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International Economics

SEMESTER-III

ECONOMICS

BLOCK- 1

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COURSE INTRODUCTION

This course entitled *'International Economics'* is one of the third semester courses of MA in Economics programme offered by this University. The course deals with certain theoretical as well as policy matters relating to the area of international economics. This course comprises 14 units and has been divided into two blocks. The first block consists of seven units from Units 1 to 7, while the second block consists of the rest of the units from Units 8 to 14.

BLOCK INTRODUCTION

The first unit of the course deals wiht a few basic concepts in international economics, viz., its meaning, distincition between internal trade and international trade, causes of international trade, distinguishing features of international trade, the need for a separate theory of international trade, as well as importance of the study of international trade have been disucssed. In the next unit, we shall discuss the theories of international trade like: the theories of Absolute Advantage, Comparative Advantage and Opportunity Costs. In the third unit, the theories like the Heckscher-Ohlin Theory of Trade, Leontief Paradox, Factor Price Equalisation theorem; the Rybczynski theorem as well as the Stolper-Samuelson model have been discussed. In the fourth unit of the course, important concepts like intra-industry trade, as well the Vent for surplus theorem have been discussed. Apart from those, concepts like availability approach of international trade, producy cycle model as well as the relationship between demand lag and imitation lag in technological gap theory have been discussed. The fifth unit entitled "Gains from Trade" discusses the important concepts like gains from trade, offer curve and distribution of gains from trade between the countries. The unit concludes with the discussion on trade and economic growth and development. The sixth unit of the course is on *Terms of Trade.* In this unit, its meaning, different factors affecting terms of trade as well as the relationships among international trade and domestic prices, and foreign trade to national income have been discussed. The last unit of this block, i.e., Unit 7 deliberates on *Trade, Growth and Immiserisation.* Here, different effects of growth on trade, viz., production effect, consumption effect have been discussed. Further, the effects of growth on production, trade, welfare has also been discussed. In addition, theoretical discussion on terms of trade of a small Ccuntry; immiserising growth, the necessary conditions for immiserising growth and the Prebisch-Singer Thesis have also been discussed. Thus, this block will provide you with a fair idea on the different concepts in the couse International Economics. The next block of the Unit will contain the remaining 7 units. The next block begins with the discussion on Theory of Interventions (Tariff) and concludes with the discussion on international monetary order in Unit 14.

While going through a unit, you will notice some along-sode boxes, which have been included to help you know some of the difficult, unseen terms. Some ‘ACTIVITY’ (s) has been included to help you apply your own thoughts. Again, we have included some relevant concepts in ‘LET US KNOW’ along with the text. At the end of sections, you will get ‘CHECK YOUR PROGRESS’ questions. These have been designed to self-check your progress of study. It will be better if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with ‘ANSWERS TO CHECK YOUR PROGRESS’ given at the end of each unit.

UNIT 1: INTRODUCTION TO INTERNATIONAL TRADE

UNIT STRUCTURE

1.1 Learning Objectives

1.2 Introduction

1.2.1 Concept of International Economics

1.3 Inter-regional and International Trade

1.3.1 Definition of Internal and International Trade

1.4 Why Do Nation Trade

1.5 Distinguishing Features of International Trade

1.6 Need for a Separate Theory of International Trade

1.7 Importance of International Trade

1.8 Let Us Sum Up

1.9 Further Reading

1.10 Answer to Check Your Progress

1.11 Model Questions

1.1 LEARNING OBJECTIVES

After going through this unit, you will be able to

- know the basic concept of “International Economics”
- put forward the meanings of terms “internal trade” and “international trade”
- explain about why do nation enters in to international trade
- discuss the distinguishing features of international trade
- analysis the need for a separate theory of international trade
- elucidate the importance of international economics.

1.2 INTRODUCTION

Economics is a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses. International Economics broadly speaking, is that part of the study of Economics which deals with the issue of adjustment between scarce

resources and ends in a more specific way. In a closed economic system, there may be severe constraints upon the optimization of production and welfare. The international exchange of goods and services can facilitate the optimum allocation of scarce productive resources not only in case of a single country but also the entire world.

1.2.1 Concept of International Economics

The International Economics is that branch of economics in general which deals with the international exchange of goods and services. It is, of course, true that the dominant concern of international economics is with the exchange of goods and services among the different countries. But in reality, the international economics is concerned with the whole gamut of economic relationship on the international plane.

International economics refers to a study of international forces that influence the domestic conditions of an economy and shape the economic relationship between countries. In other words, it studies the economic interdependence between countries and its effects on economy. The scope of international economics is wide as it includes various concepts, such as globalization, gains from trade, pattern of trade, balance of payments, and FDI. Apart from this, international economics describes production, trade, and investment between countries.

1.3 INTER-REGIONAL AND INTERNATIONAL TRADE

Trade signifies the exchange of commodities and services. This exchange may take place between two individuals, firms or industries within the same country or it may take place between two or more nations or countries.

Internal or domestic trade means trade within the geographical boundaries of a nation or region. It is also known as intra-regional trade. International trade, on the other hand, is trade among different countries or trade across the political boundaries. It is also known as foreign trade.

1.3.1 Definition of Internal and International Trade

We may define internal trade as exchange of goods and services among the residents of the same country on the other hand international trade may be defined as exchange of goods and services between the resident of a given country and the rest of the world.



CHECK YOUR PROGRESS

Q.1: State whether the following statements are True (T) or False (F)

(i) The International Economics is that branch of economics in general which deals with the international exchange of goods and services. (T/F)

(ii) International trade refers to trade between regions within a country. (T/F)

Q.2: Define International Economics. (Answer in 40 Words)

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Q.3: Distinguish between internal and international trade. (Answer in 40 Words).

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1.4 WHY DO NATION TRADE?

Human wants are varied and unlimited and no single country possess the resources to satisfy all these wants. There has been an unequal distribution of productive resources by the nature of the earth. Countries differ in respect of climatic conditions, availability of cultivable land, forest, mines, mineral products, labour, capital, technological capabilities and managerial and entrepreneurial skills. Given these

diversities no country has the potential to produce all the commodities in the most efficient manner or at the least cost. For instance, India can produce textiles at the lower cost while Japan can produce electronic goods and automobiles cheaply.



Comparative Cost Advantage: when a country produces a good or service for a lower opportunity cost than other countries.

Just as there is division of labour in the case of individuals, the countries also adopt this principle at the international level.Each one of them specializes in the production of only such commodities, which it can produce at comparatively lower cost than the others or they have ***comparative cost advantage***. They export such products to others and in return import those products in the production of which they have comparative cost disadvantage. The basis of International Trade is the gains or profits to be made from exchange of goods and services. If there are no gains to be obtained, there would be no such trade between countries.

The immediate cause of international trade, is the existence of differences in the prices of goods and services between the countries. Price difference arise either because of the differences in supply conditions or because of differences in demand conditions or because of some combination of both.

Differences in supply conditions may arise due to several factor-natural endowments of economic resources, degree of efficiency with which these factors are employed, the level of technology used in production, labour skills, factor abundance etc

Differences in demand, which are largely a function of income levels and taste patterns, are just as important as differences in the production costs in contributing to international price differentials. For example,countries A and B may be producing a given commodity at the same cost of production, but that does not guarantee the same price in both the countries for that product. If country B has a higher level of income matched by a stronger taste for that product, the product will sell for a higher prices in that country than in country A. In country A there may be lower levels of demand for that product due to lower levels of income or taste. Hence, both income and tastes, in their capacity to determine demand, would effect international trade, by causing international price differences.

We are now in a position to answer the question as to why does international trade take place or why do nation trade. Trade takes place because of the differences in prices. Foreigners buy our goods because they find them cheaper than anywhere else in the world; and we buy foreign goods because we find them cheaper. Price differences, in turn, arise either because of differences in supply conditions or because of differences in demand conditions, or due to differences in both.

1.5 DISTINGUISHING FEATURES OF INTERNATIONAL TRADE

The theories and models dealing with micro and macro aspects of international trade have been built up by the modern writers like Samuelson, Leontief, Johnson and Jagdish Bhagwati. These are quite distinct from the theory related to internal trade. When it has been fully recognised that the international trade is distinct from the internal trade, the most relevant question concerns the distinguishing features of international trade. These distinguishing features are as follows:

- **Immobility of factors:** The most prominent distinguishing features of international trade, according to classical economists, was the perfect geographical immobility of the factors of production like labour and capital among the nations. In contrast, there is perfect mobility of productive factors among the different regions of the same country.The international mobility of factors is neither free nor perfect. There are severe constraints upon the mobility of labour and capital such as immigration laws, restrictions on the international capital flows and legal restrictions. The additional barriers on factor mobility are in the form of differences in language, climate, customs, religions, political and educational systems. It is therefore, clear that there is a relatively greater degree of factor mobility within the same country than among the different countries.
- **Immobility of products:** There is relatively more free mobility of products within the different regions of a country. The only barriers to movement of goods are in the form of geographical distances

and cost of transportation. In case of international trade, on the contrary, there are several more man-made barriers to the free movement of products apart from distance and transport costs. These include import and export duties, quotas, exchange restrictions, etc which restrict the mobility of goods at international level.

- **Heterogeneous Markets:** In the international economy, world markets lack homogeneity on account of differences in climate, language, preferences, habit, customs, weights and measures, etc. The behaviour of international buyers in each case would, therefore, be different.



Foreign Exchange Rate: It is the rate at which one currency is exchanged for another.

- **Differences in currencies:** The principal differences between inter-regional and international trade lies in use of different currencies in foreign trade, but the same currency in domestic trade. For instance, all domestic transaction in India take place in terms of rupees, which is the legal tender in this country. But in its trade with countries like the U.S,A., Germany, Japan, France and Britain, the payments have to be made in terms dollars, marks, yens, francs and pound sterling respectively. Each country follows different foreign exchange policies. That is why there is the problem of ***Foreign exchange rates***. The complications in international trade, are therefore, caused by availability or shortages of foreign currency reserves, exchange rates, ease or difficulty in conversion, controls and restrictions on foreign exchange etc.
- **Differences in resource endowments:** The different countries have been endowed by nature with different types of natural resources. Each country specializes in the production and export of those commodities in which they are well-endowed. They import such products, in the production of which they face a resource deficiency. In Australia, land is in abundant but labour and capital are relatively scarce. On the contrary, capital is relatively abundant and cheap in England while land is scarce and dear there. Thus commodities requiring more capital, such as manufactures can be

produced in England; while such commodities as wool, mutton, wheat etc requiring more land can be produced in Australia. Thus both countries can trade each other's commodities on the basis of comparative cost differences in production of different commodities.

- **Different National Policies and Government Intervention:** Economic and political policies differ from one country to another. Policies pertaining to trade, commerce, ***export*** and ***import***, taxation, etc., also differ widely among countries though they are more or less uniform within the country. ***Tariff*** policy, ***import quota*** system, subsidies and other controls adopted by governments interfere with the course of normal trade between one country and another.
- **Transport and Insurance Costs:** Trade between countries involves high transport costs as against inter-regionally within a country because of geographical distances between different countries. The greater the distance between the two countries, the greater are these costs.
- **Problem of Balance of Payments:** Another important point which distinguishes international trade from inter-regional trade is the problem of **balance of payments** (**BOP**). The problem of balance of payments is perpetual in international trade while regions within a country have no such problem. This is because there is greater mobility of capital within regions than between countries.
- **Different Economic Environment:** Countries differ in their economic environment which affects their trade relations. The legal framework, institutional set-up, monetary, fiscal and commercial policies, factor endowments, production techniques. Nature of products, etc differ between countries.
- **Socio-Political Conditions:**Finally, socio-political environment varies from country to country, although such environment is uni-form within a country. Market for commodity transactions between different nations is largely governed by its own geographical boundaries, social institutions and customs, habits, choice, etc. Within a country, one observes same social institutions and business



Export: Goods or services produced in one country that is bought by someone in another country.

Import: A commodity, article, or service brought from abroad for sale ***Tariff*** is a tax or duty levied on goods and services when they enter and leave the national frontier or boundary.

Import Quota is a type of trade restriction that sets a physical limit on the quantity of a goods that can be imported into a country in a given period of time.

BOP is a systematic record of all its economic transactions with the outside world in a given year.

customs. Throughout the world, a uniform set of socio-political envi-ronment can never exist.



CHECK YOUR PROGRESS

Q.4: State whether the following statements are True (T) or False (F)

(i) A country export such products to others in which they have comparative cost disadvantage.(T/F)

(ii) The immediate cause of international trade, is the existence of differences in the prices of goods and services between the countries.(T/F)

Q5. Why labour is immobile between two countries? (Answer in 40 Words).

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1.6 NEED FOR A SEPARATE THEORY OF INTERATIONAL TRADE

There has been a controversy among the economists on the issue whether or not there is the need for a separate theory of international trade. There are two opposite viewpoints on this issue. One of them is called as the classical viewpoint, while the other is associated with Bertil Ohlin and Haberler.

The classical school of economists like Adam Smith and David Ricardo held that there are certain fundamental difference between inter-regional or internal trade and inter-national trade, and so, there is a need for a separate theory of international trade, and they propounded a separate theory of international trade.

Modern economist like Bertil Ohlin and Haberler are of the view that international trade is just a special case of inter-regional or internal trade, and the differences between inter-regional and international trade are of

degree rather than of kind, and so, these is no need for a separate theory of international trade.

Classical View: The classical writers including Adam Smith, Ricardo and J.S. Mill recognize that the inter –regional trade is fundamentally different from the international trade. Among the different regions of the same country, there is a free mobility of labour and capital but serious constraints exist upon the international mobility of labour and capital permits the different countries to specialize in the production and export of specified goods. In addition, there are differences in national policies, political organisations, monetary systems and tariff and non-tariff restrictions among the different countries. It signifies that the conditions governing the exchange of goods within the different regions of the same country are not applicable in the case of exchange of goods among different countries. Hence there is full justification in having a separate theory of international trade.

Ohlin's View: The writer like Bertil Ohlin and Haberler have refuted the classical viewpoint. In their opinion, the difference between international and inter-regional trade is only of degree and not of kind. "International trade should be regarded as a special case within the general concept of inter-regional or perhaps rather inter-local trade." Within the same country, the different regions specialise in the production of different commodities, skill and efficiency of the people. The mobility of the factors is not perfect within different parts of the same country.

Despite Ohlin's rejection of the necessity of separate theory of international trade on account of methodological reasons, it must be concluded that there are certain distinct differences and complicating factors involved in international trade. Comparative immobility of labour and capital, restric-tions on trade, transport and other costs, ignorance, and differences in language, customs, laws and currency systems make international trade different from domestic trade and necessitate a separate theory of international trade.

1.7 IMPORTANCE OF INTERATIONAL TRADE

International trade plays a vital role in the economic development of a country. No country is self-sufficient. Every country depends upon other countries for export and imports. This gives rise to international trade. When a country specialises in the production of those goods which it can produce cheaper and import those goods which other can produce at a lower cost, it gains from trade and there is increase in national income.

The classical and neo-classical economists believe that international trade contributes greatly to the economic growth of a country. Robertson calls international trade as an "Engine of Growth". In the words of Haberler, "International trade has made a tremendous contribution to the development of less developed countries in the 19th and 20th centuries and can be expected to make an equally big contribution in the future. The relevant question, in this regard is why the prominent economist of all times have given so great an importance to the international trade. The answer lies in the immense advantages of international trade that are discussed below:

- **International Division of Labour and Specialisation:** The division of labour and specialisation of products by individual firms accelerate the rate of production, lower costs and maximises profits. International trade ensures the application of the principles of division of labour and specialisation to the fields of production and international exchange of commodities by various countries.
- **Greater Variety of Goods Available for Consumption:**International trade brings in different varieties of a particular product from different destinations. This gives consumers a wider array of choices which will not only improve their quality of life but as a whole it will help the country grow.
- **Efficient Allocation and Better Utilization of Resources:**Efficient allocation and better utilization of resources since countries tend to produce goods in which they have a comparative advantage. When countries produce through comparative advantage, wasteful duplication of resources is prevented. It helps save the environment

from harmful gases being leaked into the atmosphere and also provides countries with a better marketing power.

- **Promotes Efficiency in Production:**International trade promotes efficiency in production as countries will try to adopt better methods of production to keep costs down in order to remain competitive. Countries that can produce a product at lowest possible cost will be able to gain larger share in the market. Therefore an incentive to produce efficiently arises. This will help to increase the standards of the product and consumers will have a good quality product to consume.
- **More Employment:**More employment could be generated as the market for the countries' goods widens through trade. International trade helps generate more employment through the establishment of newer industries to cater to the demands of various countries. This will help countries to bring-down their unemployment rates.
- **Consumption at Cheaper Cost:** International trade enables a country to consume things which either cannot be produced within its borders or production may cost very high. Therefore, it becomes cost cheaper to import from other countries through foreign trade.
- **Stability of Prices:** In the absence of International Trade, the domestic surpluses or shortages in production invariably lead to serious deflationary and inflationary trend and consequent destabilization of the entire system Through the international trade the domestic surpluses in production can be offset through exports and shortages can be removed through imports. In this way, international trade can efficiently deal with the problems of internal inflation or deflation and ensure a greater degree of stability in prices.
- **Promotion of Competition:** The international trade promotes competition among different countries. The international competition increases the efficiency of production. It becomes possible to import superior varieties of products at reasonable prices. Similarly, large surpluses of domestic production can be disposed of in the foreign markets to realize larger export earnings. In addition, the free

competition can provide protection from the monopolistic exploitation at the hands of domestic producers.

- **Growth of International *Economic Integration*:** The necessity of promoting restriction free international trade, for ensuring efficient system of exchange and payments and removing the shortages of international liquidity, led to the growth of several multilateral institutions like IBRD, IMF, IDA, UNCTAD and WTO. All these institutions are making efforts to create a new international economic order,
- **Fosters Peace and Goodwill:**International trade fosters peace, goodwill, and mutual understanding among nations. Economic interdependence of countries often leads to close cultural relationship and thus avoid war between them.

Economic Integration is the unification of economic policies between different states through the partial or full abolition of tariff and non-tariff restrictions on trade.

From the above discussion, it becomes clear that the countries can derive immense gains from international trade. No doubt the countries can achieve continuous expansion of their productive capacity and standards of consumption on the solid foundation of external trade.



CHECK YOUR PROGRESS

Q.6: State whether the following statements are True (T) or False (F) Adam Smith and Ricardo are of the view that international trade is just a special case of inter-regional or internal trade - (T/F)

Q.7: Is there the necessity for a separate theory of international trade? (Answer in 40 Words).

_____

_____

Q.8: State whether the following statements are True (T) or False (F)

(i) International trade promotes efficiency in production. (T/F)

(ii) The international trade does not promotes competition among different countries.- (T/F)



1.8 LET US SUM UP

- International Economics is a branch of Economics dealing with transactions among countries in the fields of goods and services, financial flows and factor movements.
- Internal trade is the exchange of goods and services among the residents of the same country and international trade is the exchange of goods and services between the resident of a given country and the rest of the world.
- Internationaltrade take place because of the differences in prices. Price differences arise either because of differences in supply conditions or because of differences in demand conditions, or due to differences in both.
- There are a number of factors which makes a difference between internal trade and international trade. Distinguishing features of international economics are:
    - Immobility of factors of production
    - Immobility of products
    - Heterogeneous market
    - Differences in currencies
    - Differences in resource endowments
    - Different national policies and government intervention
    - Transport and insurance cost
    - Problem of balance of payments
    - Different economic conditions
    - Socio-political condition
- There has been a controversy among the economists on the issue whether or not there is the need for a separate theory of international trade.
- The classical school of economists like Adam Smith and David Ricardo held that there are certain fundamental difference between internal trade and international trade. So, there is a need for a

separate theory of international trade, and they propounded a separate theory of international trade.

- Modern economist like Bertil Ohlin and Haberler are of the view that international trade is just a special case of inter-regional or internal trade, and the differences between inter-regional and international trade are of degree rather than of kind. So, these is no need for a separate theory of international trade.
- Despite Ohlin's rejection of the necessity of separate theory of international trade it must be concluded that there are certain distinct differences involved in international trade and necessitate a separate theory of international trade.
- International trade plays a vital role in the economic development of a country.
- The classical and neo-classical economist believe that international trade contributes greatly to the economic growth of a country. The importance of international trade that are discussed below:
    - International Division of Labour and Specialisation
    - Greater Variety of Goods Available for Consumption
    - Efficient Allocation and Better Utilization of Resources
    - Promotes Efficiency in Production
    - More Employment
    - Consumption at Cheaper Cost
    - Stability of Prices
    - Promotion of Competition
    - Growth of International Economic Integration
    - Fosters Peace and Goodwill



1.9 FURTHER READING

(1) Jhingan M.L.: International Economics, Vrinda Publishing Pvt. Ltd.

