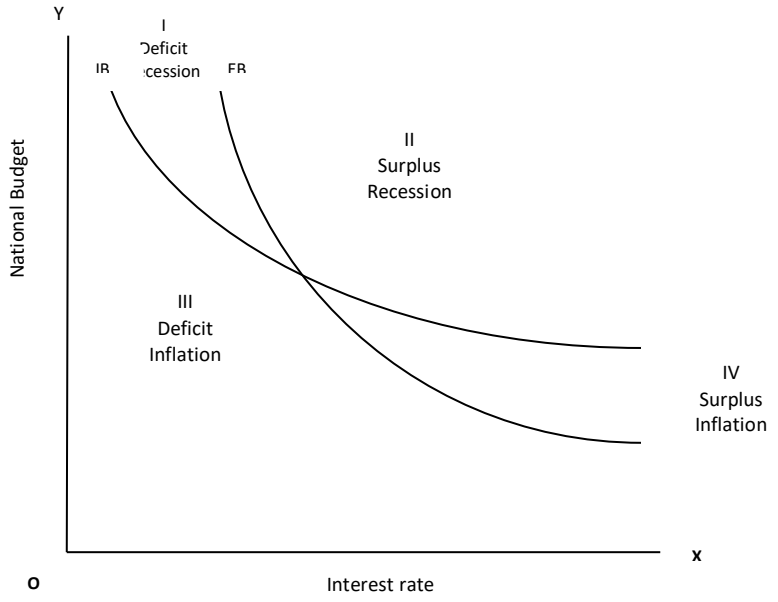

Fig. 10.2

The two curves IB and EB in Fig. 10.2 represent the internal and external balances and OX axis indicates the interest rate which is a monetary policy instrument and OY axis represent national budget – the instrument for fiscal policy instrument. The steeper slope of the external balance curve indicates that it is more responsive to the monetary policy, while the internal balance curve is more responsive to fiscal policy. These curves have been drawn on the basis of a given cost ratio of domestic and international prices. A change in the cost ratio will cause a displacement of both the curves. An increase in the cost ratio would shift the external balance curve to the right. It will mean that a higher interest rate, given the budgetary surplus or deficit, will be required for the achievement of balance. Such a change in the cost ratio would shift the internal balance curve downwards and to the left. It shows that a reduction in spending on exports and import-substitutes requires a higher budgetary deficit, at a given rate of interest, in order to maintain full employment.

Check your Progress 3

1. Mark True (T) or False (F):
   (i) The choice of policy instruments for achieving internal and external balance are direct controls. (T)
   (ii) A major problem is that while restructuring monetary and fiscal policies of a nation for internal balance, it may widen external imbalance and vice versa. (T)
   (iii) The open market operations are in essence a trading activity. (T)
   (iv) The effects of monetary and fiscal policies on the balance of payments are quite similar except for their effects on national income (F)
   (v) An expansionary fiscal policy brings down interest rate because of increase in money supply. (F)
2. Explain the concept of internal and external policy in monetary policy in about five sentences.
   ……
   ……..

10.2.4 Flexible exchange rate and problems in maintenance of monetary and fiscal policies

A flexible exchange rate system refers to the monetary system that allows the exchange rate to be determined by supply and demand of goods and services between a domestic economy and foreign countries. The flexible exchange rate and problems in maintenance of monetary and fiscal policies can be discussed with the help of expansionary monetary policy and expansionary fiscal policy under two heads, (i) Flexible exchange rate with perfect capital mobility and (ii) Flexible exchange rate with relative capital mobility.