(2) Mannur H.G : International Economics, Vikash Publishing House Pvt. Ltd

(3) Mithani D.M.: International Economics, Himalaya Publishing House

(4) Rana K.C. ; Verma .N. International Economics, Vishal Publishing Co

(5) Sodersten, B & Reed, G. International Economics, Mac Millan.



1.10 ANSWERS TO THE CHECK YOUR PROGRESS

Ans to Q No 1: (i) True (ii) False

Ans to Q No 2: The International Economics is that branch of economics in general which deals with the international exchange of goods and services. It refers to a study of international forces that influence the domestic conditions of an economy and shape the economic relationship between countries.

Ans to Q No 3: Internal trade means the trade which is conducted within the political and boundaries of a country. It is also called Domestic trade. International trade means the trade that takes place between the two countries. It is also called External trade.

Ans to Q No 4: (i) Fales (ii) True

Ans to Q No 5: The reason for international immobility of labour are differences in languages, customs, occupational skills, unwillingness to leave familiar surroundings, and family ties, the high travelling expenses to the foreign country, and restrictions imposed by the foreign country on labour immigration.

Ans to Q No 6: False

Ans to Q No 7: Some differences and complicating factors involved in international trade. Comparative immobility of labour and capital, restric-tions on trade, transport costs, differences in language, customs, laws and currency systems make international trade different from domestic trade and necessitate a separate theory of international trade.

Ans to Q No 8: (i) True (II) False



1.9 MODEL QUESTIONS

Short Questions (Answer each questions in about 150 words)

Q 1: Why do nation participate in international trade?

Q 2: How do cost and price differences give rise to international trade?

Q 3: How do factor and product mobility influence International trade?

Q 4: "The difference between inter-regional and international is of degree and not of kind". Discuss

Essay-type Questions(Answer each questions in about 300-500 words)

Q 1: Elucidate the distinguishing features of international trade.

Q 2: Discuss the need for a separate theory of international trade.

Q 3: Explain the importance of international trade for a country.

*** ***** ***

UNIT 2 : THEORIES OF INTERNATIONAL TRADE - I

UNIT STRUCTURE

2.1 Learning Objectives

2.2 Introduction

2.3 The Theory of Absolute Advantage

2.4 The Theory of Comparative Advantage

- 2.4.1 Assumptions
- 2.4.2 An Evaluation of the Theory of Comparative Advantage

2.5 The Opportunity Costs Theory

- 2.5.1 The Production Possibility Curve : Constant Opportunity Costs
- 2.5.2 The Basis for trade and the Gains from Trade under Constant Opportunity Costs
- 2.5.3 The Production Possibilities Curve: Increasing Opportunity Costs
- 2.5.4 The Basis for trade and the Gains from Trade under Increasing Opportunity Costs

2.6 Dynamic Factors and International Trade

- 2.6.1 Growth in Factor Supplies and International Trade
- 2.6.2 Technological Improvement and International Trade
- 2.6.3 Changes in Taste and International Trade

2.7 Let Us Sum Up

2.8 Further Reading

2.9 Answers to Check Your Progress

2.10 Model Questions

2.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- discuss the theories of Absolute Advantage, Comparative Advantage and Opportunity Costs as the basis for trade and gains from trade among countries of the world.

- outline the role of various dynamic factors in explaining the emergence of trade.

2.2 INTRODUCTION

In the introductory unit of this paper, you have learnt about distinguishing features of international economics ,as a distinct and separate discipline of applied economics. You have also learnt about importance of the discipline along with increasing interdependance among nations. This unit examines “basis for trade” and “gains from trade” through the doctrines of Adam Smith (Theory of Absolute Advantage), David Ricardo (Theory of Comparative Costs) and G. Haberler (Theory of Opportunity Costs).The second section discusses about the role of dynamic factors in explaining the emergence of trade. That is, how changes in tastes, technology and factor endowments effect the trade relation among nations.

2.3 THE THEORY OF ABSOLUTE ADVANTAGE

Adam Smith, in his famous book *The Wealth of Nations* advocated the free trade is the best policy for the nations of the world. This free trade should be based on “absolute advantage”. That is, a nation should produce and export only those commodities in which it had an *absolute advantage* (or could produce more efficiently than other nations). At the same time a nation should import only those commodities in which it had an *absolute disadvantage* (or could produce less efficiently than the other countries.. In this way, all nations can gain by each *specializing*in the production and export of the commodities of its absolute advantage and importing the commodities of its absolute disadvantage. Output worldwide would increase as a result of this international specialization of factors in production. This increase in output will be shared by the trading nations. Thus, a nation need not gain at the expense of other nations. All nations could gain simultaneously.

Table 2.1: Theory of Absolute Advantage

Items	Countries	
	U.S.	U.K.
Wheat (Quintals per labour-hour)	6	1
Cloth (Kilometres per labour-hour)	1	2

Table 2.1 shows trade relation between two countries: United States (U.S.) and United Kingdom (U.K.). It is clear from the table that U.S. has an absolute advantage over the U.K. in the production of wheat and U.K. has an absolute advantage in the production of cloth. Now, let us suppose that U.S. produces and specializes in the production of wheat only and the U.K. produces and specializes in the production of cloth only. In that situation, total production of wheat will be 12 quintiles and total production of cloth is 4 kilometers. Thus, combined output will be greater and both the countries can gain through exchanging the products voluntarily.

Thus, according to Smith, after showing specialization by the trading countries, output of all commodities traded would increase and this increase would be shared by the trading nations. Gains from trade will be maximum when there is little intervention by the government in the functioning of the domestic economy as well as in international trade. In this, way, free trade will lead to maximization of welfare of the whole world.

2.4 THE THEORY OF COMPARATIVE ADVANTAGE

Smith's theory of absolute advantage remained unquestionable for a long period of 40 years. David Ricardo, 40 years later Adam Smith, advocated that trade among countries should be based on "*comparative advantage*", not on absolute advantage. According to Ricardo, mutually advantageous trade takes place with a country even if it has an *absolute disadvantage*in the production of both commodities with respect to the other nation. The less efficient nation (having absolute disadvantage in both commodities) should specialize in the production and export of the commodity in which its *absolute disadvantage is less*. That is, this is the commodity in which the nation has a comparative disadvantage. As opposite

to this, the country should import the commodity in which its absolute disadvantage is greater. That is, this is the area of its comparative disadvantage. This is about Ricardo's famous law of comparative advantage. Table 2.2 can be used to explain the law. It is clear from Table 2.2 that it is absolutely disadvantageous for U.K. to produce both wheat and cloth. However, this disadvantage is less in the production in cloth than in wheat. It implies that the U.K had a comparative advantage with respect to U.S. in cloth and a comparative disadvantage in wheat. As opposite to this, from Table 2.2 it is clear that the U.S. has an absolute advantage over the U.K. in production of both wheat and cloth. However, this advantage is greater in wheat (6:1) than in cloth (3:2). Thus, the U.S. has a comparative advantage over the U.K. in wheat and a comparative disadvantage in cloth. Thus, according to the law of comparative advantage, the U.S. can exchange wheat (W) for cloth(C) with the U.K.

Table 2.2 : Theory of Comparative Advantage

Items	Countries	
	U.S.	U.K.
Wheat (Quintals per labour-hour)	6	1
Cloth (Kilometres per labour-hour)	4	3

It is clear from Table 2.2 that if the U.S. could specialze in production of wheat, and U.K. in cloth, the U.S. could exchange 6W for 6C with the U.K. Because, domestically, the U.S. can exchange 6W for only 3C. In addition to this, to produce 6W itself, the U.K. would require 6 hours of labour. Instead of this, the U.K. can use the 6 labour-hours to produce 12C. And out of these 12C, the U.K. can exchange 6C for 6W from the U.S. and end up with 6C more for itself. Thus, by exchanging 6W for 6C, the U.S. would gain 3C and the U.K. 6C.

Besides 6W for 6C, there are many other ratios for exchange of W for C that would be advantageous to both nations. Of course, the U.S. would not be willing to exchange 6W for less than 3C. Because, domestically in U.S., 1 labour-hour can produce either 6W or 6C. Similarly, the U.K. would not be willing to exchange more than 12C for 6W. Because, to produce

more than 12C , the U.K. would require more than 6 labour-hours, whereas production of 6W require only 6 labour-hours in the U.K.

Thus, in order to have a mutually advantageous gain from trade, 6W must exchange for more than 3C(for the U.S. to gain) but less than 12C (for the U.K. to gain. Therefore, the rate of exchange of 6W would be in between 3C and 12C. Thus, the range for mutual beneficial trade is:

3C<6W<12C

The difference of 9C(=12C-3C) is the total amount of gain from specialization in production and trade. The closer the ratio of exchange settles to 6W for 12C, the greater is the proportion of the total gains from trade going to the U.S. On the otherhand, the closer the ratio of exchange settles to 6W for 3C, the greater the proportion of total gains from trade going to the U.K. The fixation of ratio of exchange also depends on demand conditions in each nation.

2.4.1 Assumptions

David Ricardo's theory of comparative advantage is based on the following assumptons:

- The economy operates without government intervention.
- Perfect competition prevails in both product and factor markets.
- Static condition prevails in the economy without any change in factor endowments, technology and tastes and preferances.
- Labour is the only factor of production and therefore cost of production is expressed in labour hour.
- Labour is perfectly mobile within the country and perfectly immobile among different countries.
- There is no transportation cost.
- Only two commodities are traded between the two countries.
- The economy is non-monetized and prices of different goods are measured by their real cost of production.
- Full employment of resources prevails in both countries.
- Barter trading occurs between the two countries.

2.4.2 An Evaluation of the Theory of Comparative Advantage

The law of comparative advantage is valid till date. However, like any other theories under classical set-up, Ricardo's law of comparative advantage is based on a number of unrealistic assumptions- like full employment of resources, static conditions, non-monetized economy etc. One of these assumptions is the co-called labour theory of value. With this, the value, and accordingly the price of a commodity can be inferred from the amount of labour time spared in its production. In today's technology dominated world, is completely rejected. Therefore, with this background, we must reject Ricardo's explanation of comparative advantage. But there is no need to reject the law of comparative advantage itself. The law is valid and can be explained in terms of opportunity costs, as explained in section 3.5

2.5 THE OPPORTUNITY COSTS THEORY

The theory of opportunity cost was developed by G. Haberler in 1936. According to this theory, the cost of a commodity is the amount of a second commodity that must be given up to release just enough resources to produce one additional unit of the first commodity. A nation with lower opportunity cost in the production of a commodity has a comparative advantage in that commodity (and a comparative disadvantage in the second commodity). It is important to note that here, the basis of trade has not been explained with the help of labour theory of value.

2.5.1 The Production Possibility Curve : Constant Opportunity Costs

The Production Possibility Curve (PPC) or the transformation curve can be used to illustrate opportunity costs. A PPC shows all the various alternative combinations of the two commodities that a nation can produce by fully utilizing all of its factors of production

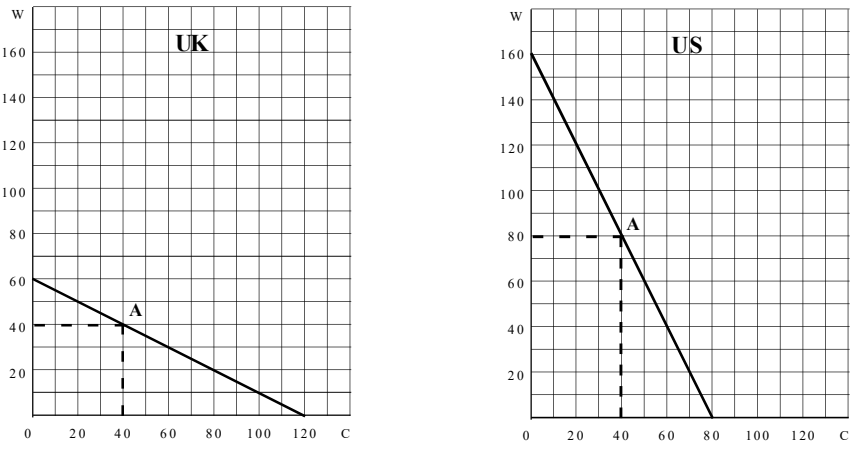
with the best technology available. The slope of the PPC then refers to the Marginal Rate of Transformation (MRT). It refers to the amount of a commodity that the nation must give up in order to get one more unit of the second commodity. The PPC of a country is a straight line if it faces constant costs or MRT. The straight line PPC has an absolute slope equal to the constant opportunity costs or MRT, which is also equal to the relative commodity price in the nation.

Table 2.3: Constant Opportunity Cost (PPC)

Items	Countries	
	U.S.	U.K.
Wheat (Thousand Quintals per year)	60	160
Cloth (Thousand Kilometres per year)	120	80

For example, Table 2.3 shows the maximum amount of wheat or cloth that the two countries the U.K. and the U.S. could produce with the best technology available, and with full utilization of productive resources at their disposal. Now, with constant opportunity costs of producing wheat and cloth for each nation, the resulting straight line PPC has been shown in Fig. 2.1. Each point on the straight line PPC represents one combination of wheat and cloth that the nation can produce. For example, at point A, the U.K. produces 40C and 40W.At point A', the

Figure 2.1: The Pure Theory of International Trade



U.S. produces 40C and 80W. The negatively slopped PPCs of the countries implies that the more of one commodity the nations produce,the less it is available to produce of the other. The (constant) absolute slope of the curve for the U.K. is

$60/120=1/2=MRT_{cw}=P_c/P_w$

And the same for the U.S. is:

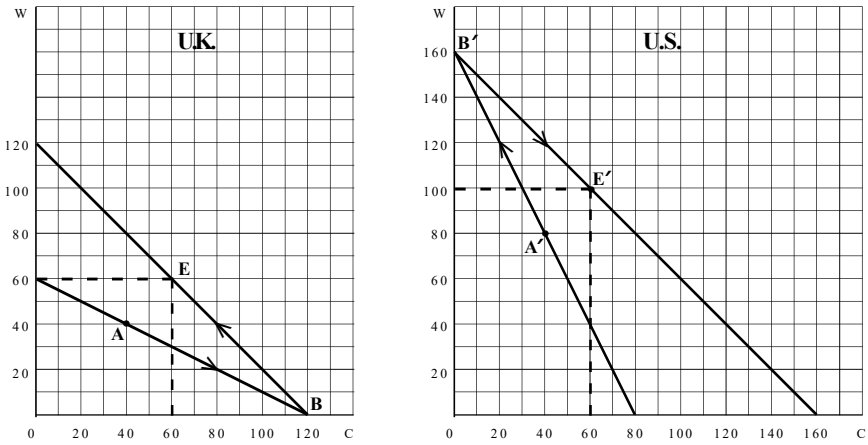
$160/80=2=MRT_{cw}=P_c/P_w$

Thus, under constant costs,the supply conditionsin each nation exclusively determines the internal equilibriumP_c/P_w.

2.5.2 The Basis for trade and the Gains from Trade under Constant Opportunity Costs

In the absence of trade (i.e; in autarky) a nation's PPC or Production Possibilities Frontier and its Consumption Frontier are the same.It implies that a nation can produce only a combination of commodities that it can produce. However, after trade, situation changes. A country with trade, can consume more of both commodities (than without trade) of comparative advantage as well as disadvantage. Because, the country can specialize in the production of the commodity of its comparative advantage, then exchange part of this commodity for the commodity of its comparative disadvantage, produced by the other nation (which specializes in the production of that commodity).

Figure 2.2: The Basis for Trade



For example, Fig.2.2 reveals that in absence of trade, the U.K. produces and consumes at point A while the U.S. does so t point A'. It is clear that in the absence of trade, the marginal rate of transformation, that is, the slope of the line AB is equal to ½ in U.K. (MRT_{CW}=1/2) . For country U.S. the same is 2, i.e;$MRT_{CW}=P_C/P_W=2$ (the slope of the line A' B') . Thus, it is clear from Fig 2.2 that the U.K. has a comparative in cloth and the U.S. has a comparative advantage in wheat. Therefore, mutually advantageous trade is possible within the limits: $1/2<P_C/P_W<2$. If with trade, the P_C/P_W is stabilized at 1, the U.K. can move from point A to point B in production. Out of 120 C produced at point B, the U.K exchanges 60C for 60W from the U.S. and end up consuming at point E. Thus, trade involves a gain in consumption of 20C and 20W over the no-trade consumption point A. On the other hand, the U.S. moves from point A' to point B' in production, 60 of its 160W (produced at point B') for 60C from the U/K. and ends up consuming at point E'. This is one possible outcome showing the gain with complete specialization and trade by each nation.

2.5.3 The Production Possibilities Curve: Increasing Opportunity Costs

Opportunity costs, in real world increases in –stead- of diminishing. Thus, the opportunity costs or MRT in producing more units of a commodity increases. The PPC curve is such a situation is concave to the origin. The country will then produce where MRT equals the equilibrium relative commodity price in the nation. In case of increasing costs, the equilibrium relative commodity price in the nation is determined by demand and supply conditions in the nation.

Figure 2.3: PPC (Increasing Opportunity Costs)

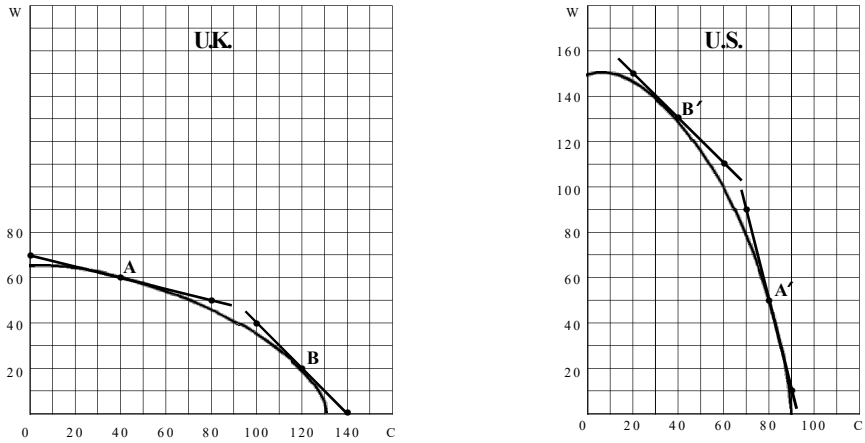


Fig.2.3 shows hypothetical production possibilities curves for the U.K. and the U.S. showing increasing costs. In the absence of trade, the U.K. would produce at point A., where its $MRT_{CW}=P_C/P_W=1/4$. Here, $P_C/P_W=1/4$ is given by the internal equilibrium of demand and supply. If P_C/P_W rises, it would pay for the U.K. to produce more cloth and less wheat (a movement along the curve in a downward direction). However, as the U.K. does this, its MRT_{CW} rises. Thus, at $P_C/P_W=1$, the U.K. produces at point B, where its $MRT_{CW}=P_C/P_W=1$.

Similarly, with $P_C/P_W=4$, the U.S. produces at A', where $MRT_{CW}=P_C/P_W=4$. If P_C/P_Wfalls to 1, the U.S. will move to point B '. Thus, the U.S. will produce less cloth and more wheat. It is clear that at pointB ' the U.S. incurs a lowerMRT_{CW} , which means that its reciprocal or MRT_{wc} is higher than at point A '.

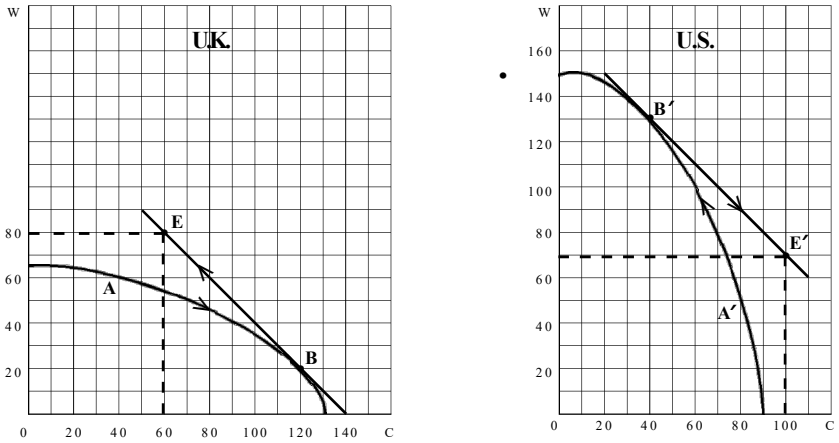
2.5.4 The Basis for trade and the Gains from Trade under Increasing Opportunity Costs

When the production possibility curves are concave, each nation incurs higher and highrt opportunity costs or MRTs, as it specializes in the production of the commodity of its comparative advantage. Specialization in production will continue until the rising MRT in each nation equals the relative commodity price at which

trade takes place. Through trade, each nation will then end up consuming outside (and above) its no-trade consumption (and consumption) frontier (Fig. 2.3 and Fig.2.4).

Let us suppose that in the absence of trade the internal equilibriumP_C/P_W=1/4 in the U.K. and 4 in U.S. It is clear from Fig. 2.3 that the U.K. produces and consumes at point A while the U.S. produces and consumes at point A '. In the absence of trade the U.K. has a comparative advantage in cloth and the U.S. in wheat. Since P_C/P_W is lower in the U.K. than in U.S. , mutually advantageous trade is possible within the range¼ <P_C/P_W<4 .If P_C/P_W is established at 1 with trade the U.K. can move from point A to point B in production. At this stage the U.K. can exchange 60 of each 120C (produced at point B) for 60 w from the U.S. and end up consuming at point E (in Fig. 2.4). Thus the country is with a gain of 20C and 20W over point A.

Figure 2.4: Gains from Trade (Increasing Opportunity Costs)



On the other hand, the U.S., moves from A' to B' in production. There by it exchanges 60 W for 60C with the U.K.,and ends up at point E'. Point E' involves a gain of 20C and 20W than at point A'. It is noteworthy that as the U.K. specializes in the production of cloth, it incurs increasing costs in cloth production (That is, a higher MRT_{CW}). Similarly, that as the U.S. specializes in the production of wheat; it incurs increasing costs in wheat production (That is, a higher

MRT_{wc}). Specialization will continue in each countryuntil its $MRT_{CW}=P_C/P_W=1$. It is also noteworthy that the U.S. and the U.K. do not specialize completely in the production of one commodity as in the case of constant costs. Thus, there is incomplete specialization in case of increasing costs.



CHECK YOUR PROGRESS

Q.1: State whether the following statements are true (T) or false (F)

(a) Adam Smith advocated a protectionist policy for international trade trade (T/F)

(b) According to Ricardo, a country should go for international trade even if it has absolute disadvantage in the production of both of the commodities.(T/F)

Q.2: What is the doctrine of Comparative Advantage? (Explain in 30-40 words)

.....

.....

Q.3: What does the theory of opportunity costs say? (Explain in about 30-40 words)

.....

.....

2.6 DYNAMIC FACTORS AND INTERNATIONAL TRADE

Theories discussed in previous section were based on static conditions. That is, we have assumed that each nation has given and unchanging factor endowments and technology. Also each nation has given and unchanging tastes. Changes in factor endowments and technology of a country lead to shifts its production possibility frontier. On the other hand, changes in tastes and preferences of a country may result in a different indifference map.Accordingly, volume and terms of trade of the country

underwent a change. This section examines impact of these dynamic factors on volume and terms of trade of a country.

2.6.1 Growth in Factor Supplies and International Trade

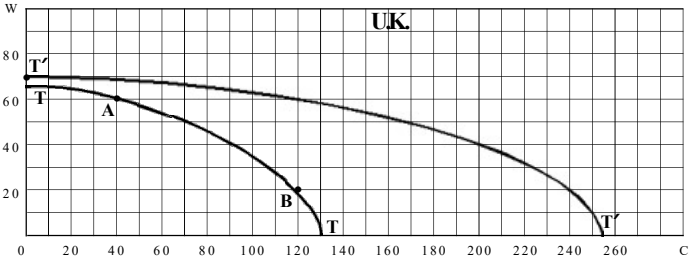
Given the technology, if the factors of production available to a nation increase, the nation's production possibilities curved shifts outward. If labour and capital grow in the same proportion, it is called balanced growth. The new production possibilities curved has the same shape as the old one. If the supply of labour increases proportionately more than its supply of capital then , the nation's productions possibilities curved shifts more along the axis measuring the L- intensive commodity than along the axismeasuring the K-intensive commodity. Opposite shift occurs if only the nation's supply of capital more than proportionately than that of labour. A detail account of this aspect given by T.M. Rybczynski is discussed in Unit-3 of this paper.

2.6.2 Technological Improvement and International Trade

As a result of improvement in technology a nation's productions possibilities curved shifts outward. In general there exist 3 types of technological progress:

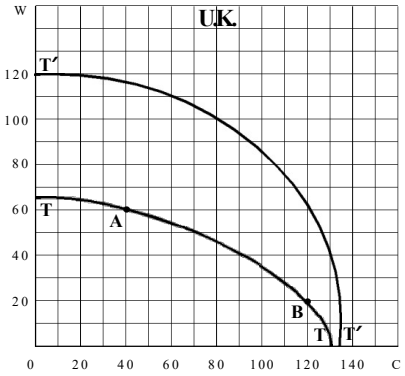
- *K-saving* technical progress- in this type, the productivity of labourincreases more than that of capital. As a result, L is substituted for K in production. At unchanged w/r, L/K rises (K/L falls). Since more units of L are used per unit of K, this type of technical progress is called capital saving. It means that a given output can now be produced with fewer units of L and K but with a higher L/K(a lower K/L).

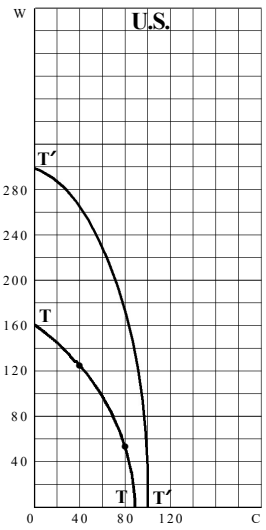
Figure 2.5: K-Saving Technical Progress



- *L-saving* technical progress - in this type, the productivity of capital increases more than that of labour. As a result, K is substituted for L in production. At unchanged w/r, K/L rises (L/K falls). Since more units of K are used per unit of L, this type of technical progress is called labour saving. It means that a given output can now be produced with fewer units of K and L, but with a higher K/L (a lower L/K).

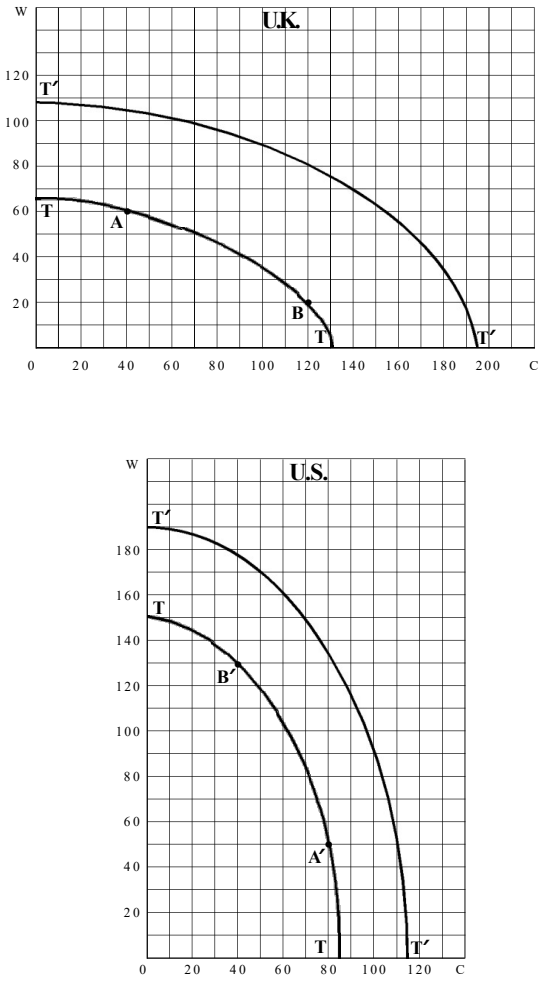
Figure 2.6: L-Saving Technical Progress





- *Neutral* technical progress increases the productivity of L and K in the same proportion. With unchanged relative factor prices (w/r), K/L remains the same after this type of technical progress. That is, there is no scope for substitution of L for K (or vice versa) in production. Thus this type of technical progress implies that a given output can now be produced with less L and less K.).

Figure 2.7: Neutral Technical Progress



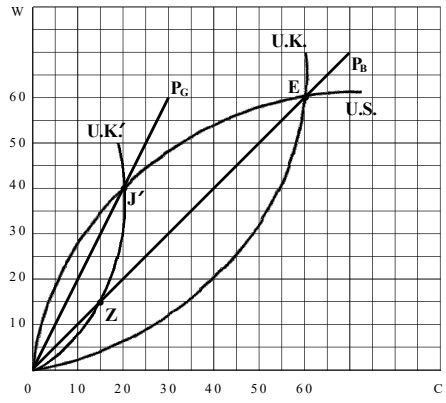
2.6.3 Changes in Taste and International Trade

Offer Curve shows how much of its import commodity a nation requires in exchange for various quantities of its export commodity. Ultimately it reflects the terms of trade of the country

(Detail in Unit-4). A change in tastes and preference of a country alters the volume of trade and ultimately, the nation's terms of trade. For example, if the people of a country (other things being equal) start to prefer its exportable commodity in place of importable commodity, the volume of trade of the country declines and the country's terms of trade improve. Fig. 2.8 explains the fact.

Let us suppose that cloth and wheat are respectively the exportable and importable item of U.K. Both U.K. and U.S. are in equilibrium at point J as directed by their respective offer curves. Other things being equal, now suppose that the U.K.'s tastes shifts away from wheat toward cloth. In such a situation, the offer curve of U.K. shifts away from U.K. to U.K.'. It is because of the fact that the U.K. now wants less quantity of wheat and is willing to offer less of its cloth than before. The new equilibrium will be established at J', where the U.K. exchanges only 20C for 40W. Thus, the terms of trade of the U.K. improve to PG'=2 (from PB'=1). Since the terms of trade improve, there is an increase in welfare for U.K. However, there is also loss in welfare for U.K. due to reduction of specialization and consequent fall in the volume of trade. Exact amount of gain/ loss will depend upon the relative strength of these two forces.

Figure 2.8: Changes in Taste and International Trade



Contrary to this, if the U.K.'s taste shifts from cloth to wheat, the offer curve of U.K. will rotate clockwise. As a result, volume of trade will increase, indicating gain in welfare. However, since there is reduction in terms of trade, there is also the loss in welfare.Exact amount of gain/loss will depend, as mentioned above,upon the relative strength of these two forces.



CHECK YOUR PROGRESS

Q.4: State whether the following statements are true (T) or false (F)

(a) Given the technology, if the factors of production available to a nation increase, the nation's production possibilities curved shifts outward ? (Explain in about 40 words (T/F)

(b) *L-saving* technical progress increases the productivity of labour.(T/F)

Q.5: What is the effect of change in tastes and preference of a country on volume and terms of trade of a country. (Answer in about 30-40 words)

.....

.....



2.7 LET US SUM UP

- Adam Smith advocated the free trade is the best policy for the nations of the world. This free trade should be based on "absolute advantage". This law of absolute advantage states that :
- A nation should produce and export only those commodities in which it had an *absolute advantage* (or could produce more efficiently than other nations). At the same time a nation should import only those commodities in which it had an *absolute disadvantage* (or could produce less efficiently than the other countries.

- Output worldwide would increase as a result of this international specialization of factors in production. This increase in output will be shared by the trading nations.
- David Ricardo introduced the law of comparative advantage. This postulates that
  - Even if one nation is less efficient than the other nation in the production of both commodities, there is still a basis for mutually beneficial trade.
  - The less efficient nation should specialize in the production and export of the commodity in which its absolute disadvantage is smaller.
- According to opportunity costs theory, the cost of a commodity is the amount of a second commodity that must be given up to release just enough resources to produce one additional unit of the first commodity.
- Under constant cost condition, complete specialization is possible.
- There is incomplete specialization in case of increasing costs.
- The dynamic factors have important bearing on volume and terms of trade of a country.
- Given the technology, if the factors of production available to a nation increase, the nation's production possibilities curved shifts outward.
- As a result of improvement in technology a nation's productions possibilities curved shifts outward. Is is three types: K-Saving, L-Saving and Neutral.
- A change in tastes and preference of a country alters the volume of trade and ultimately, the nation's terms of trade. This is reflected through offer curve.



2.8 FURTHER READING

- Salvator D.(2014). *International Economics,* Tenth Edition, Wiley Publication

- Mannur, H. G.(1995). *International Economics*, New Delhi: Vikas Publishing House Pvt. Ltd
- Rana, K.C.&Verma, K.N. (2010). *International Economics,* New Delhi: Vishal Publishing Co.



2.9 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: a) False b) True

Ans to Q No 2: According to the doctrine of comparative advantage, mutually advantageous trade takes place with a country even if it has an *absolute disadvantage*in the production of both commodities with respect to the other nation. The less efficient nation (having absolute disadvantage in both commodities) should specialize in the production and export of the commodity in which its *absolute disadvantage is less*. That is, this is the commodity in which the nation has a comparative disadvantage. As opposite to this, the country should import the commodity in which its absolute disadvantage is greater. That is, this is the area of its comparative disadvantage. This is about Ricardo's famous law of comparative advantage.

Ans to Q No 3: Opportunity cost the cost of a commodity is the amount of a second commodity that must be given up to release just enough resources to produce one additional unit of the first commodity. A nation with lower opportunity cost in the production of a commodity has a comparative advantage in that commodity (and a comparative disadvantage in the second commodity). Under constant cost condition, complete specialization is possible. There is incomplete specialization in case of increasing costs

Ans to Q No 4: a) True b) True

Ans to Q No 5: A change in tastes and preference of a country alters the volume of trade and ultimately, the nation's terms of trade. For example, if the people of a country (other things being equal) start to prefer its exportable commodity in place of importable commodity, the volume

of trade of the country declines and the country's terms of trade improve. All these are reflected through the "offer cuve".



2.10 MODEL QUESTIONS

Short Questions (Answer each question in about 150 words)

Q 1: Explain Adam Smith's view on international trade.

Q 2: Explain international trade with the help of opportunity costs.

Q 3: Analyse the impact of change in taste and preference of the people of a country on international trade.

Essay-type Questions (Answer each question in about 300-500 words)

Q 1: What are assumptions of Comparative Costs Theory? Critically examine the theory.

Q 2: Explain various types of technical progress and their impact on international trade.

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UNIT 3: THEORIES OF INTERNATIONAL TRADE - II

UNIT STRUCTURE

3.1 Learning Objectives

3.2 Introduction

3.3 Heckscher-Ohlin Theory of Trade

- 3.3.1 Relative Factor Abundance
- 3.3.2 Relative Factor Intensity
- 3.3.3 Heckscher-Ohlin Theorem
- 3.3.4 Gains From Trade

3.4 Leontief Paradox

3.5 Theorem of Factor Price Equalisation

3.6 The Rybczynski Theorem

3.7 Stolper Samuelson Model

3.8 Let Us Sum Up

3.9 Further Reading

3.10 Answer to Check Your Progress

3.11 Model Questions

3.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- explain the Heckscher-Ohlin theory of international trade
- discuss the concepts of relative factor abundance and relative factor intensity
- discuss the Leontief paradox
- explain the theRybczynski Theorem as well as theStolper Samuelson model.

3.2 INTRODUCTION

In the previous two units you have learnt what do we mean by international trade, what are the distinctive features of international trade and who do we need a separate theory of international trade. You have also known the importance of international trade. You have learnt two very

important theories of international trade – Absolute Advantage theory propounded by Adam Smith and David Ricardo's Comparative Cost Theory in terms of labour theory of value. Not only you have understood that opportunity cost is very crucial in determining comparative advantage of the countries and the direction of trade, but also dynamic factors play a very important role in international trade. You have also known the basis of trade – how the changes in tastes, technology and factor endowments explain the emergence of international trade. In fact Ricardian theory is highly dependent on technological differences among the two countries.

In this unit you will broaden your concept from 2x2x1 (two countries-two commodities-one factor) model to 2x2x2 (two countries-two commodities-two factors) model of trade – Heckscher-Ohlin Theory of international trade, which was a very dominant trade theory of the 20th century. You will learn Leontief Paradox – under what circumstances Heckscher-Ohlin theory of trade does not hold. You will further learn how the factor prices get equalized among the two countries through international trade even when the movement of physical factors is restricted among the nations.

The Rybczynski Theorem will explain the product magnification effect that fastest growing factor will increase the production of the commodity, which uses the fastest growing factor intensively, at a greater rate than both the factors of production, whereas, the production of the other commodity will increase (if at all) at a lower rate than the slowest growing factor.

On the other hand,Price Magnification effect by Stolper-Samuelson explores the rate of change in factor prices due to change in relative of price of the commodities.Stolper Samuelson Theorem states that the real return to the intensive factor increases due to an increase in the price of the commodity that uses the factor intensively and the real return to the factor, which is not used intensively in the production of that commodity will increase (if at all) at a lower rate.

3.3 HECKSCHER-OHLIN THEORY OF TRADE

Comparative advantage of the country in Ricardian Comparative Cost Advantage theory is explained by technological differences across nations, whereas, Heckscher-Ohlin (H-O) theory relies on the differences in relative factor endowments, that is why this model is known as factor proportion model. This H-O theorem diverges from Ricardian Comparative Cost theory in two important aspects. First, the model accepts the existence of a second factor of production, which we call capital and second, it believes in identical production functions instead of assuming technological differences. To understand the H-O theorem clearly,we have to understand the underlying assumptions of the theory. The assumptions are given below:



H – O Theory of Trade: It proposes that the country will trade that commodity which uses intensively its relatively abundant factor.

- The Factor Proportion Model is a 2x2x2 model, i.e., there are two countries A and B, they produce two commodities, X and Y and each country is endowed with fixed quantities of two factors, capital (K) and labour (L).
- Country A is relatively labour abundant and country B is relatively capital abundant.
- Perfect competition prevails in factor markets as well as in commodity markets in both the countries. It implies that in the long run equilibrium P (price of the commodity) = AC (average cost) = MC (marginal cost).
- There is complete factor mobility of factors across the two commodity sectors but factors of production are completely immobile between the two countries.
- It is assumed that the production functions are identical internationally.
- The production functions are linearly homogeneous production functions or putting in another way, production function shows constant returns to scale (CRS). Therefore, if the factor inputs are increased by a certain proportion, then the output will also increase by the same proportion. This CRS also exhibits decreasing but positive marginal products of the factor endowments.

- The production functions are such that the two commodities can be separated by factor-intensity. Commodity is X is assumed to be relatively labour intensive and commodity Y is relatively capital intensive.
- And there is no factor-intensity reversal.i) There is neither any trade barriers of any kind nor there is any transhipment cost. Thus,trade among the countries if it prevails is free and costless.

On the basis of the above assumptions ***Heckscher - Ohlin*** theory proposes that the country will trade that commodity which uses intensively its relatively abundant factor. But what is relative factor abundance and relative factor intensity?It is explained in the following sub-section.

3.3.1 Relative Factor Abundance



Relative Factor Abundance: Country A will be relatively labour abundant if its wage-rental ratio is less than that in country B.
or,
A country will be considered as relatively labour abundant if its K/L ratio is less than the other country.

There are two different interpretations of relative factor abundance – one is related to factor prices and the other one is related to factor proportions. The first definition is known as 'price definition of relative factor abundance' and the second definition is called 'physical definition of relative factor abundance'. Ohlin chooses the price definition.

According to Ohlin, the country A will be relatively labour abundant if its wage-rental ratio is less than that in country B, i.e., if $(w/r)_A < (w/r)_B$ or $q_A < q_{B,}$ where q = w/r, the country A is said to be relatively labour abundant country where labour is relatively cheaper and the country B will be relatively capital abundant country where capital is relatively cheaper. But this price definition of factor abundance does not consider the comparison of factor endowment ratios of the two countries.

The alternative definition of factor abundance, the physical definition relies on the difference in physical factor endowment ratios. As per this definition a country will be considered as relatively labour abundant if its K/L ratio is less than the other country. Therefore, country A will be relatively labour abundant if and only if it holds a lower K/L ratio than country B, i.e, if $(K/L)_A < (K/L)_B$ then country A

will be relatively labour abundant country and country B will be relatively capital abundant country. This physical definition of factor abundance of the countries does not compare the relative factor prices of the two countries.

3.3.2 Relative Factor Intensity

Factor intensity plays a very crucial role in Heckscher-Ohlin theorem. Commodity X is said to be a relatively labour intensive commodity and Y will be relatively capital intensive commodity if capital-labour ratio used in the production of Y is higher than that in the production of X, i.e., $(K/L)_Y > (K/L)_X$. However, this ranking may be reversed, which is a case of Factor Intensity Reversal (FIR), when one country can easily substitute capital for labour along the isoquant. Existence of FIR may create problem in Heckscher-Ohlin theory.The above mentioned two definitions of factor abundance are certainly not equivalent. However, its need not to say according to the price definition of factor abundance, the country rich in labour will have a bias in producing labour intensive commodities and the country rich in capital will prefer to produce capital intensive commodities. Thus, given the price definition of factor abundance, Heckscher-Ohlin theorem follows from the assumptions made above that the labour abundant country will export labour intensive commodity and capital abundant country will export capital intensive commodity.