The expansionary monetary policy has an effect of lowering the interest rate thereby increasing the capital outflow and thus, bringing deficit in balance of payments of a country. How this deficit is removed is demonstrated in Fig. 10.3

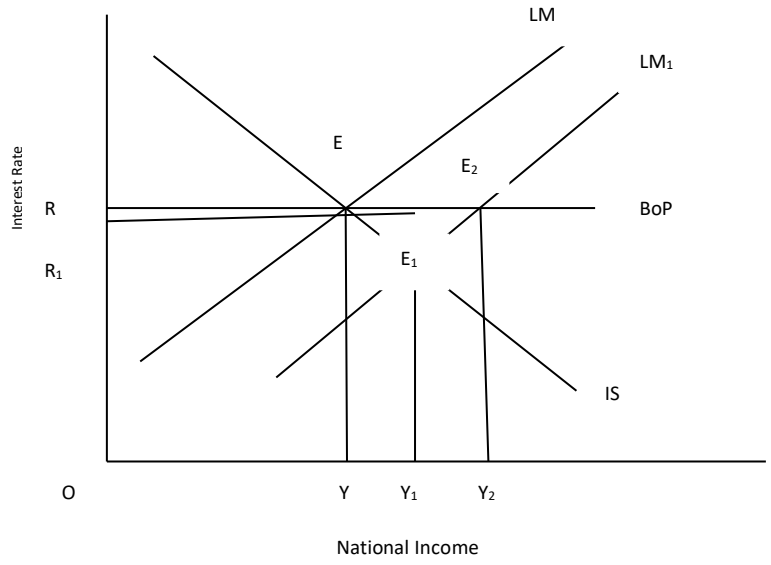

Fig. 10.3

The LM and IS curves are intersected at point E (OY = OR) from where, an expansionary monetary policy shifts the LM curve to the right to LM_1 curve, given the IS curve. The M_1 intersects IS curve at E_1 which lowers the interest rate to OR_1 and raises income to OY_1. These lead to capital outflows and the consequent deficit in the balance of payments and depreciation of the exchange rate. Depreciation increases the demand for domestic goods in the foreign countries thereby, increasing output and income. This moves the economy upward along the LM_1 curve till it reaches point E_2 where income rises to OY_2 and the interest rate rises to the old level OR. Equilibrium in the balance of payments is

restored at E_2 where the increase in imports through the rise in income is offset by surplus in trade balance due to depreciation.

Similarly, the expansionary fiscal policy has an effect of raising the national income thereby increasing the capital inflow and thus, bringing surplus in balance of payments of a country. How this surplus is disinterested is shown in Fig. 10.4.

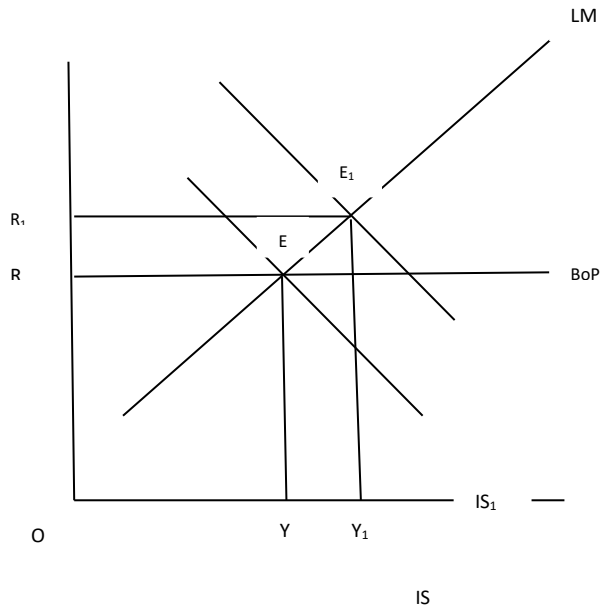

Fig.10.4

In the expansionary fiscal policy, LM curve is given and IS curve shifts to IS_1 curve in Fig.10.4. and equilibrium E also shifts to a new equilibrium E_1 where, IS_1 curve intersects LM curve with OR_1 interest rate and OY_1 level of national income. Since E_1 is above the BoP line, there is surplus in the balance of payments of the country. Surplus in the balance of payments leads to appreciation of exchange rate which in turn reduces demand for domestic goods and services. This process of appreciation will continue so long as R_1 is above R (interest rate) and compensate the expansionary effect of fiscal policy till IS_1 curve shifts back to IS curve and the equilibrium is re-established at E where interest rate and national income are back to their original levels of OR and OY. Therefore, expansionary fiscal policy has no effect on income and employment under perfect capital movement.