Relative Factor Intensity: A commodity is said to be relatively labour-intensive commodity if capital-labour ratio used in the production of the commodity is less than that in any other commodity.

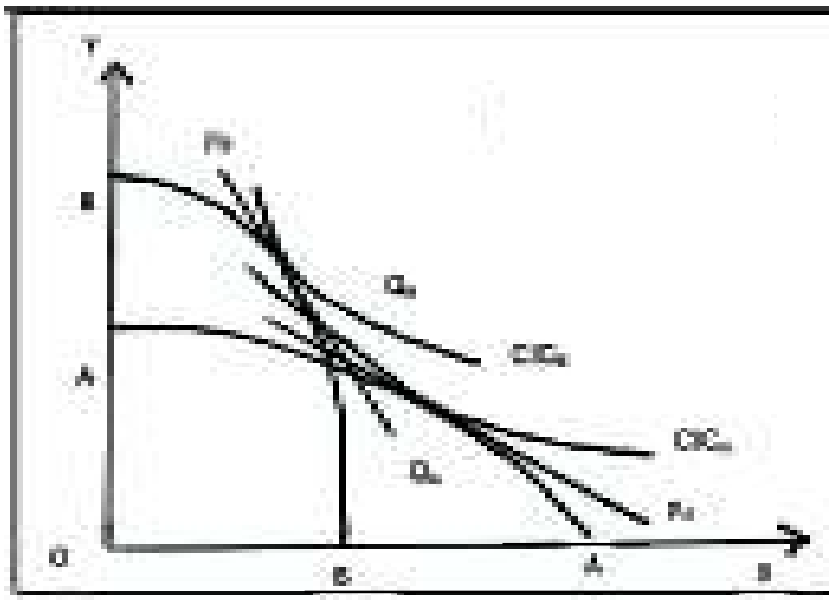
3.3.3 Heckscher-Ohlin Theorem

The autarky situation of the two countries can be explained in terms of Figure 3.1. In the figure, the production possibility curves of the two countries are shown by AA and BB. Homogeneous and identical consumption preferences are shown by two community indifference curves CIC_A and CIC_B. Autarky point of country A is obtained where the highest community indifference curve is tangent to the price line at the point Q_A on the production possibility curve

and on the other hand, is the autarky point of county B on its production possibility curve. In the absence of trade, the production point and the consumption point are same in both the countries implying that whatever is produced is consumed in both the countries and the factors of production are fully utilised. Therefore, in autarky there is no idle resources. The domestic price line of country A is clearly flatter than that of country B. It clearly implies that the relative price of X in country A less than that in country B. Thus, commodity X is relatively cheaper in country A than B and commodity Y is relatively cheaper in country B than A, i.e.,

$p_A < p_B$ .....(i)

Figure 3.1: Autarky Equilibrium



From the inequality (i) we can say that country A has relative efficiency in producing X, i.e., country A can produce X at a relatively lower price than B, whereas, country B produces Y at a relatively lower pricesince, the relative price p is the relative price of X, i.e., $p = P_X/P_Y$. Therefore, when trade opens up among these two countries, residents of country B find commodity X relatively cheaper in country A and residents of country A find commodity Y relatively cheaper in country B. Thus, when trade is permitted, the

consumers in country A will try to import commodity Y from B and likewise, the consumers in country B will try to spend money on commodity X of country A. Finally, two countries will mutually decide to trade at a common price, which is known as world price or the Terms of Trade (TOT).At the new world price, country specialises in the production of X, whereas country B specialises in the production of Y. In post trade there will be reallocation of resources according to the relative efficiency of the factors. Trade will be balanced, i.e., total volume of exports will be equal to the total volume of imports of each country.

The above phenomenon is described in Figure 3.3.2. In this figure we can examine the impacts of international trade on the production and consumption pattern of the two countries. We can see that as commodity is produced at a relatively lower cost in country A compared to B, in post trade situation country A will specialize in the production of commodity X and its production point shifts to E_A, clearly which lies to the right of the previous production point Q_A. Similarly, country B specialises in the production of Y. Production point of country B shifts to $E_B$and clearly which is to the left of the previous production point Q_B. Both the countries A and B move to higher community indifference curve CIC_A^1 and CIC_B^1 respectively. Country A consumes at C_A and country B consumes at C_B in post trade situation. C_AGE_A is the trade triangle of which perpendicular C_AG measures volume of import of commodity Y of country A. GE_A, the base measures the volume of export of commodity X of country A and C_AE_A measures world relative price or the TOT. Likewise, for country B, the trade triangle is E_BFC_B. In this trade triangle of country B, perpendicular, E_BF measures volume of export, base, FC_B measures volume of imports and hypotenuse, E_BC_B measures the international price. Here in the diagram C_AE_A and E_BC_B are two parallel lines that implies both the countries face the same terms of trade. Thus, trade results in the equalization of the commodity prices of the two countries since the slopes of the two parallel lines are equal.Hence, given the assumptions of the model, the ***Heckscher-Ohlin theorem*** states that the country will export the commodity that intensively uses its relatively abundant factor.



CHECK YOUR PROGRESS

Q.1: What do you mean by Heckscher-Ohlin Theorem?

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Q.2: What is Factor Abundance?

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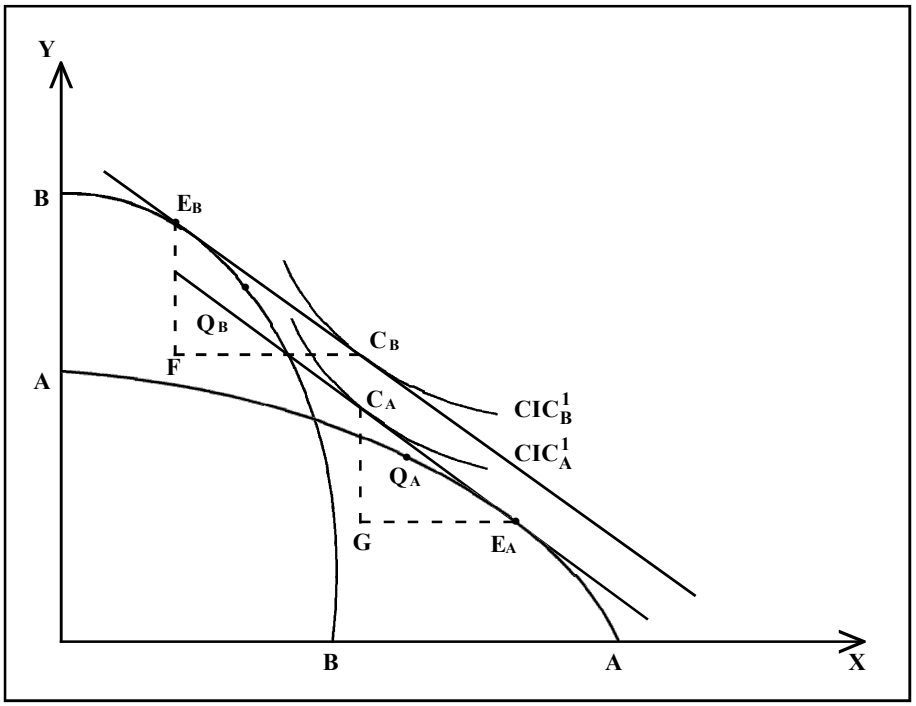
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Q.3: What is Factor Intensity?

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Figure: 3.2: The Heckscher-Ohlin Theorem



3.3.4 Gains from Trade

The most important perception in any theory of international trade is gains from trade (GFT). GFT means that the countries involved in the trade are benefitted as a whole from free trade. It does not mean that every one of the countries will be benefitted. Countries always

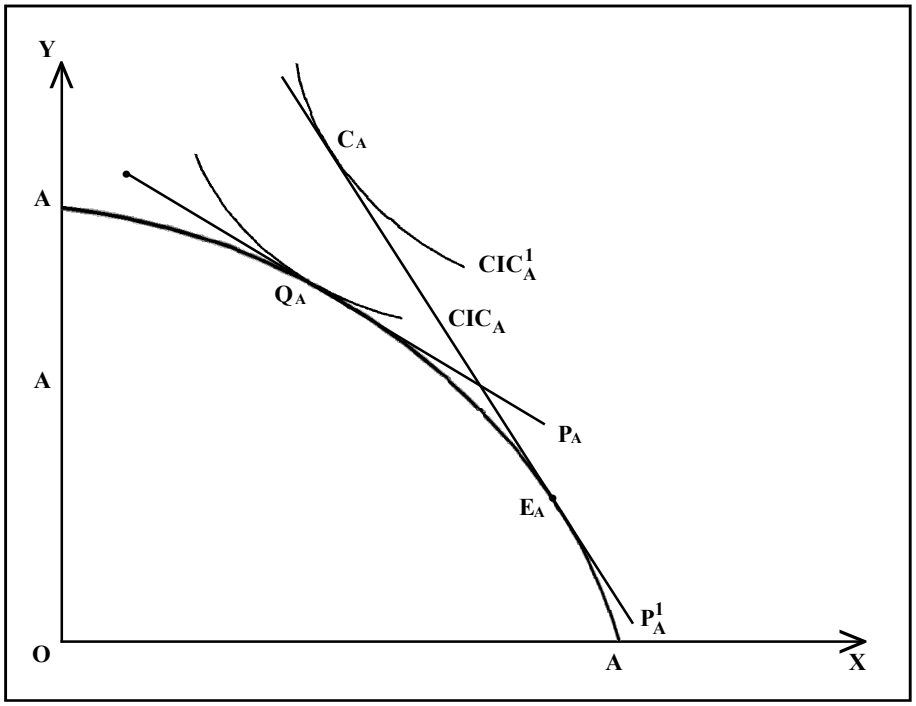
exchange their goods and services among themselves for their mutual benefits. Ricardo explained two countries can gain from trade even when one country has absolute advantage over the other country in all lines of production. The international trade also provides benefits to the countries by importing the commodities that use intensively the locally scarce factors at a relatively lower price than otherwise would have been in the absence of trade (Heckscher-Ohlin trade theory).

Now, when trade is permittedamong the countries, both the countries are benefitted. In post trade there will be trade-off between the two sectors of the economy. With an expansion in the production of X in country A, which uses its abundant factor, there will be a contraction in the import competing sector Y. Since, resources are already fully employed in autarky situation, following free trade, specialisation in the labour-intensive commodity of exportable X needs reallocation of resources. Therefore, the real income of the abundant factor increases at the cost of scarce factor capital in the post trade. This increase in the real income actually improves the level of welfare of the country.



Gains from Trade: GFT means that the countries involved in the trade are benefitted as a whole from free trade. It does not mean that every one of the countries will be benefitted.

Figure: 3.3: Gains from Trade



This is shown in the Figure 3.3. When trade is permitted, country A faces world relative price or the TOT, p_A^1 as depicted in the figure. This TOT, p_A^1 is clearly steeper than At this higher price country p_A. A specialises in the production of labour-intensive commodity X and the production point of country A shifts from Q_A to E_A. Therefore, there is a clear trade-off between labour-intensive commodity X and capital-intensively commodity Y as a result of free trade. The income effect of the price change leads to an increase in the consumption of both the commodities shown by the movement from a lower CIC to a higher CIC from Q_A to C_A. Hence, a rise in the relative price of exportable of a country A actually increases its welfare. By the similar explanation, it can also be shown that country B will also be benefitted as a result of free trade. Thus, it can be said that, if free trade occurs, the countries involved in exchanging the commodities among themselves will definitely gain from trade.



Leontief Paradox: It states that capital abundant countryexports labour-intensive commodity. Trade pattern is not consistent with H-O theorem.

3.4 LEONTIEF PARADOX

A model must be tested empirically and the first test of the Heckscher-Ohlin theorem was tested by Wassily Leontief in 1951. For this test he used the input-output table[1] of the US economy for the year 1947. Again in 1956 he repeated the same experiment using 1947 input-output table of the US economy but considered 1951 trade data as the year 1951 is normally considered to mark the completion of post-world war reconstruction. As US economy is more capital abundant country it was expected that US will specialise in the production of capital-intensive commodities and will export the same. He estimated factor intensity of US import substitutes rather than actual US imports since foreign production data on actual US imports were not available. The result of the test was surprising. US exports were 30% less capital intensive than US import substitutes, i.e., though US was expected to export relatively capital-intensive commodities but actually it exported relatively

[1] Input-output table is a table that shows origin and destination of each product produced in the economy. For discovery of input-output technique Leontief won Nobel Prize in 1973.

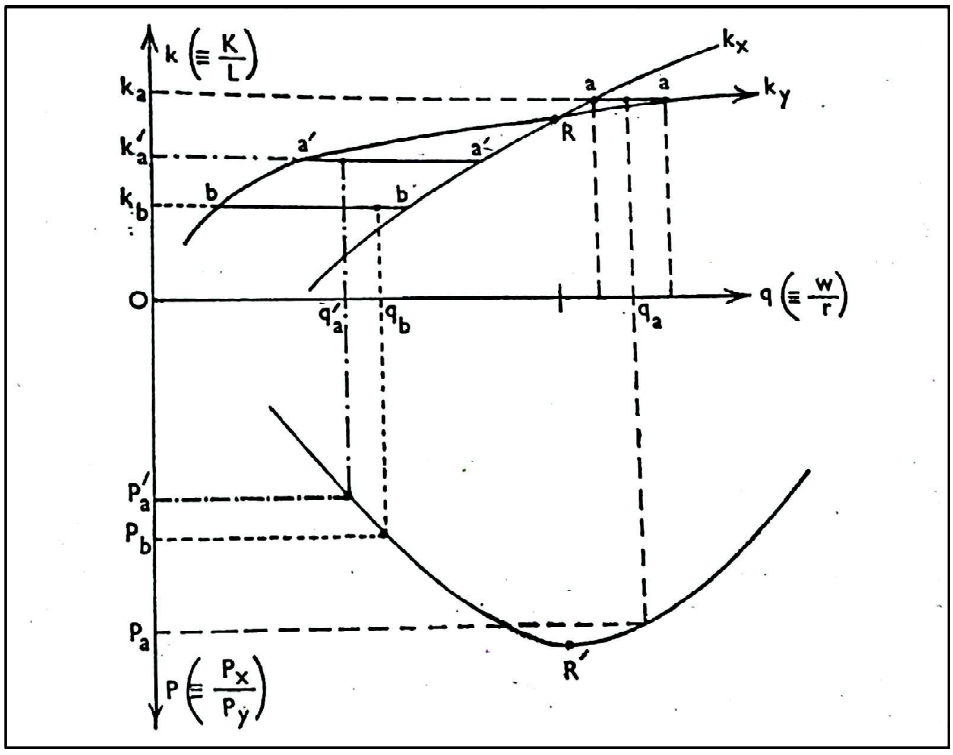
labour-intensive commodities. This phenomenon is actually the opposite of what Heckscher-Ohlin theorem predicts and it is the famous Leontief Paradox. The paradox states that the trade pattern of the US economy was not consistent with Heckscher-Ohlin theorem, i.e., capital abundant US economy exports relatively labour intensive commodities.

Different economists provided several explanations in support of Leontief Paradox. Some have pointed out US tariff policy as a possible source of bias. A tariff is nothing but a tax which is imposed on imports and it protects import competing sectors. They argued that in US, labour-intensive industries were heavily protected and it changed the pattern of trade and supported the existence of Leontief Paradox. Some have argued that Leontief did not consider human capital in his measure of capital. Human capital is the capital that increases labour productivity and it refers to the education, skill, training of the labourers. US labour embodies more human capital than any labour of the foreign country and it makes US exports more capital intensive than its import substitutes.

However, the most important explanation of Leontief Paradox can be explained by the existence of factor intensity reversals (FIR). In the presence of FIR, it is quite likely that a capital abundant country may export labour intensive commodity. This phenomenon is explained in Figure 3.4. We assume country A as relatively capital abundant compared to country B as relative factor abundance of country A, k_a is greater than that of country B, k_b. Two commodities are X and Y, whose factor intensity curves are shown in the upper panel of the diagram by k_X and k_Y respectively. The two curves intersect at point R, which is the factor reversal point. The relative factor ratios of the two countries A and B are such that the relative factor intensity points of country A fall to the right of R, where as that of country B fall to the left of R. From the figure it is clear that country A has a comparative advantage in producing commodity Y, which is relatively labour-intensive in country A since relative domestic price of country A, $P_a > P_b$, the relative domestic price of country B. So when trade occurs, though country A is comparatively capital abundant country it will export relatively labour intensive

commodity Y and will import comparatively capital intensive commodity X. Thus, Leontief Paradox holds for country A.

Figure: 3.4: Leontief Paradox



After much empirical testing of Heckscher-Ohlin theorem, economists concluded that the traditional Heckscher-Ohlin model can be retained to explain trade between developed and developing countries, which is commonly known as North-South trade and a restricted version of trade can be used to explain trade among the developed countries (North-North trade).



CHECK YOUR PROGRESS

Q.4: State whether following statements are true (T) or false (F):

a) GFT implies everyone within a country will be benefitted.

b) H-O theorem states that labour abundant country will export labour-intensive commodity.

Q.5: What do you mean by Gains from Trade?

.....

.....

Q.6: What is Leontief Paradox?

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3.5 THEOREM OF FACTOR PRICE EQUALISATION

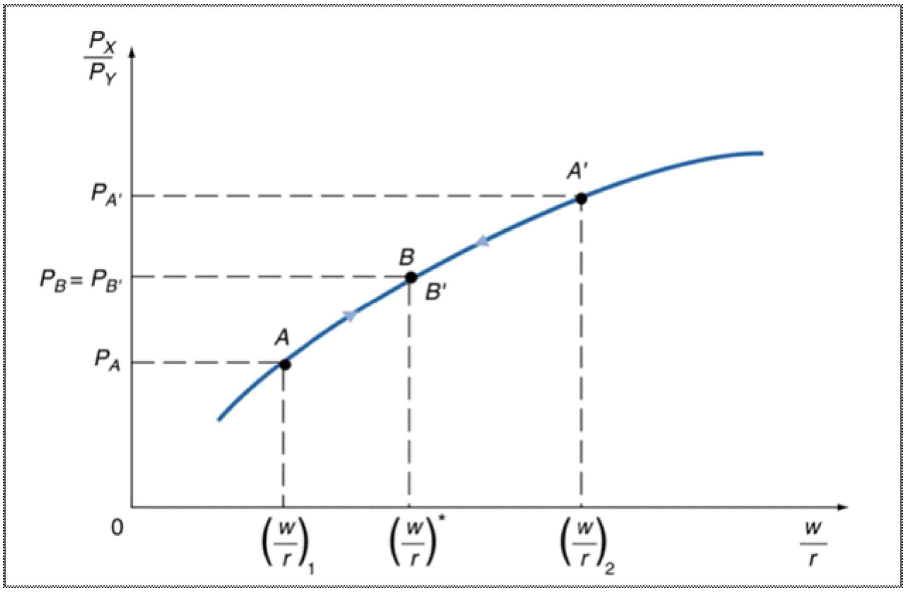
In the absence of trade, labour abundant country A produces labour-intensive commodity X at a relatively lower price than the capital abundant country B. Difference in relative prices of X in the two countries actually implies the difference in the relative price of factors, i.e., wage-rental ratio. However, when trade opens up among the two countries, the relative commodity prices of the two countries converge and this in turn converges the relative factor prices. Thus, factor prices equalize among the countries through free trade.

Now, when trade occurs between two countries A and B, it is more than mere exchange of commodities. Country A sells commodity X, which requires relatively more labour than the commodity Y that is imported by country A. Therefore, country A sells labour to B not directly but through exchange of the commodities. Similarly, country B sells its abundant factor capital indirectly through the exchange of the commodities. Thus, labour abundant country A exports labour embodied in its labour-intensive commodity X while capital abundant country B exports capital embodied in its capital-intensive commodity Y.

However, through free trade factor prices of the two countries A and B are equalised though the factors of production are completely immobile across the countries. This result is explained in the Figure 3.5. Initially, in the autarky, the labour abundant country A is at point A with relative domestic price ratio P_A and factor price ratio $\left(\frac{w}{r}\right)_1$ and capital abundant country B is at A' with relative price ration P_A' and factor price ratio $\left(\frac{w}{r}\right)_2$. Now $P_A < P_A'$ and thus labour abundant country A has a comparative advantage in producing labour-intensive commodity X, whereas capital abundant country has comparative advantage in producing capital-intensive commodity Y. As trade occurs, country A will specialise in the production of X and country B

will specialise in the production of Y. Therefore, relative demand for labour in country A and that for capital in country B will increase, which in turn will increase wage-rental ratio in country A and will reduce the same in country B. This causes relative price of X to increase in country A and to decrease in country B as there is one-to-one correspondence between wage-rental ratio and relative commodity price ratio. In the presence of perfect competition and with the identical technology of production, this process will continue until they reach to the point at B = B'where they will trade the commodities at the same TOT, $P_B = P_B$'and the same wage-rental ratio $\left(\frac{w}{r}\right)^*$ prevails in both the countries.

Figure 3.5: Factor Price Equalisation



However, though it is very much apparent theoretically that free trade will lead to factor price equalisation, there is a practical problem in real world. In real world, there exist a wide range of wage rates across the nations and that reflects the differences in the quality of labour. Therefore, in real world relative factor prices may not get equalised through free trade. Three assumptions crucial to the theory of factor price equalisation – (i) identical technologies across the countries; (ii) equalisation of commodity prices through costless trade and (iii) incomplete specialisation after trade, are not always true in reality.

- If the trading countries have different technologies of production, the proposition of factor price equalisation may not hold. For example, a country with inferior technology may have a lower factor price ratio than a country with superior technology.
- In the real world, the relative commodity prices of the two countries do not fully converge due to the presence of both tariff barriers and non-tariff barriers like import quotas, transport costs and other restriction.
- Even when the two countries produce the commodities with identical technology and face the same relative commodity price, factor price may not get equalised among the two countries since the prerequisite for factor price equalisation is that the countries will produce same set of goods. Therefore, if the trading countries have similar and congruent relative factor endowments and produce the same set of commodities then only factor price may equalise through free trade.

  From the above discussion, factor price equalisation theorem can be stated as below:

  "Under identical constant-returns-to-scale production technologies, free trade in commodities will equalise relative factor prices through the equalisation of relative commodity prices, so long as both countries produce both goods."[2]



Factor Price Equalisation: Free trade tends to equalise relative factor prices among the trading countries through the equalisation of relative commodity prices.

3.6 RYBCZYNSKI THEOREM

Rybczynski in 1955 proved that at a constant commodity prices, an exogenous increase in the endowment of one factor of production changes the output composition of the countries. According to Jones[3], "If factor endowments expand at different rates, the commodity intensive in the use of the fastest growing factor expands at a greater rate than either factor and the other commodity grows (if at all) at a slower rate than either factor.

[2] Markusen, J. R., Melvin, J. R., Maskus, K. E., & Kaempfer, W. (1995). *International Trade: Theory and Evidence.* McGraw Hill, Inc.

[3] Jones, R. W. (1956-57). Factor Proportions and the Heckscher-Ohlin Model. *Review of Economic Studies*.

Jones called this the Output Magnification Effect. Let us assume that labour supply of country A increases more than its capital endowment so that $\hat{L} > \hat{K}$. Then according to magnification effect, production of labour-intensive commodity will expand relatively more than either factor and the capital-intensive commodity Y grow (if at all) at a smaller rate than both the factors. In other words, if

$$\hat{L} > \hat{K}$$

where, $\hat{L} = \frac{dL}{L}$ and $\hat{K} = \frac{dK}{K}$, such that the rate of change in labour supply is greater than the rate of change in capital endowment;

then,

$\hat{X} > \hat{L} > \hat{K} > \hat{Y}$ ..... (ii)

Where, $\hat{X} = \frac{dX}{X}$ and $\hat{Y} = \frac{dY}{Y}$ are the rate of changes in the commodities X and Y respectively.

Rybczynski Theorem: It states that at a constant commodity prices, an exogenous increase in the endowment of one factor of production changes the output composition of the countries.

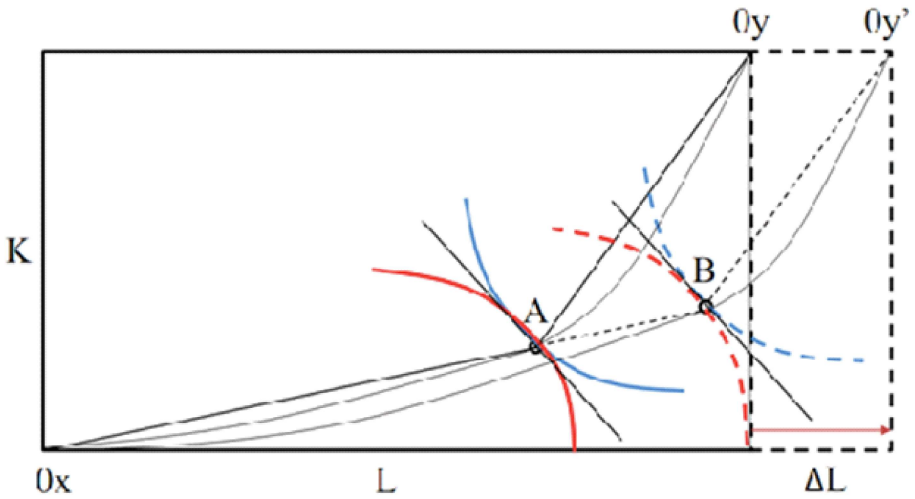
In the above ranking (ii), two things are very obvious. First, labour-intensive commodity X increases more than the capital-intensive commodity Y and secondly, the endowment changes are trapped in between the output changes. In this chain of ranking, if $\hat{L} > \hat{K}$, i.e., if the factor endowments change at the same rate then, production of both labour-intensive and capital-intensive commodities will change at the same rate. On the other hand, if $\hat{K} = 0$, then capital-intensive commodity Y will not grow, rather this sector will shrink.

Hence, Rybczynski theorem, more specifically the output magnification effect proved that if there is a more than proportionate increase in labour supply compared to the growth in capital, production of labour-intensive commodity X increases more than the increase in either factor of production and that in the production of capital-intensive commodity Y. This result can also be explained by Edgeworth Box diagram in Figure 3.6.

The points A and B are the common tangency points between two isoquants of two sectors X and Y. The rays $O_X A$ and $O_Y A$ represents the capital-labour ratios for the two industries X and Y respectively. Now suppose only labour supply of the economy increases by $^{3}\%$L with no change in capital, which shifts the origin for commodity Y from O_Y to O_Y'. Assuming

constant relative commodity price and thereby constant relative factor price as there exists a one-to-one correspondence between commodity price ratio and factor price ratio, change in labour supply will definitely affect the outputs of the two commodities. The ray O_XA remains unaffected but there will be a parallel shift of O_YA towards $O_Y'B$. The point B will be the new equilibrium point, which is further away from point A, clearly indicating that labour-intensive industry X expands as it uses more labour and capital. On the other hand, capital-intensive sector Y contracts.

Figure: 3.6: Rybczynski Theorem



3.7 STOLPER- SAMUELSON THEOREM

This theorem states that an increase in relative price of a commodity will raise the return to the factor that is used intensively in the production of that commodity. For example, tariff which is nothing but an import tax, raises the relative price of its importable. In our specification country A is relatively labour abundant country and country B is rich in capital. Therefore, as per Heckscher-Ohlin theorem, when trade is permitted between the two countries A and B, country A exports relatively labour-intensive commodity X and imports relatively capital-intensive commodity Y from country B. Now, if country A imposes import tariff to protect its import competing sector, relative price of the commodity Y will increase since country A imports commodity Y. As a result, according to Stolper Samuelson theorem, the

real return to the scarce factor capital, which is used intensively in the production of Y in country A will rise at a greater rate than any other commodity price and the return to the abundant factor labour. That is if,

$$\widehat{P_Y} > \widehat{P_X}$$

where, $\widehat{P_Y} = \frac{dP_Y}{P_Y}$ and $\widehat{P_X} = \frac{dP_X}{P_X}$, such that, the rate of change in P_Y> the rate of change in P_X; then,

$$\hat{r} > \widehat{P_Y} > \widehat{P_X} > \hat{w} \quad \text{.....(iii)}$$

where, $\hat{r} = \frac{dr}{r}$ and $\hat{w} = \frac{dw}{w}$ are the rate of change in return to capital and rate of change in return to labour respectively.



Stolper -Samuelson Theorem: This theorem states that an increase in relative price of a commodity will raise the real return to the factor that is used intensively in the production of that commodity.

In the above inequality (iii), commodity price changes are trapped into the relative factor price changes. This is also referred to as the 'Price Magnification Effect'. As a special case, let us assume that $\widehat{P_Y} = \widehat{P_X}$, i.e., both the prices increase at the same rate, then both the factor price must rise at the same rate, i.e.,

$$\hat{r} = \widehat{P_Y} = \widehat{P_X} = \hat{w}$$

On the other hand, if $\widehat{P_X} = 0$, i.e., if the price of X, which is a labour-intensive commodity does not change, real return to the factor labour used intensively in its production will fall.

The reason for this is that when relative price of the commodity Y, $\frac{P_Y}{P_X}$ increases, production of commodity Y becomes more profitable. As a result, country A will produce more of relatively capital-intensive commodity Y. Expansion of the sector Y requires more of capital in relation to labour. And as the basic assumption is that there is full employment of factors of production in the country, the additional demand for capital will raise the relative return to the factor capital, w/r. Hence increase in the relative price of commodity Y actually raises the earning of the scarce factor capital at the expense of its abundant factor labour.

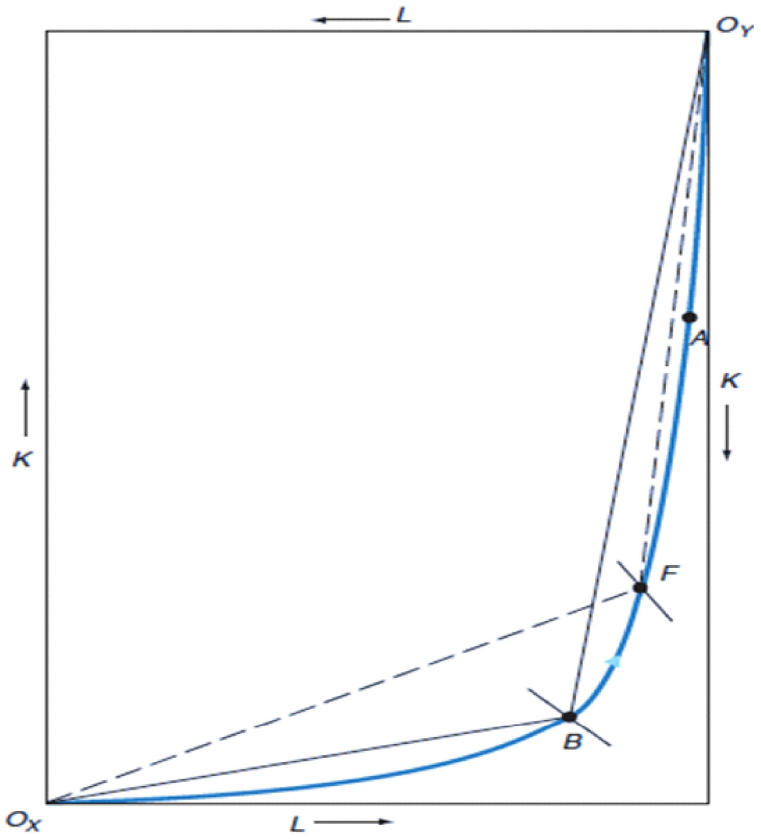
On the other hand, given an increase in the relative price of labour-intensive commodity X in country A as a result of trade, the economy would specialise in the production of X and produce less of capital-intensive commodity Y. Therefore, after trade capital-intensive sector Y will release more of capital than labour, whereas the demand for labour will be more in labour-intensive sector X than compared to capital. Hence real return to the factor labour will increase at a greater rate than either prices of the

commodity and the rate of return to the capital following an increase in the relative price of the commodity X as a result of free trade.

Now suppose that the country A is a capital rich country and imposes an import tariff on its importable X so that $\widehat{P_X} > 0$ *and* $\widehat{P_Y} = 0$, and how this will affect the relative factor prices can be explained graphically in Figure 3.7. In the figure we can see that an increase in relative price of X, P_X/P_Y due to imposition of an import tariff, leads the country to move from an initial free trade equilibrium point B to point F on the contract curve signifying that K/L ratio is higher in both the production of X and Y. Increase in capital-labour ratio implies increase in marginal productivity of labour in both the sectors in one hand and on the hand marginal productivity of capital reduces in both the sector. Thus, real wage increases in both the sector, where as real return to capital reduces in all the sectors. Therefore, tariff induces a transfer of income from capital owners to labourers. Hence,Stolper-Samuelson price magnification effect follows as below:

$$\hat{w} > \widehat{P_X} > \widehat{P_Y} = 0 > \hat{r}$$

Figure 3.7: Stolper-Samuelson Theorem





CHECK YOUR PROGRESS

Q.7: What is Factor Price Equalisation?

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.....

Q.8: What do you mean by Rybczynski Theorem?

.....

.....

Q.9: What is Stolper Samuelson Theorem?

.....

.....



3.8 LET US SUM UP

- There are lots of theories in international trade. Classical theories like Adam Smith's Absolute Advantage Theory and Comparative Cost Advantage Theory depends on labour theory of value, i.e., labour is the single factor of production.
- Heckscher-Ohlin theory rests on two factors of production – labour and capital. Given the set of assumptions H-O theory states that labour abundant country will export labour-intensive commodity and capital abundant country will export capital-intensive commodity when trade opens up.
- Physical definition of factor abundance demonstrates that a country will be relatively labour abundant compared to the other country if capital-labour ratio of the country is less than that of the other country.
- According to Price definition of factor abundance, a country will be relatively labour abundant compared to the other country if wage-rental ratio of the country is than that of the other.
- A commodity is said to be intensive in one factor of production, if the said factor is used intensively than the other factor in the production process.

- A country will tend to produce more of that good, which uses its abundant factor intensively.
- Gains from trade states that overall the countries engaged in the trade will be benefitted. It does not mean that everyone within the countries will be benefitted.
- Empirical validity of Heckscher-Ohlin theorem was first tested by Leontief and he found a result which is not consistent with H-O theorem. He found that though the US economy is capital abundant, it exports labour-intensive commodities.
- Rybczynski's output magnification effect finds that more than proportionate exogenous growth in one factor of production expands the sector that uses the factor intensively, more than the growth of either factor and the other commodity (if at all).
- In the price magnification effect, it was found by Stolper-Samuelson thatan increase in relative price of a commodity will raise the real return to the factor that is used intensively in the production of that commodity more than proportionately than either prices and return to the other factor (if at all).
- International trade changes the relative price of the commodities in the world market. It has a significant impact on the distribution of income. The factor which is used intensively in the production of that commodity whose relative price increases gain more than proportionately.



3.9 FURTHER READING

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3.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: Heckscher-Ohlin theorem states that the country will export that commodity which uses intensively its abundant factor.

Ans to Q No 2: Factor abundance means the factor of a country which is available more in the country.

Ans to Q No 3:Factor intensity of a commodity means the factor, which is used intensively in the production of that commodity.

Ans to Q No 4: (a) False (b) True

Ans to Q No 5: Gains from trade implies that the countries engaged in trade will be mutually benefitted through free trade. It does not mean that each and every one of the countries will be benefitted.

Ans to Q No 6: Leontief paradox states that in reality all the trade patterns are not consistent with Heckscher-Ohlin theorem. He found that capital abundant US economy exports labour-intensive commodities.

Ans to Q No 7: Factor price equalisation theorem states that relative factor prices of the countries get equalised through the equalisation of relative commodity prices after trade though the factors of production are immobile across the nations.

Ans to Q No 8: Rybczynski theorem states that if a factor of production increases more than proportionately than the other factor, the commodity that uses the fastest growing factor intensively, will grow at a greater rate than either factor and the other commodity.

Ans to Q No 9: Stolper Samuelson theorem states that if the relative price of a commodity increases, the real return to the factor, which is used intensively in the production of that commodity will increase more than proportionate increases in either prices of the commodities and the return to the other factor (if at all).

3.11 MODEL QUESTIONS

Q.1: Write short answers to the following questions (within 150 words):

a) Consider the following factor endowments of two countries, A and B:

Availability of Factors	A	B
Labour force (millions of labour hours per year)	50	15
Capital stock (millions of machine hours per year)	25	20

(i) Which country is capital abundant and why?

(ii) Which country is labour abundant and why?

(b) Suppose that there are two factors, capital and land, and that the United States is relatively capital endowed while India is relatively labour-endowed. According to the Heckscher-Ohlin model, will the US capitalists support India-US free trade? Why?

(c) 'If India and USA trade with each other, real wages will be equalized in the two countries even in the absence of labour migration across countries'- prove or disprove the statement.

(d) 'Owners of a country's abundant factor gain from trade while owners of scarce factors lose'-do you agree? Explain.

(e) 'Trading countries will expand their export sector and contract their import competing sector after trade' - do you agree? Explain.

Q.2: Answer the following questions within 500 words:

(a) Write an essay on Heckscher-Ohlin theorem.

(b) International trade leads to complete equalization of factor prices. Discuss.

(c) Explain why the Leontief paradox contradicts the factor-proportion theory. What are the possible reasons for this paradox?

*** ***** ***

UNIT 4: THEORIES OF INTERNATIONAL TRADE-III

UNIT STRUCTURE

4.1 Learning Objectives

4.2 Introduction

4.3 Intra-Industry Trade

- 4.3.1 Meaning
- 4.3.2 Measurement

4.4 Vent-For-Surplus

4.5 Availability Approach

4.6 Product-Cycle Model

4.7 Technological Gap Model

4.8 Let Us Sum Up

4.9 Further Reading

4.10 Answers to Check Your Progress

4.11 Model Questions

4.1 LEARNING OBJECTIVES

After going through this unit, you will be able to –

- put forward the concept, importance and measurement of Intra-Industry-Trade
- recognised Vent for surplus and its effectiveness in international trade
- discuss the availability approach of International trade theory
- analyse the product cycle model of international trade
- discuss the relationship between demand lag and imitation lag in technological gap theory.

4.2 INTRODUCTION

In the previous unit 1, 2 and 3 the concept of trade on all the theories were based upon inter-industry trade. The exchange of Industry A with Industry B is an exchange between the products of two different industries. The classical, neo-classical, Heckscher-Ohlin theory all were based on

inter-industry trade. But in real life a country simultaneously imports and exports the different varieties of the product of the same industry. This is termed as intra-industry trade. All the theories prior to this are dealing with homogeneous products.

4.3 INTRA-INDUSTRY TRADE

Intra-industry trade arises in order to take advantages of economies of scale, market imperfection and varieties of product. Intra-industry trade benefits the consumers because of the wider range of choices available at lower prices due to the economies of scale in the economy. It also stimulates innovation in the country.

4.3.1 Meaning

Intra-industry trade refers to the exchange of similar products belonging to the same industry. The term is usually applied in International Trade, where the same types of goods or services are imported and exported. The intra-industry trade arises because of the economies of scale, product differentiation in a monopolistic competition market, division of labour, rapid economic growth, globalization *etc.*.

4.3.2 Measurement

The level of intra-industry trade(IIT) can be measured by the intra-industry trade index developed by Grubel-Llyod in the year 1967 and popularly known as GL index.

$$GL_i = 1 - \frac{[X_i - M_i]}{[X_i + M_i]}$$

Where,

Xi = Value/Volume of Export

And Mi = Value/Volume of Import

- If Export of same product is equal to import of that product

  Xi=Mi

Then

GLi=1

- There will be intra industry trade and no inter industry trade.
- If countries Either Export or Import of any good or service
- Either Xi=0
- Or Mi=0
- Then GLi=0
- There will be Inter industry trade between two countries and no IIT.

Explanation

- If GLi=1
- Then,

$$1-\frac{[X_i-M_i]}{[X_i+M_i]}=1$$
$$\frac{X_i-M_i}{X_i+M_i}=0$$
$$X_i-M_i=0$$
$$X_i=M_i$$

Export of a product is equal to import of that product, so there is IIT in two countries

- If GLi=0
- Then,

$$1-\frac{[X_i-M_i]}{[X_i+M_i]}=0$$
$$\frac{[X_i-M_i]}{[X_i+M_i]}=1$$
$$X_i-M_i=X_i+M_i$$
$$M_i=0$$

- Thus Export or Import will be Zero, so there will be Inter Industry trade between two countries.



CHECK YOUR PROGRESS

Q.1: State whether the following statements are True (T) or False (F)

(i) The intra-industry trade is the trade between two countries. (T/F)

(ii) The classical theories of international trade were based on the concept of intra-industry trade. (T/F)

Q.2: What is meant by the intra-industry trade?