The monetary and fiscal policy under flexible exchange rate with relative capital mobility also shows that expansionary monetary policy is effective and expansionary fiscal policy ineffective. It can be shown in the following Fig.10.5.

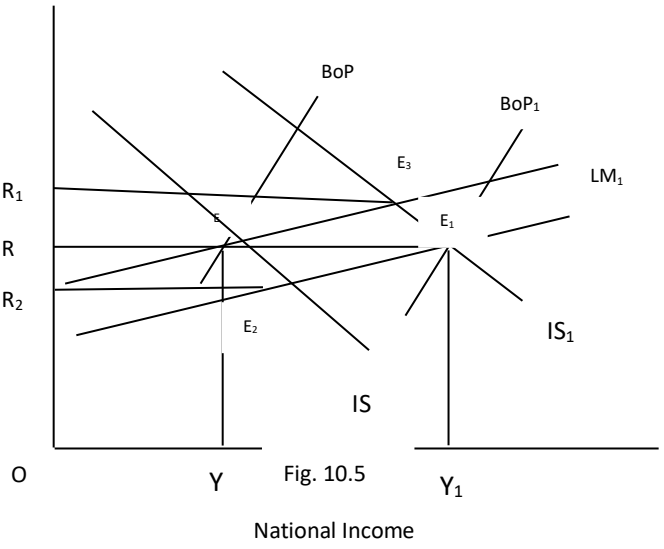

Fig. 10.5

Now, if the monetary authority follows the expansionary monetary policy, LM curve shifts to the right LM_1 curve and intersects the IS curve at E_2 and it leads to short run BoP deficit because E_2 is below and to the right of BoP but with the fall in interest rate from OR to OR_1, there is capital outflow from the country. This situation leads to increase in the demand for foreign currency and exports but depreciates its own exchange rate and imports. This causes the IS curve to shift to the right to IS_1 and hence, balance of payments improves and shifts to the right from BoP to BoP_1 and a new equilibrium E_1 is established where, IS_1=LM_1=BoP_1 curves and both internal and external balance are attained at a higher OY_1 income level than OY. Therefore, expansionary monetary policy is effective under flexible exchange rate with relative capital mobility. If expansionary fiscal policy is applied, there is balance of payment deficit under flexible exchange rates. For example, if there is increase in government expenditure, the IS curve will shift to the right to IS_1 which intersects the LM curve at E_3. This raises the interest rate from OR to OR_3 and capital inflow vis-à-vis currency appreciation in the economy takes place. This in turn raises imports and reduces exports and leads to currency depreciation. Hence, IS_1 curve is shifted back to the original IS curve and restored to the equilibrium point E. Thus, the expansionary fiscal policy is unproductive and inefficient under flexible exchange rate with relative capital mobility. Generally, an expansionary monetary policy combined with a contractionary fiscal policy of the country

under flexible exchange rate with relative capital mobility yields in attaining internal and external balance of a country.

10.2.5 Maintenance of current and capital account balance

The current and capital account balance are two components of a country's balance of payments. The current account deals with the receipt and payment in cash as well as non-capital items, while the capital account reflects sources and utilization of capital. The sum of the current account and capital account reflected in the balance of payments will always be zero. Any surplus or deficit in the current account is matched and cancelled out by an equal surplus or deficit in the capital account. Therefore, the problems in maintenance of current and capital accounts balance under balance of payments can be discussed under two heads; such as (i) devaluation and (ii) direct controls which are also known as expenditure switching policies. The expenditure switching policies aim at maintaining external balance of a country.