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.....

Q.3: Explain Grubel-Llyodindex.

.....

.....

4.4 VENT-FOR-SURPLUS

The vent for surplus theory was developed by Adam Smith and later it was revised by HlaMyint. The theory states that if a country produces more than it absorbs it has a surplus. In the absence of international trade, a surplus domestic productive capacity will be unutilised or underutilised its natural resources and labour resources. In addition the process of absorption may be slow. The international trade can absorb this surplus of production without creating any adverse effects upon poor countries. The export of surplus product will create new effective demand for the products of less developed countries. The international trade absorb the surplus domestic production and prevents any likely slump in the home market, creates markets for product abroad and permit the imports of essential products. In this way, the vent for surplus theory state that international trade cannot be an obstacle but an opportunity for accelerating the process of growth.

HlaMyint, therefore, considered the vent for surplus theory more appropriate for the less developed countries than the principle of comparative cost advantages.Myint made some points in this regards, in less developed

countries the utilised and under-utilised resources exist in a large numbers. In such situation, the production can be increased with the surplus and it results in new discoveries. Most of the less developed countries suffer with the problem of poverty, therefore there market size is very limited with the international trade they not only utilised their surplus in an effective manner but can also expands market size. The vent for surplus approach helps in increasing the mobility of labour and specific factor of production and gives a way out from serious impediments. The approach also permits the monetary and fiscal authorities to adopt measures suitable for the expansion of exports. In this way we can say that the approach is more effective than the traditional comparative cost theory.

4.5 AVAILABILITY APPROACH

An important extension of international trade theory given by Heckscher-Ohlin is the availability approach to international trade. This approach was given by Irving B. Kravis in 1956. According to Kravis, the pattern of trade in any country depends upon the availability and non-availability of resources in the nation. In other words, a country produced and exported those goods which it had 'available', that is, goods developed by its entrepreneurs and innovators. Availability means an elastic supply. Trade takes place in only those goods which are not available at home. The non-availability of goods in home country may either be in the absolute or the relative sense. In the former sense, certain goods are not available at all in the home country and in relative sense means that the domestic supply of products is short of their demand.

Kravis has discussed four factors which influence availability. They are natural resources, technical progress, product differentiation and government policy. Firstly, if a country is rich in natural resource or availability of scare natural resources determines the trade pattern of a country. Secondly, the technical progress can have a significant impact upon factor utilisation, expansion in the scale of production and improvement in the quality of products which determined the trade direction of a country. The third factor is product differentiation which confers temporary monopoly to

a specific innovating country and it exports it until the importing country imitates. The last factor is Government policy that is the tariff and non-tariff trade restrictions that tend to restrict the international flows of goods.

The availability theory can be explained with the help of an example. Supposed there are four countries- A, B, C and D. There are two commodities-wheat and steel. The production of both the commodities requires labour and capital. In addition the production of wheat requires fertile agricultural land whereas the production of steel requires iron ore. Out of four countries, A, B and C are endowed with agricultural land. The countries B, C and D are endowed with iron ore. Given these the country A can produce only wheat and country D can produce only steel. The countries B and C can produce both wheat and steel. Now according to availability approach country A will export wheat to country D and will import steel from country D. Since B and C are capable of producing both the commodities the trade between them will be governed by their respective comparative cost advantages. Suppose the domestic exchange ratio between wheat and steel in country B is 6 units of wheat = 1 unit of steel. It is 3 units of wheat=1 unit of steel in country C. If the international exchange ratio is settled at 4 units of wheat= 1 unit of steel, country B will export wheat to country C and latter will export steel to country B.

Findlay argues that availability approach has superiority over factor proportions approach. Although two countries have equal endowments of labour and capital, yet country A produces and exports the capital intensive commodity steel and country B produces and exports relatively less capital intensive commodity wheat. It is not fully consistent with the factor proportions theory. However, the availability theory recognizes that the trade pattern between these two countries is governed by availability. Thus, this theory seems to be better than the factor proportion theory.



CHECK YOUR PROGRESS

Q.4: State whether the following statements are True (T) or False (F)

(i) HlaMyint propounded the concept of vent for surplus. (T/F)

(ii) Kravis' theory is related international trade. (T/F)

Q.5: What is meant by vent for surplus approach?

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.....

Q.6: In what waydoes the domestic availability of products influence the pattern of international trade?

.....

.....

4.6 PRODUCT-CYCLE MODEL

The product cycle model was developed by Prof. Raymond Vernon in his article "International Investment and International Trade in Product Cycle" published in the year 1966. According to this model, when a new product is introduced, it requires highly skill labour to produce. As the product matures and acquires mass acceptance, it became standardised it can be produced by less skilled labours and by mass production techniques. In other words a product is initially produced and exported by the innovating country but finally it ends up as an importing country of the same product or same differentiated variety of that product. The basic argument in this model is that the factor requirements of a product differ over its lifetime, so that there is a cycle in the production of it. The innovation of a new product involves risks that can be borne by relatively rich firms.

According to the theory, the pattern of trade has been witnessed in case of several products such as electronic goods, synthetic materials, motion pictures, consumers' durables and office machinery and equipments. The classical example of the product cycle model is provided by the experience of U.S. and Japanese manufactures of radio. Immediately after the Second World War, the U.S. manufactures dominated the world market of radios based on vacuum tubes. Within a few years, the Japanese manufacturer copies the U.S. technology and captured a large part of the world market. The U.S. then introduced transistors. Once again the Japan

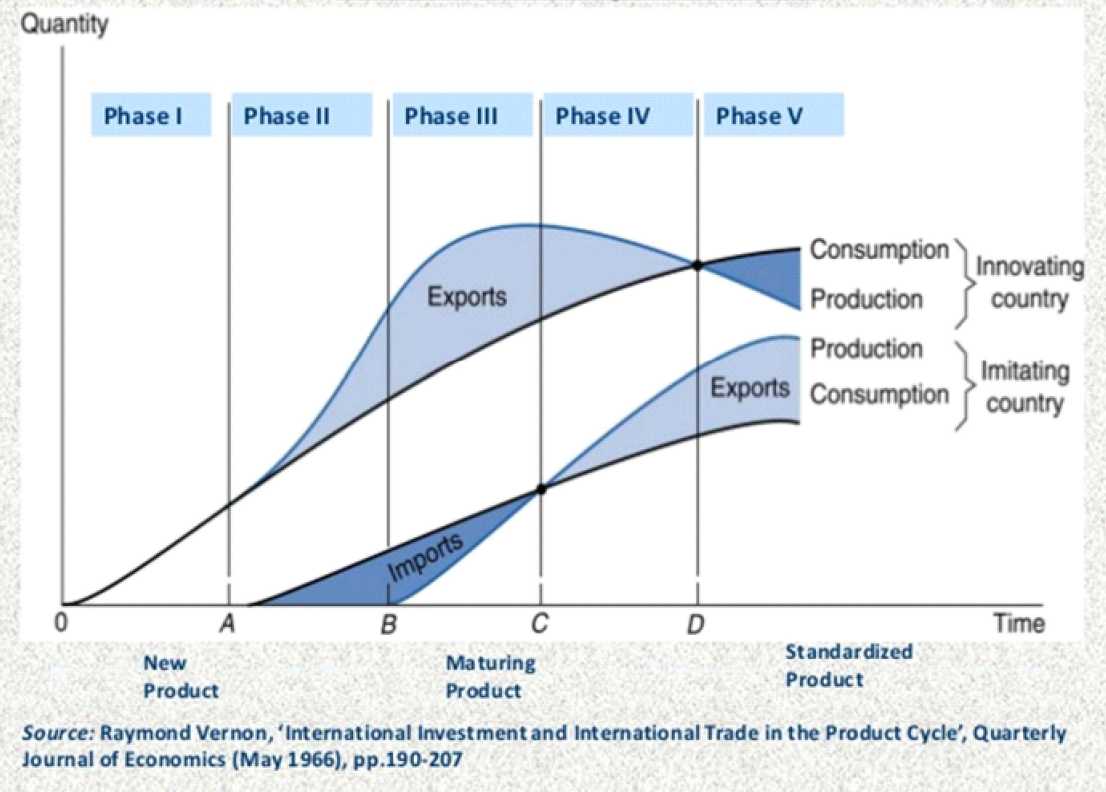
could produce them at lower costs and recapture the world market. Than the U.S. manufacturers introduced the printed circuits. Even in this case the Japan followed the technology and expanded its exports. Similar is the pattern of trade concerning automobiles involving U.S. and Japan.

According to this theory, the products generally pass through five different stages discussed below:

- **STAGE -I** or New Product Phase: The product is produce and consumed only in the innovating country.
- **STAGE-II** or Product Growth Phase: At this stage, there is not yet any foreign production of product, so that the innovating country has a monopoly in both the home and export markets.
- **STAGE-III** or Product Maturity Phase: In this stage, the product standardised and the innovating firm may find it profitable to manufacture the product. Thus, the imitating country starts producing the product for domestic consumption.
- **STAGE-IV** or Product Decline Phase: At this stage, the imitating country facing lower labour and other costs now the product has become standardized and the production of the product in the innovating country starts declines.
- **STAGE-V** or Product Decline Phase: the imitating country starts selling the product in the markets and the production of product in the innovating country declines rapidly or collapse.

It can be visualised with the figure and it identifies the five different stages of the product cycle.

Figure: 4.1: The Product Cycle Model



Source: Raymond Vernon, 'International Investment and International Trade in the Product Cycle', Quarterly Journal of Economics (May 1966), pp.190-207

Criticism:

- The assumption that innovating firms have no information about conditions in foreign market.
- Not exposed to different home environment from other advanced countries.
- New products may not be initially developed in capital rich countries.
- Developing countries may not be late starters in the process of absorbing the innovations of advanced countries.

4.7 TECHNOLOGICAL GAP MODEL

This theory is given by M.V. Posner in 1961.He analyzed the effect of technology on international trade unlike Heckscher-Ohlin model which is based on the assumption that technology is the same in all trading countries. He regards technological changes as continuous process and a

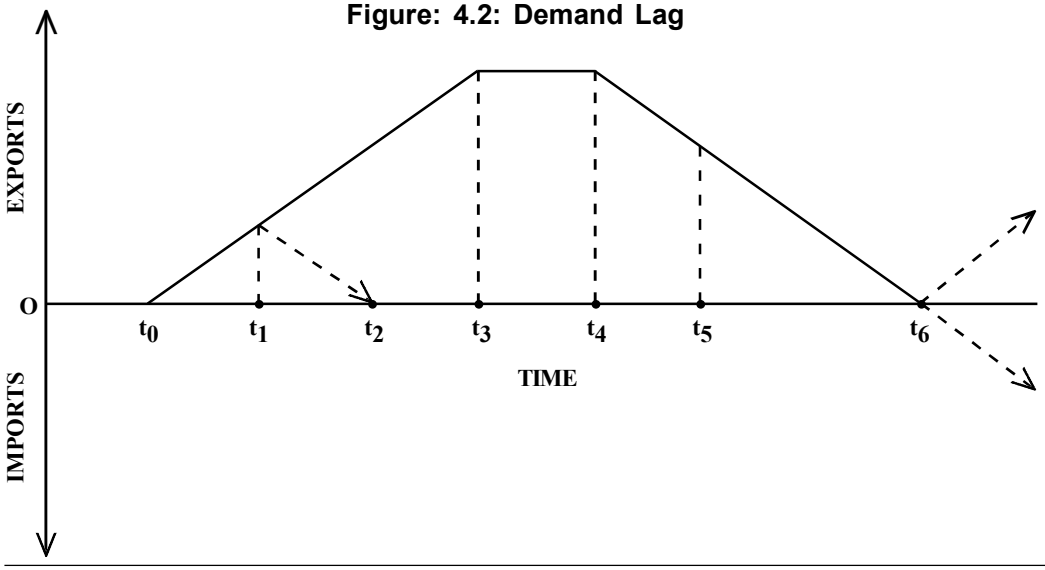
technological innovation in the form of production of a new good in one country leads to the IMITATION GAP and DEMAND GAP in the other country. This theory explains the sequence of innovation and imitation as it affects the patterns of the trade. When a firm innovate a new product, it becomes profitable in the domestic market and enjoys a temporary monopoly.This product is exported to foreign market and has an absolute advantage.Innovating country's profit encourages imitation in other country.Till the importing country learns the new process, the innovating country will continue to export the product and have a comparative advantage in it, this is the imitation gap.

According to Posner, **the imitation gap** has three components:

- **Foreign reactions lag**: time taken by the innovating firm to start the production of the new product.
- **Domestic reaction lag**: time taken by other domestic producers to follow and establish a hold on the domestic market.
- **Learning period:** time taken by domestic producers to master the technique of producing the new product and selling it in the domestic market.

There is also the **'demand lag'** which is the time taken by consumers in the importing country to acquire the taste for the new product. To obtain the period during which its imports will continue, the demand lag must be subtracted from imitation lag.

Figure: 4.2: Demand Lag



Explanation of the Figure:

In the figure, there is no trade up to point t0, at t0 A innovates the new product.If there is no imitation of the commodity in B, country A will continue to export it till exports reach at time t3. The period from t0 to t3 is the demand lag.If a producer in B starts producing the product by time t3, the exports of A will decline.If producers in B are unable to adopt the innovation of the new commodity till time t4, the country A will continue to export. As country B starts imitating the new technology, there will be decline in exports from A to B and this would fall down to zero in time t6.

Criticisms:

- It doesn't explain the size of the technological gap
- Doesn't explain the reason that technological gaps arise
- Posner didn't discuss the factors responsible for innovation.
- The competitive pattern of innovations in the two countries is also not explained.



CHECK YOUR PROGRESS

Q.7: State whether the following statements are True (T) or False (F)

(i) According to product cycle model, product passes through four stages. (T/F)

(ii) The technological gap is caused by foreign reaction lag. (T/F)

(iii) Product cycle model was given by R.Vernon. (T/F)

Q.8: What is meant by imitation gap?

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Q.9: Describe the main stages in the product cycle model.

.....

.....

Q.10: Explain briefly Demand lag.

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4.8 LET US SUM UP

- The classical, neo-classical, Heckscher-Ohlin theory all were based on inter-industry trade.
- In real life a country simultaneously imports and exports the different varieties of the product of the same industry. This is termed as intra-industry trade.
- Intra-industry trade arises in order to take advantages of economies of scale, market imperfection and varieties of product.
- The level of intra-industry trade (IIT) can be measured by the intra-industry trade index developed by Grubel-Llyod index (GLi).
- $GL_i = 1 - \frac{[X_i - M_i]}{[X_i + M_i]}$
- The vent for surplus theory states that if a country produces more than it absorbs it has a surplus. In the absence of international trade, a surplus domestic productive capacity will be unutilised or underutilised its natural resources and labour resources.
- According to vent for surplus approach if a country produces more than it absorbs it has a surplus. It means that international trade cannot be an obstacle but an opportunity for accelerating the process of growth.
- According to Availability approach, the pattern of trade in any country depends upon the availability and non-availability of resources in the nation.
- According to the product cycle model, when a new product is introduced, it requires highly skill labour to produce. As the product matures and acquires mass acceptance, it became standardised it can be produced by less skilled labours and by mass production techniques.
- The technological gap model explains the sequence of innovation and imitation as it affects the patterns of the trade.



4.9 FURTHER READING

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4.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: (i) True` (ii) False

Ans to Q No 2: Intra-industry trade refers to the exchange of similar products belonging to the same industry. The term is usually applied in International Trade, where the same types of goods or services are imported and exported.

Ans to Q No 3: The level of intra-industry trade (IIT) can be measured by the intra-industry trade index developed by Grubel-Llyod in the year 1967 and popularly known as G-L index. It is calculated by:

$$GL_i = 1 - \frac{[X_i - M_i]}{[X_i + M_i]}$$

Where,

Xi= Value/Volume of Export

And Mi= Value/Volume of Import

Ans to Q No 4: (i) False (ii) True

Ans to Q No 5: The vent for surplus approach states that if a country produces more than it absorbs it has a surplus. In the absence of international trade, a surplus domestic productive capacity will be unutilised or underutilised its natural resources and labour resources.

Ans to Q No 6: The pattern of trade in any country depends upon the availability and non-availability of resources in the nation. In other words, a country produced and exported those goods which it had 'available', that is, goods developed by its entrepreneurs and innovators. Trade takes place in only those goods which are not available at home. The non-availability of goods in home country may either be in the absolute or the relative sense.

Ans to Q No 7: (i) False (ii) False (iii) True

Ans to Q No 8: The imitation gap has three components:

- Foreign reactions lag: time taken by the innovating firm to start the production of the new product.
- Domestic reaction lag: time taken by other domestic producers to follow and establish a hold on the domestic market.
- Learning period: time taken by domestic producers to master the technique of producing the new product and selling it in the domestic market.

Ans to Q No 9: The products generally pass through five different stages discussed below:

- STAGE -I or New Product Phase: The product is produce and consumed only in the innovating country.
- STAGE-II or Product Growth Phase: At this stage, there is not yet any foreign production of product, so that the innovating country has a monopoly in both the home and export markets.
- STAGE-III or Product Maturity Phase: In this stage, the product standardised and the innovating firm may find it profitable to manufacture the product. Thus, the imitating country starts producing the product for domestic consumption.
- STAGE-IV or Product Decline Phase: At this stage, the imitating country facing lower labour and other costs now the product has become standardized and the production of the product in the innovating country starts declines.

- STAGE-V or Product Decline Phase: the imitating country starts selling the product in the markets and the production of product in the innovating country declines rapidly or collapse.

Ans to Q No 10: The 'demand lag' which is the time taken by consumers in the importing country to acquire the taste for the new product.



4.11 MODEL QUESTIONS

Short Questions (Answer each question in about 150 words)

Q.1: Write a short note on the concept of Vent for surplus of Adam Smith.

Q.2: Discuss the causes of intra industry trade.

Q.3: Explain Kravis theory of availability.

Q.4: Describe anti-inflationary measures other than fiscal measures.

Easy type Questions (Answer each question in about 300-500 words)

Q.1: Explain Product Cycle Model of international trade.

Q.2: Describe the Posner's technological gap model of trade.

Q.3: Write an essay on the concept and measurement of intra industry trade.

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UNIT 5: GAINS FROM TRADE

UNIT STRUCTURE

5.1 Learning Objectives

5.2 Introduction

5.3 Gains from Trade

- 5.3.1 Concept of Gains from Trade
- 5.3.2 Approaches to Gains from Trade
- 5.3.3 Factors determining Gains from Trade

5.4 Offer Curve

- 5.4.1 Derivation of Offer curve
- 5.4.2 Equilibrium terms of trade
- 5.4.3 Elasticity of offer curve

5.5 Distribution of Gains from Trade in Terms of Offer Curves

5.6 Trade as an Engine of Economic Growth

5.7 Let Us Sum Up

5.8 Further Reading

5.9 Answers to Check Your Progress

5.10 Model Questions

5.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- put forward the meanings of the terms
- learn the concept of gains from trade and the approaches towards it
- have an idea about offer curve and its derivation
- learn about distribution of gains from trade between trading countries
- know the role of trade in economic growth and development

5.2 INTRODUCTION

International trade between countries, whether developed or developing or underdeveloped, is favourable for economic development of the trading countries in particular and the world in general. A country under

autarky or no trade (closed economy) can never prosper economically. Trading countries ultimately can reap the fruits of gain or profit. However, the distribution of gains may vary between countries. Large countries or the countries having comparative advantage in production of any commodity(especially manufactured commodities) may gain more compared to the countries producing primary commodities. In other words, gains from trade may be inequitable, but economists are of the view that some trade is always better than no trade. There are various approaches towards analysis of gains from trade, some of which are briefly discussed in next sections. Adam Smith, David Ricardo, J.S. Mill and many eminent economists had put forward various approaches to analyze the concept of international trade and the gains that can be derived from it. Gains from trade have been analyzed using the concepts of (i) comparative advantage, (ii) offer curves, (iii) production possibility curve and community indifference curves and so on. Gains from trade were measured by the classical economists in terms of (i) increase in national income, (ii) Differences in comparative costs, and (iii) Terms of trade. The modern economists explained gains from trade as composition of gains from exchange and gains from specialisation.But the basic proposition is that trade leads to gain in welfare between the trading countries.

5.3 GAINS FROM TRADE

5.3.1 Concept of Gains from Trade

Gains from trade refer to the increase in welfare experienced by a country by engaging in trade. It is advantageous for any country of the world to involve in trade with another country. As trade is mutually beneficial for both or all the trading countries, the countries - whether developed or underdeveloped - trade with each other. But it is to be kept in mind that the gains accrued from trade can never be equal for all these countries. Some countries may reap more gain, while for some the gain may be less. However, this situation of trade is better than no trade or autarky condition.

5.3.2 Approaches to Gains from Trade

Gains from trade have been at centre of discussion since the classical times. Various approaches have been put forward at various times by eminent economists. In the next sub-sections, let us have a bird's eye view of few such approaches.

- **Adam Smith's Approach**

  According to Adam Smith, gains from trade arise due to the division of labour and specialisation (improvement in the productive capacity). A commodity is exported in trade whose demand is comparatively less in the home market, whereas a commodity which has more demand is imported. The trading countries try to derive maximum welfare as well maximum earnings from export. Specialisation in the production of a commodity having cost advantage leads to optimum allocation of productive resources. Specialisation along with increased division of labour helps in broadening the market for the trading countries that ultimately leads to maximisation of welfare.

- **Ricardo-Malthus's Approach**

  David Ricardo emphasizes on comparative cost advantage. Comparative cost advantage theory proposes that trade can be beneficial for all countries if they specialise in the production of those goods in which they have comparative advantage. According to Ricardo, a country will export those commodities in which it has comparative cost advantage. The commodities with comparative cost disadvantage will be imported. The use of resources can be economised through international trade. Given the amount of resources, trade enables the countries to obtain a larger total income than if the countries attempted to produce everything domestically. In the words of David Ricardo, the advantage to both places is not that they have any increase in value but with the same amount of value they are both able to consume and enjoy an increased quantity of commodities.



Comparative advantage is a country's ability to produce a commodity at a lower opportunity cost compared to other countries with which the country is engaged in trade.Comparative advantage suggests that countries will engage in trade with one another, exporting those commodities in which they have a relative advantage.

Malthus, however, criticised Ricardo on the ground that his proposition on gains from trade is overestimated. The gains from trade, according to Malthus, consists of the increased value that results from exchanging what is wanted less for what is wanted more. The international exchange on this basis increases exchangeable value of possession, means of enjoyment and wealth.



Reciprocal demand means the relative strength of the two trading countries for each other's produced commodity in terms of their own product. Mill, by reciprocal demand, meant the quantities of exports that a country would offer at different terms of trade, in return of changing quantities of imports.

Terms of trade is the relationship between the prices at which a country sells its exports and the prices paid for its imports. If the prices of a country's exports rise relative to the prices of its imports, it is said that its terms of trade have moved in a favourable direction, as it now receives more imports for each unit of commodities exported.

- **J.S. Mill's Approach**

J. S. Mill considered his theory of gains from trade in terms of his reciprocal demand theory. Ricardian approach of gains from trade was criticised on the ground that it could not explain the distribution of gains from trade among the trading countries. J.S. Mill, in an attempt to explain this distribution emphasised upon the concept of reciprocal demand that determines terms of trade. Terms of trade, the ratio of quantity imported to the quantity exported by a given country, decides how the gains from trade is distributed between the trading countries. The approach is analysed with the help of offer curve.

In this unit, we shall discuss only this approach of distribution of gains from trade using the concept of offer curve.

- **Taussig's Approach**

The approach put forward by F. W.Taussig is to some extent different from the other approaches. His analysis was directed towards rise in income as the gain from international trade. According to Taussig, trade brings about an expansion of the export industrythat resulted in requirement of more labour. The employers start offering higher wages in order to absorb more labour in this industry. The economy witnesses a rise in the money wages in other industries as well;otherwise, there will be accumulation of inefficiency in them. There is a general rise in money incomes. The people of a country canincrease purchases of both domestically produced and imported goods. The country attains higher level of welfare.

- **Modern Approach**

  Both the trading countries gain from trade when the trade takes place based on the principle of comparative advantage. The modern approach proposed that this gain from trade can be decomposed into two types of gains — one gains from exchange and the other gains from specialisation. Consumers of both the trading countries enjoy a higher level of satisfaction, partly because of improvement in terms of trade (exchange) and partly due to greater specialisation in the use of economic resources of the country.

5.3.3 Factors determining Gains from Trade

Few important factors that determine gains from trade are discussed here briefly.

- **Differences in cost ratios:**

  International trade takes place when the domestic cost ratios of two commodities between two countries are different. Stated alternatively, the gains from trade depend on differences in comparative cost ratios of the two countries engaged in trade. If a country A has a comparative advantage in the production of commodity X, and country B has such advantage in production of commodity Y, then both the countries will gain from trade. However, the volume of gain will be dependent on differences of comparative cost in these two countries. If for some reason, the cost of production of X in country A falls, then country B will gain from trade. Again, country A will gain from trade if cost of production of commodity Y in country B falls. The larger the differences in the comparative cost ratios, the larger are the volumes of gain.

- **Reciprocal Demand:**

  As stated earlier, the terms of trade is determined by reciprocal demand (the relative strength and elasticity of demand of one country for the commodity of the other country in exchange for

its own commodity). If it is found that country A's demand for commodity Y is more inelastic, then the terms of trade will move in favour of country Â and against country A. The gain from trade of country Â will be more compared to country A. On the contrary, if demand of country A for commodity Y is more elastic, then the terms of trade will be in favour of country A. Country A will gain more from trade compared to country B. Thus, a trading country whose demand for foreign goods is highly elastic gains the most from trade.

- **Income level:**

  A country having a steady demand for its commodity in other countries will have a high level of money income because high demand for its exports will help in expanding the export industries, as a result of which the level of money wages will rise in these industries. The money wages in other industries will also rise at least to the level of wages in export industries due to competition for labour leading to increase in money income in the country. If the prices of imported foreign goods be low, people of this country will gain consuming cheap imported goods. On the other hand, a country with high demand for imported goods will have low money incomes and high prices, as a consequence of which people will lose consuming those imported goods.

- **terms of trade:**

  It is already learnt that the terms of trade is the rate at which one commodity of a country is exchanged for another commodity of the other country. In both J.S. Mill's theory and modern theory, terms of trade determines gains from trade. But when international trade takes place, the terms of trade change and are different from the domestic terms of trade.

- **Other factors:**

  Gains from trade also are influenced by the nature of exported commodities (*exporter of primary commodities having*

unfavourable terms of trade and country exporting manufactured commodities gaining more), Technological advancement(*country with advanced technology and abundance of capital gaining more from trade*), productive efficiency and size of the country.



CHECK YOUR PROGRESS

Q.1: State whether the following statements are True (T) or False (F)

(i) Reciprocal demand theory was advocated by J.S. Mill (T / F)

(ii) Terms of trade is determined with help of cost difference (T / F)

Q.2: What does comparative cost theory suggest ? (Answer in about 40 words)

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Q.3: On what factors gain from trade depends? (Answer in about 40 words)

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5.4 OFFER CURVE

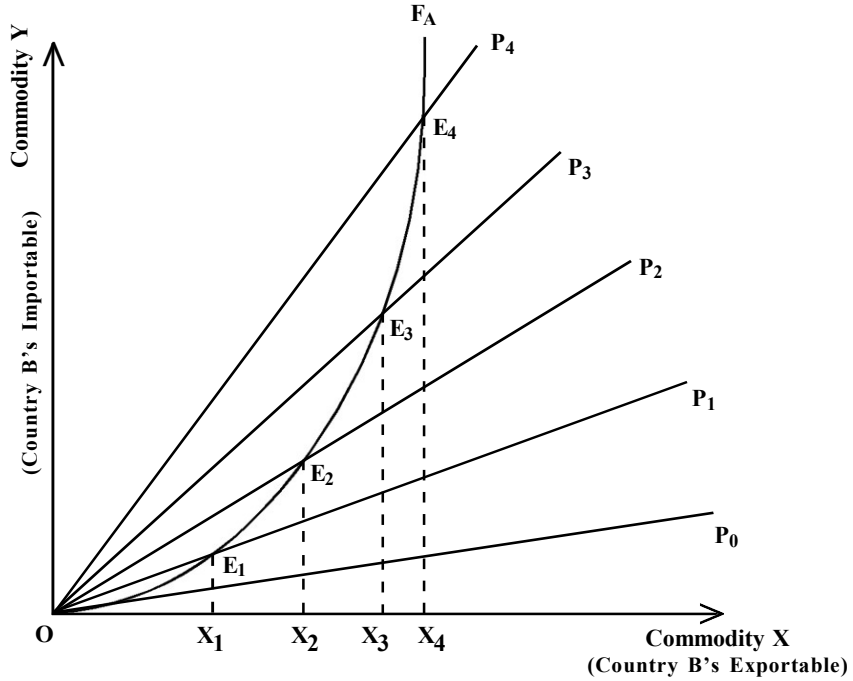
5.4.1 Derivation of Offer Curve

Offer curve or trade offer curve shows the quantities of any commodity one country is willing to offer in exchange of certain quantities of another commodity produced in the second country at different relative prices. The concept of offer curve was first put forward by Marshall and Edgeworth. However, Mill's idea of reciprocal demand is important to construct offer curves.

Let there are two countries A and B. Two commodities X and Y are produced. The exportable commodity of country A is X,

i.e. commodity X is importable of country B. Similarly, the exportable commodity of country B is Y, *i.e.* commodity Y is importable of country A. Let us assume that the price of commodity X increases relative to price of Y under constant cost condition. In this context, let us derive the offer curve of country A using the following diagram.

Fig 5.1: Offer curve for country A

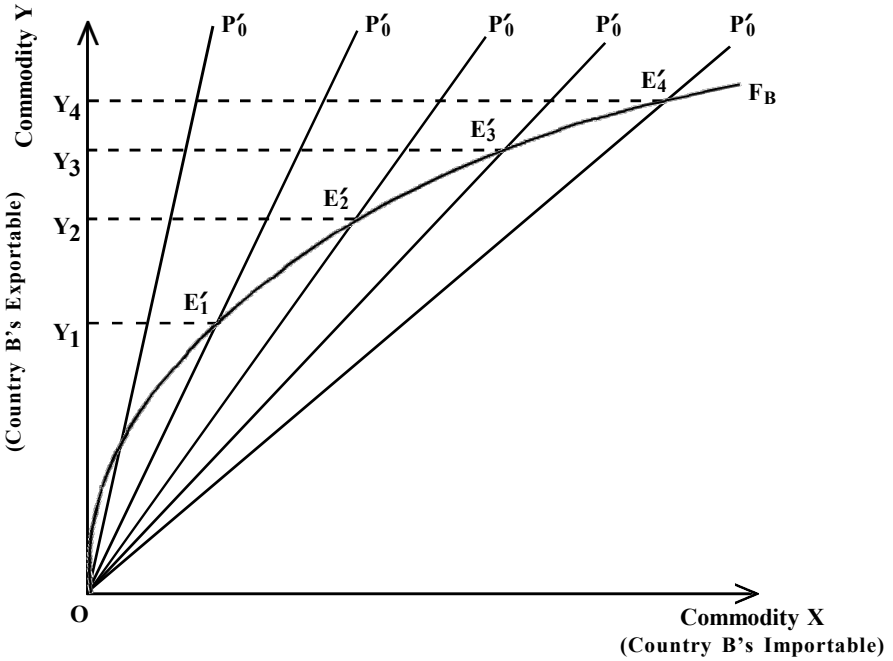


Commodity is plotted along the horizontal axis and commodity Y along the vertical axis.If country A uses all its available resources for producing commodity X, the maximum quantity of X that can be produced is OX_0. The initial price ratio line for the two commodities is OP_1. The price ratio line becomes steeper with the rise in relative price ratio of commodity X to commodity Y. The gradually changed price ratio lines are shown by OP_2, OP_3 and OP_4 in the diagram. If the price ratio line is OP_0, country A will not trade as it represents a very low price of commodity X in terms of commodity Y. The points of exchanges are E_1, E_2, E_3 and E_4. As stated above, the maximum quantity of commodity X that is produced in country A using all resources is OX_0. If price ratio line is OP_1, country A keeps X_1X_0 quantity of commodity X for consumption

by home people and remaining OX_1 will be exchanged with E_1X_1 units of commodity Y at point E_1.Similarly, at points of exchange E_2, E_3 and E_4, the units exchanged between countries A and B are respectively OX_2 of X and E_2X_2 of Y, OX_3 of X and E_3X_3 of Y and OX_4 of commodity X and E_4X_4 of commodity Y. In other words, country A exports OX_i units of commodity X in exchange of E_iX_i units of commodity Y from country B (where i = 1, 2, 3, 4). The offer curve OF_A (also known as reciprocal demand curve) of country A can be traced out by joining the points E_1, E_2, E_3 and E_4 that gives the demand of country A for commodity Y.

In the same way, offer curve for country B can be constructed. In the diagram, commodity X or country B's importable commodity is plotted along the horizontal axis and commodity Y or country B's exportable commodity is plotted along the vertical axis.

Fig 5.2: Offer curve for country B

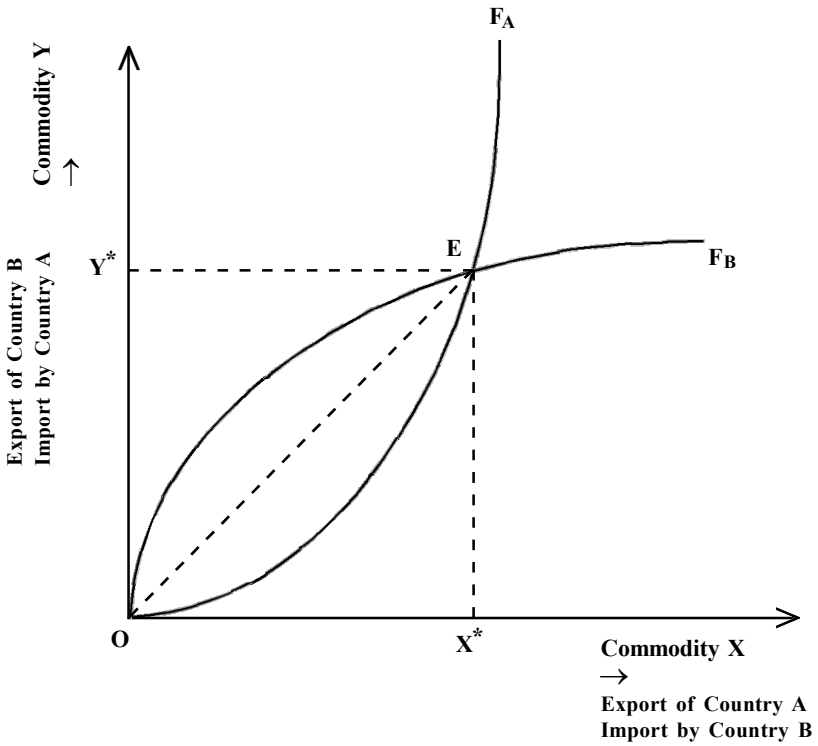


The steepness of the price ratio line decreases when the price of commodity Y increases relative to that of commodity X. In the same logic as explained above for country A, the offer curve OF_B for country B can be derived.

5.4.2 Equilibrium Terms of Trade

The equilibrium terms of trade is determined when the export of one country is equal to imports by other country for different commodities. Graphically, this equilibrium point is determined at the intersection point of offer curves of two trading countries.

Fig 5.3: Equilibrium terms of trade



The diagram shows that offer curve of country A (OF_A) intersects the offer curve of country B (OF_B) at point E. The equilibrium terms of trade is indicated by the slope of ray OE. It may be noted that, the export of commodity X by country A = the import of commodity X by country B = OX*. Similarly, the import of commodity Y by country A = the export of commodity Y by country B = OY*. Therefore, there is equilibrium in both exports and imports.

5.4.3 Elasticity of Offer Curve

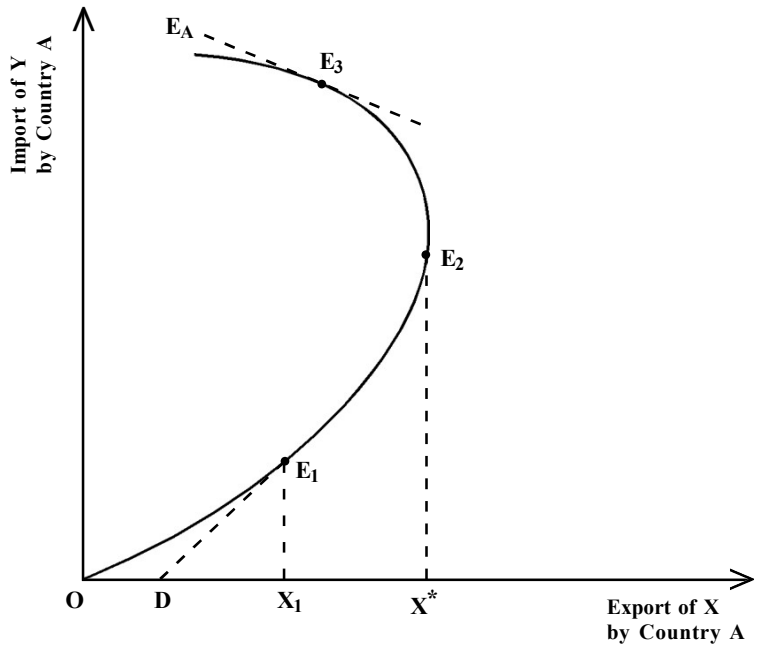
In this section, we shall discuss about derivation of a geometric measure for elasticity of offer curve. Country A is the exporter of

commodity X and importer of commodity Y. If the quantity of X exported is shown by x and quantity of Y imported is y, then elasticity of offer curve may be expressed as

$$e = \frac{proportionate\ change\ in\ imports}{proportionate\ change\ in\ exports} = \frac{dy/y}{dx/x} = \frac{dy}{dx} \cdot \frac{x}{y}$$

Let us now consider the following diagram, where export of commodity X by country A is plotted along the horizontal axis and import of commodity Y by country B is plotted along the vertical axis.

Fig 5.4: Elasticity of offer curve



OF_A is the offer curve for country A. Let E_1 be any point on the offer curve in the upward rising positively sloped part. Let DE_1 be a tangent to the offer curve at point X_1. Here, at point E_1quantity of x is OX_1, y is E_1X_1. Therefore, following the above formula, elasticity of offer curve at point $E_1$is

$$e = \frac{E_1X_1}{OX_1} \cdot \frac{OX_1}{DX_1} = \frac{E_1X_1}{DX_1}$$

The elasticity of offer curve is greater than unity. Similarly, at point E_2, since the slope of the offer curve is infinity and the tangent

is parallel to the vertical axis, the elasticity also tends to infinity. At point E_3, elasticity of offer curve is negative.

5.5 DISTRIBUTION OF GAINS FROM TRADE IN TERMS OF OFFER CURVES

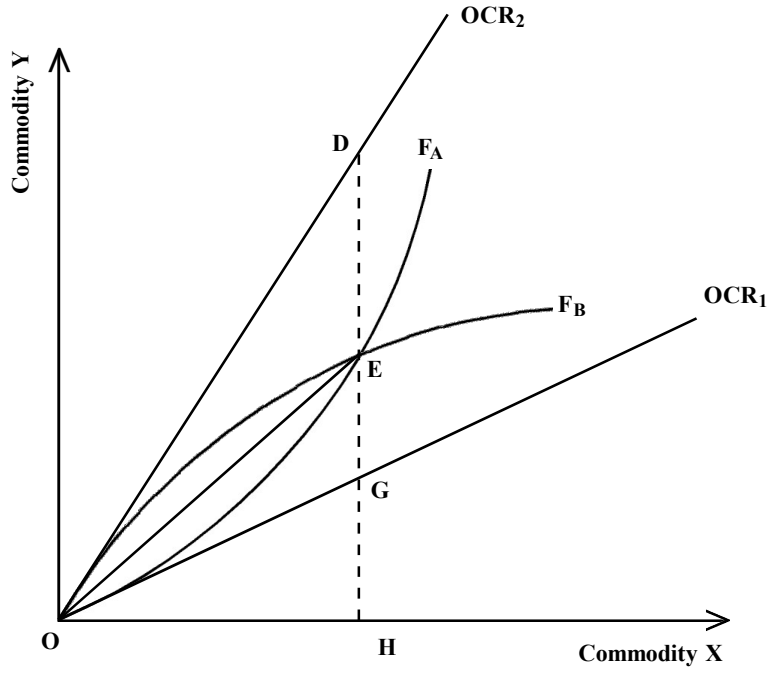
John Stuart Mill, in terms of his reciprocal demand theory, has explained how trade takes place between countries and how gains from trade are distributed. According to him, reciprocal demand determines 'terms of trade'. This 'terms of trade' determines each trading country's distribution of gains from trade. Now, what is terms of trade? Terms of trade is defined as the ratio of quantity of imports for a given quantity of exports of a country. Ricardo explained the concept of cost-difference, but could not explain terms of trade. Mill proposed his theory based on the foundations laid down by Ricardo. Given the cost-difference, the demand for commodities in both the countries determines terms of trade.