(i) Devaluation (expansionary monetary policy): It means a reduction in the external value of a currency in terms of other currencies while the internal purchasing power of the country remains constant. When the country, with balance of payment deficit devalues its currency, the domestic price of its imports becomes costlier and the foreign price of its exported goods becomes cheaper. In other words, the domestic price of its imports increases and the foreign price of its exported goods falls. This encourages exports and discourages imports. This causes expenditures to be switched from foreign goods to domestic goods and thereby increase in the production of goods so as to meet both foreign demand for goods and domestic demand for goods since imports of foreign goods are costlier. Thus, the rise in exports and fall in imports in current account corrected the balance of payments deficit and,

(ii) Direct controls (expansionary fiscal policy): It is the policy of government to restrict imports of goods or exchange controls in order to correct balance of payment deficit. Such a policy increases domestic output for exports and encourages production of import substitute goods. To induce producers to switch their expenditures to exportable goods, the government may provide them export subsidies and simultaneously by increasing import duties on the basis of its necessity of the goods. In these ways, imports are reduced in order to correct an

adverse balance of payments position of a country. In the exchange controls, the government restricts imports and regulates foreign exchange. Thus, direct controls help in correcting an adverse balance of payments.

Check your Progress 4

1. Mark True (T) or False (F):
   (i) A flexible exchange rate system refers to the monetary system that allows the exchange rate to be determined by supply and demand of goods and services between a domestic economy and foreign countries. (T)
   (ii) The expansionary monetary policy has an effect of lowering the interest rate thereby increasing the capital outflow and thus, bring deficit in balance of payments of a country. (T)
   (iii) The monetary and fiscal policy under flexible exchange rate with relative capital mobility shows that expansionary monetary policy is ineffective and expansionary fiscal policy effective. (F)
   (iv) Devaluation refers to a reduction in the external value of a currency in terms of other currencies while the internal purchasing power of the country remains constant. (T)
   (v) Direct controls are the policy of government to restrict export of goods or exchange controls in order to correct balance of payment deficit. (F)
2. Explain the problems in maintenance of current and capital accounts balance under balance of payments in about five sentences.

   ……
   ……

10.3 Let Us Sum Up

The problem of policy in an open economy lies in the issues of monetary and fiscal policy instruments. Monetary policy instruments are used for managing short-term rates, and changing reserve requirements for commercial banks while fiscal policy instruments consist in managing the national budget and it's financing so as to influence economic activity. Jan

Tinbergen classified some macroeconomic variables as targets and some others as instruments to bring economic analysis on practical issues of how central banks can and/or should conduct monetary policy. The desire to provide normative guidance to public policy is a fundamental theme that has motivated much of monetary economics, almost since the inception of the subject as a recognizable field of economic inquiry.

10.4 Key Terms

Expansionary monetary policy: It is a policy used by a monetary authority to stimulate the economy by expanding money supply faster than usual or lowering short term interest rates.

Contractionary monetary policy: It is also a policy used by a monetary authority to reduce government spending or reduction in the rate of monetary expansion.

Expansionary fiscal policy: It is a policy used by a government to decrease taxes, or increase government expenditures or both to fight recessionary pressures.

Contractionary fiscal policy: It is a policy used by a government to increase taxes or decrease government expenditures or both to fight inflationary pressures.

Monetary policy instruments: Instruments like the discount rate, reserve requirements, liquidity requirements and open market operations are monetary policy instruments used by a monetary authority (central bank).

Fiscal policy instruments: instruments like taxes, expenditure, public debt and budget are fiscal policy instruments used by a government.

Current account: The current account deals with the receipt and payment in cash as well as non-capital items in balance of payments accounting.

Capital account: The capital account reflects sources and utilization of capital balance of payments accounting.

10.5 Answers to Check Your Progress

Check your Progress 1

1. Mark True (T) or False (F):

   (i) (T), (ii) F, (iii) T, (iv) T (v) F

2. Explain the importance of fiscal policy in about five sentences.

Fiscal policy consists in managing the national budget and its financing so as to influence economic activity. This entails the expansion or contraction of government expenditures related to specific government programs such as building roads or infrastructure, military expenditures and social welfare programmes. It also includes the raising of taxes to finance government expenditures and the raising of debt to bridge the gap between revenues and expenditures related to the implementation of government programmes. Raising taxes and reducing the budget deficit is deemed to be a restrictive fiscal policy as it would reduce aggregate demand and slow down gross domestic product growth. Lowering taxes and increasing the budget deficit is considered an expansionary fiscal policy that would increase aggregate demand and stimulate the economy.

Check your Progress 2

1. Mark True (T) or False (F):

   (i) (T), (ii) T, (iii) T, (iv) F, (v) T

2. Explain the three structural equations of this model in about five sentences.

The three structural equations of this targets and instruments can be explained which are as follows:

$$Y = C + I + G, \qquad \text{……..(1)}$$

$$C = a + \beta D + \gamma C_{t-1} + u \qquad \text{……..(2)}$$

$$D = Y(1 - m) - H \qquad \text{……..(3)}$$

This model specifies that there are three endogenous variables (Y = NNP, C = consumption and D = disposable income); and that there are four exogenous variables (I = net private domestic investment, G = government purchases plus exports less imports, H = the fixed part of tax revenues independent of NNP, and m = the marginal tax rate on NNP). Lagged consumption is denoted by C_{t-i} and α, β, and γ are three unknown parameters; and u is a random disturbance with zero mean. All these quantities are expressed in billions of real (i.e., deflated)

dollars per year, except for m, β, and γ, which are pure numbers between 0 and 1. The reduced form of this model is obtained by solving the three structural equations for Y, D and C.

Check your Progress 3

1. Mark True (T) or False (F):

   (i) (T), (ii) T, (iii) T (iv) F, (v) (F)

2. Explain the concept of internal and external policy in monetary policy in about five sentences.

The choice of policy instruments for achieving internal and external balance are direct controls, expenditure changing and switching policies by a nation. Direct controls refer to government restriction such as quotas, tariffs, production and distribution controls and price controls. Expenditure changing policies may be both monetary and fiscal policies. These policies seek to achieve internal and external balance by altering the aggregate level of demand for goods and services, both in domestic and foreign goods, by increasing or reducing the expenditure in the country. Similarly, expenditure switching policies seek at changing expenditure between domestic and foreign goods through devaluation of currency. Therefore, to understand the effects of monetary and fiscal policies on internal and external balances under fixed and floating exchange rate system, it is important to understand the challenges.

Check your Progress 4

1. Mark True (T) or False (F):

   (i) (T), (ii) T, (iii) F, (iv) T, (v) F

2. Explain the problems in maintenance of current and capital accounts balance under balance of payments in about five sentences.

The problems in maintenance of current and capital accounts balance under balance of payments can be discussed under two heads; such as devaluation and direct controls which are also known as expenditure switching policies. Devaluation means a reduction in the external value of a currency in terms of other currencies while the internal purchasing power of the country remains constant. This encourages exports and discourages imports. Thus, the rise in exports and fall in imports in current account corrected the balance of payments deficit and, direct controls is the policy of government to restrict imports of goods

or exchange controls in order to correct balance of payment deficit. Such a policy increases domestic output for exports and encourages production of import substitute goods.

10.6 Questions and Answers

10.6.1 Short-Answer Questions

1. What is instrument in monetary policy?
2. What do you mean by fiscal policy?
3. What is internal policy in monetary policy?
4. What is external policy in monetary policy?
5. What do you mean by 'Targets' of Tinbergen?
6. What do you mean by 'Instruments' of Tinbergen?
7. What is the choice of policy instruments for achieving internal and external balance?
8. What are the problems in maintenance of current and capital accounts balance under balance of payments?
9. How Swan diagram analyse the economic effect on policies?
10. What are the main assumptions of Trever Swan model?

10 .6.2 Long-Answer Questions

1. Discuss the achievements of internal and external balances through monetary and fiscal policies in Swan diagram.
2. Explain the flexible exchange rate and problems in maintenance of monetary and fiscal policies of an economy.
3. Examine the role of expenditure reducing policies in correcting a deficit in balance of payments.
4. Explain internal and external balance in terms of IS-LM-BoP technique.
5. Distinguish between expenditure switching and expenditure switching policies of balance of payments adjustment.

10.7 Suggested Readings

Allen, R. G. D (1967): Macro Economic Theory, St. Martin's Press, New York

Meade, J. E (1952): A Geometry of International Trade, George Allen and Unwin, London.

Meier, G. M (1964): Leading Issues in Development Economics, Oxford University Press, New York.

Salvatore, D (2007): International Economics, Wiley India (P) Ltd, New Delhi.