In the next paragraphs, we shall discuss how terms of trade determine the distribution of gains from trade for both the countries. Let there be two countries A and B. Two commodities are produced X and Y. Let 1 unit of labour in country A can produce 20 units of commodity X or 10 units of commodity Y. Again, 1 unit of labour in country B can produce 8 units of commodity X or 16 units of commodity Y. Therefore, the domestic terms of trade (exchange ratio) is x : y = 2 : 1, where x and y are the quantities of commodities. 1 unit of X will, therefore, be exchanged for ½ units of Y in country A. Similarly, 1 unit of commodity X in country B will be exchanged for 2 units of Y, i.e. y : x = 1 : 2.Mill proposed that reciprocal demand will determine actual exchange ratio of commodities X and Y. It is the relative strength and demand elasticity of each country engaged in trade for each other's product in terms of those countries' own product. If country A's demand for commodity Y is less elastic or inelastic, then the terms of trade will be closer to domestic price ratio (x : y = 2 : 1 *or* y : x = 1 : 2) and will favour country B and disfavour country A.Country B will gain more compared to country A. Conversely, if country A's demand for commodity Y is more elastic and country B's demand for commodity X is less elastic or inelastic,

the terms of trade will be close to domestic exchange ratio (x : y = 1 : 2). Country A will get the terms of trade in favour gaining more compared to country B *i.e.*, terms of trade will disfavour country B and the gain will be less compared to that of country B.

In section 5.4, we have seen how offer curve can be constructed for the trading countries. Let us now analyze with the help of offer curves how gains from trade may be distributed. As stated in earlier section, let OF_A be the offer curve of country A, while OF_B be the offer curve of country B.

Figure 5.5: Distribution of gains from trade using offer curves



Commodity X is plotted along the horizontal axis and commodity Y along the vertical axis. OCR_1 and OCR_2 are the domestic cost ratios of producing commodities X and Y in countries A and B. These two rays are the boundaries within which the terms of trade should lie. The offer curves $OF_A$and OF_B intersect each other at E. The equilibrium terms of trade is the slope of the line OE. The cost ratio for country A domestically is GH units of Y for OH units of X. But at point E, country A gets EH units of Y in exchange

for OH units of commodity X. Country A gains EH – GH = EG units of commodity Y due to trade with country B. On the other hand, the domestic cost ratio for country B is DH units of Y for OH units of X. But country B imports OH units of commodity X in exchange for EH units of commodity Y. Thus, due to trade with country A, country B could gain DH – EH = DE units of Y by sacrificing only EH units of Y instead of DH units. So, both the countries could gain by engaging in trade, where the gain depends on respective countries' domestic cost ratio and terms of trade.

5.6 TRADE AS AN ENGINE OF ECONOMIC GROWTH

International trade contributes significantly in economic development of any country. Economists, from time to time, have put forward different theories in favour of international trade as a promoter of economic growth and development.

The classical and neo-classical economists favoured trade as a growth promoting factor. Classical economists Adam Smith and David Ricardo had supported trade for economic development based on absolute advantage and comparative advantage respectively. The classical economists were in favour of laissez-faire doctrine (policy of minimum governmental interference in the economic affairs) in international trade which they believe would enhance welfare of the countries. Robertson designated international trade as an 'engine of growth'.

P. A. Samuelson and W. D. Nordhaus also advocated free trade and were of the view that free trade allows each country to expand its production and consumption possibilities.

According to A. C. Cairn, trade gives birth to the urge to develop the knowledge and experience that make development possible, and the means to accomplish it.

G.Haberler was of the opinion that trade provides capital goods, machinery, raw materials that are indispensable for economic development; helps in the dissemination of technological knowledge, transmission of ideas, import of expertise, skills, entrepreneurship, etc.; helps in maintaining free competition.

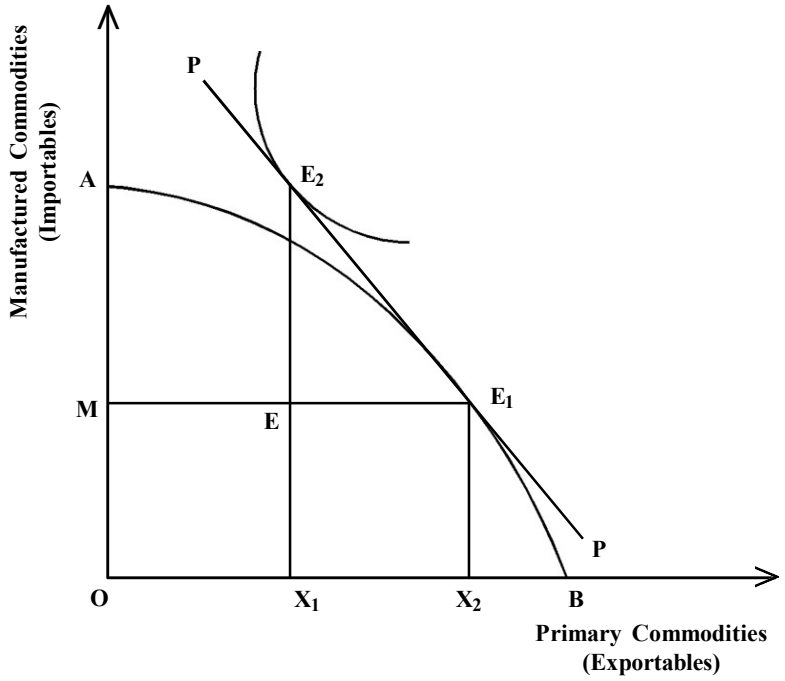
Let us now discuss how international trade contribute to economic development of the trading countries.

- Firstly, a trading country generally specialises in the production of some commodities in which it has comparative advantage. These commodities are exported. The country also adopts division of labour. Resources are more efficiently utilised. According to J.S. Mill, trade adds to the efficiency of production.
- Due to proper division of labour and improvement in mechanisation as well as more scope of innovation, productivity increases in the trading countries.
- According to Prof. J. R. Hicks, international trade creates opportunity for exchanging commodities having less growth potential with commodities with more growth potential.
- Trade helps to explore the means to import capital goods, the basic necessity to initiate the process of economic development. The import of machinery, vehicles, technological know-how, medicines, chemicals, etc. benefits developing countries. Moreover, the movement of capital from developed countries facilitates growth process in theunderdeveloped countries.
- Trade helps in better allocation of resources for promoting exports as well as substituting imports.
- International trade stimulates the process investment and raises rate of capital formation. Trade facilitates stability in the prices of commodities.
- Underdeveloped or less developed countries can better their well-being by specialising in and exporting the relatively less expensive domestic commodities and importing commodities that are relatively more expensive. These countries can industrialize themselves by importing required capital goods from developed countries, and in exchange may export primary commodities. The balance of payment problem may thus be solved.

- Due to specialisation, for most less developed countries, comparative advantage in use of labour, the abundant factor, helps to expand labour-intensive production instead of more modern, capital-intensive production. International trade thus stimulates employment.
- According to Watkins, due to international trade, many underdeveloped countries specialise in the production of one or two staple commodities. Export of these commodities, if possible, may widen the market. Unemployment may be reduced. Output will be more.
- International trade may assist in transforming subsistence sector to monetised sector, if the farm products get market. Income and standard of living of the farmers improves.
- Haberler was of the view that due to trade, international competition increases, eliminating inefficient .monopolies and efficiency.
- Production for exportable commodities and increased imports of goods bring about a chain of fine-tuning within the economic system that ultimately induces not only the growth of export industries, but also promotes the growth of infrastructure and services sector.
- The export sector allied ancillary industries expand rapidly with increase in exports, creating more and more investment opportunities. Foreign direct investments also add tothe investment substantially in the export sector of the economy.
- Trade encourage competition among the producers. Quite naturally, the producers in all the countries are bound to improve the quality of products at the least costs in order to survive in the competition.
- Full employment does not prevail in less developed countries. According to Hla Myint, actual output is always less than its potential output as a consequence of unemployment. Utilising country's population fully, those countries can produce more commodities. The supply may even exceed domestic demand. This excess supply may be exported. Introduction of international trade opens up possibility of 'vent for surplus' in these countries. The excess supply

of primary commodities can be exported in exchange for manufactured commodities from developed countries. Let us consider the following diagram.

Figure 5.6: Vent for surplus



Primary commodities or the exportable are plotted along the horizontal axis and manufactured goods or the importable are along the vertical axis. AB is the production possibility curve using the resources fully. Let E be any point below the production possibility curve before trade when the resources are not utilised fully. The country produces OX_1 units of primary commodities and OMunits of manufactured commodities. Due to trade, country produces more primary commodities and point E shifts to point E_1 on the production possibility curve. Country produces OX_2 units of primary commodities, an excess of X_1X_2 units without reducing the production of manufactured commodities. PP is the terms of trade line tangent to the production possibility curve at E_1. Now, EE_1 or X_1X_2 units of primary commodities are exchanged with E_2E units of manufactured commodities implying that international trade has taken the country to E_2, a point outside the production possibility curve AB.



CHECK YOUR PROGRESS

Q.4: State whether the following statements are True (T) or False (F)

(i) The concept of offer curve was first put forward by Marshall-Edgeworth. (T / F)

(ii) Production possibility curve is convex to the origin (T / F)

Q.5: How Mill's theory is advancement over Ricardo-Malthus theory? (Answer in about 40 words)

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Q.6: How does trade helps underdeveloped countries or LDCs? (Answer in about 40 words)

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5.7 LET US SUM UP

- All countries, be it developed or developing or underdeveloped, engage in trade among themselves that leads to economic development of the trading countries in particular and the world in general. A country with no trade (closed economy) cannot prosper economically.
- The countries engaged in trade can gain from trade, though the distribution of gains may vary between countries.
- Several approaches on these gains have been proposed from time to time by eminent economists.
- Adam Smith was of the view that gain from trade is a result of division of labour and specialisation.
- According to Ricardo, a country exports only that commodity in which it has comparative advantage.

- Mill explained his theory based on the concept of reciprocal demand that determines terms of trade. The distribution of gains from trade is explained in his theory.
- The modern approach divides gains from trade into gains from exchange and gains from specialisation.
- This gain from trade is dependent on various factors, some of which are difference in cost ratio, reciprocal demand, income level, terms of trade, nature of exported commodities, advancement in technology, efficiency in production, size of the country, *etc.*



5.8 FURTHER READING

(1) Heller H R (1998), Consumption & International Trade, *International Trade: Theory and Empirical Evidence*, Prentice-Hall of India Private Limited, New Delhi

(2) Heller H R (1998), Equilibrium in International Trade, *International Trade: Theory and Empirical Evidence*, Prentice-Hall of India Private Limited, New Delhi

(3) Lekhi (2019), Foreign Trade and Economic Development, *The Economics of Development and Planning*, Kalyani Publishers, Ludhiana.

(4) Mannur H G (2018), International Trade Equilibrium: Neo-classical Analysis, *International Economics,* Vikas Publishing House, New Delhi

(5) Mannur H G (2018), The Classical Theory of International Trade: Comparative Advantage Model, *International Economics,* Vikas Publishing House, New Delhi

(6) Sarkhel J & Salim S. (2011), International Equilibrium, *International Economics*, Book Syndicate (P) Ltd., Kolkata

(7) Sodersten B. & Reed G. (1994), International Economics, Palgrave Pearson.



5.9 ANSWERS TO CHECK YOUR PROGRESS

Ans. to Q No 1: (i) True, (ii) False

Ans. to Q No 2: Comparative cost advantage theorysuggests trade to be beneficial for all countries if they specialise in the production of those goods in which they have comparative advantage. A country will export those commodities in which it has comparative cost advantage and will import those commodities in which it has comparative disadvantage.

Ans. to Q No 3: Gain from trade is dependent on various factors like difference in cost ratio, reciprocal demand, income level, terms of trade, nature of exported commodities, advancement intechnology, efficiency in production, size of the country, *etc.*

Ans. to Q No 4: (i) True, (ii) False

Ans. to Q No 5: Ricardo explained the concept of cost-difference, but could not explain terms of trade – theratio of quantity of imports for a given quantity of exports of a country. Mill proposed his theory based on the foundations laid down by Ricardo. Given the cost-difference, the demand for commodities in both the countries determines terms of trade.

Ans. to Q No 6: Trade helps underdeveloped countries by the movement of basic capital goods, like import of machinery, vehicles, technological know-how, medicines, chemicals, etc. benefits from developed countries. The export of primary commodities to developed countries also facilitates welfare in underdeveloped countries.



5.10 MODEL QUESTIONS

Short questions (Answer in about 150 words)

Q.1: What is meant by gains from trade?

Q.2: What is comparative advantage?

Q.3: What is meant by reciprocal demand in the context of international trade?

Q.4: What is an offer curves?

Q.5: What is meant by terms of trade?

Essay-type Questions (Answer each question in about 300-500 words)

Q.1: Discuss the various approaches to gains from trade.

Q.2: Explain the distribution of gains from trade between trading countries with help of offer curves.

Q.3: Discuss Mill's approach to gains from trade.

Q.4: Discuss the factors that may impact international trade.

Q.5: Discuss how trade may be considered as an engine of growth.

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UNIT 6: TERMS OF TRADE

UNIT STRUCTURE

6.1 Learning Objectives

6.2 Introduction

6.3 Meaning of Terms of Trade

6.4 Net Barter or Commodity Terms of Trade

6.5 Gross Barter Terms of Trade

6.6 Income Terms of Trade

6.7 Factors Affecting Terms of Trade

6.8 International Trade and Domestic Prices

6.9 Relation of Foreign Trade to National Income

6.10 Let Us Sum Up

6.11 Further Reading

6.12 Answers to Check Your Progress

6.13 Model Questions

6.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- put forward the meaning of terms of trade
- explain the factors affecting terms of trade
- explain the measurement and distribution of terms of trade
- discuss trade as an engine of growth.

6.2 INTRODUCTION

This unit aims to familiarise you tothe concept of terms of trade, commodity terms of trade, gross barter terms of trade, income terms of trade, factors affecting terms of trade, measurement and distribution of terms of trade.

The theory terms of trade and commodity terms of trade are the integral parts of international economics. Terms of trade refers to the rate at which goods of one country is exchanged for the goods of another country. It is a measure of the purchasing power of exports of a country in terms of

its imports, and is expressed as the relation between export prices and import prices of the goods.

The terms of trade of a country are influenced by various factors such as reciprocal demand, changes in factor endowments, changes in technology, changes in tastes, economic growth, tariffs and devaluation etc.

6.3 MEANING OF TERMS OF TRADE

As already mentioned in the introductory section, "terms of trade" refers to the rate at which the goods of one country is exchanged for the goods of another country. As such, terms of trade is expressed as the relation between export price and import price. When export prices of a country rise relatively to its import prices, the terms of trade is said to have improved as the country can have larger quantity of imports in exchange for a given quantity of exports. On the other hand, when its import prices rise relatively to its export prices, its terms of trade are said to have worsened.

Equation/Formula: The terms of trade can be expressed in the form of equation as such:

$$\textbf{Terms of Trade} = \frac{\text{Price of Imports and Volume of Imports}}{\text{Price of Exports and Volume of Exports}}$$

The terms of trade are of economic significance to a country. If they are favourable to a country, it will be gaining more from international trade and if they are unfavourable, the loss will be occurring to it. When the country's goods are in high demand from abroad, i.e., when its terms of trade are favourable, the level of money income increases. Conversely, when the terms of trade are unfavourable, the level of money income falls.

Measurement of Change in Terms of Trade: The changes in terms of trade can be measured by the use of an import and export index number. We here take only standardized goods which have internal market and give them weight according to their importance in the international transactions. A certain year is taken as base year and the average of the countries import and export prices of the base year is called 100. We then work out the index of subsequent year. These indices then show as to how

the commodity terms of trade move between two countries. The ratio of exchange in export prices to the change in import prices is put in the form of an equation as under:

$$\textbf{Commodity Terms of Trade} = \frac{\text{Change in Export Prices}}{\text{Change in Import Price}}$$

Algebraically, it can be expressed:

$$T^e = \frac{Px^1}{Px^0} \div \frac{Pm^1}{Pm^0}$$

Here, T^e represents commodity terms of trade; Px^1 represents export price index for the required (or current) year; Px° Represents exports price index of the base year; Pm^1 represents indices of prices of the required year and Pm° represents indices of prices for the base year.

We now apply the above formula by taking a specific example. We take the indices of export and import prices for the year 2000 as 100. We assume also that the export prices index for the year 2020 is 530 and import prices index 580. The ratio of change in export prices to the change in import prices will be:

$$T^e = \frac{530}{100} \div \frac{580}{100}$$

$$T^e = \frac{530}{100} \times \frac{580}{100}$$

Thus, Te = 0.91

The above example shows that the prices of imports have increased more than the exports prices. The terms of trade are unfavourable to the country by 9 per cent. In other words, the country has to pay 9 per cent more for a given amount of imports.

6.4 NET BARTER OR COMMODITY TERMS OF TRADE

As discussed in the introductory section of the unit, the net barter or commodity terms of trade is the ratio between the price of a country's export goods and import goods. To measure the changes in commodity terms of

trade over a period, the ratio of change in export prices and import prices is taken. The formula which is used to measure the commodity terms of trade is:

$$Tc = \frac{\frac{P_{x1}}{P_{x0}}}{\frac{P_{m1}}{P_{m0}}}$$

where T_c stands for the commodity terms of trade, P for the price, the subscript x for exports and m for imports, 0 for the base year and 1 for the current year. The concept of the commodity or net barter terms of trade has been used by the economist to measure the gain from international trade.

6.5 GROSS BARTER TERMS OF TRADE

From the above discussion, we have got an idea about net barter terms of trade. But this measure of net barter terms of trade has its limitations. To make up for the deficiency realised in the net barter terms of trade, Professor Taussig devised the concept of gross barter terms of trade. He pointed out that instead of relating import and export prices, we should relate quantities of imports and exports. In this section of the unit, a discussion is made regarding gross barter terms of trade. The gross barter terms of trade is the ratio between the quantities of a country's imports and exports.

Symbolically,

$$Tg = \frac{Q_m}{Q_x}$$

where, Tg stands for gross barter terms of trade, Q_m for quantities of imports, Q_x for quantities of exports.

It can be easily accessed from the above equation that higher the ratio between quantities of imports and exports, the better the gross barter terms of trade. To measure the changes in gross barter terms of trade over a period, the index number of the quantities of imports and exports in base

period and the end period are related to each other. The formula which is used for measuring gross barter terms of trade is:

$$T_g = TC = \frac{\frac{Q_{m1}}{Q_{m0}}}{\frac{Q_{x1}}{Q_{x0}}}$$

Taking 2001 as base year and expressing India's both import and export quantities as 100, if we find that the index of quantity imports had risen to 160 and that of quantity exports to 120 in 2011, then the gross barter terms of trade has changed as follows:

$$T_g = \frac{\frac{160}{100}}{\frac{120}{100}} = 133.33$$

It implies from the above equation that the gross barter terms of trade has registered an improvement by approximately 33 percent in 2011 compared with 2001. On the other hand, if the quantity of import index has risen by 130 and that of quantity exports by 180, then the gross barter terms of trade would be 72.22

$$T_g = \frac{\frac{130}{100}}{\frac{180}{100}} = 72.22$$

The above equation implies that there was deterioration in the terms of trade by 18 percent in 2011 over 2001.

6.6 INCOME TERMS OF TRADE

It is the desire of every country that it should earn the maximum of income out of international exchange by taking permanent favourable terms of trade. In order to secure maximum gain, the country will try to increase the volume and value of exports and reduce the volume of imports and buy it also from the cheapest market. If the country is having a monopoly in the supply of a commodity and the demand for products is inelastic, then it can

fetch more income. Incase the terms of trade moveagainst the country, then there will be drain of national income, the commodity terms of trade depend upon the following factors:

- Ratio of import prices to export prices.
- The volume and value of exports and imports.
- The condition attached to export and import such as insurance charges, supply of machinery and shipping, etc.

If the terms of trade are favourable which may be due to monopolistic supply or inelastic demand or cheap and better kind of exports, etc., the terms of trade will be favourable and the national income will rise. In case of terms of trade are unfavourable over a period of time, the national income will fall.

It was the famous economist G. S. Dorrance who has improved upon the concept of the net barter terms of trade by formulating the concept of the income terms of trade. The index takes into account the volume of exports of a country and its export and import prices (the net barter terms of trade). It shows a country's changing import capacity in relation to changes in its exports. Thus, the income terms of trade are the net barter terms of trade of a country multiplied by its export volume index. It can be expressed as:

$$T_y = T_{c.}.Q_x = \frac{\text{Index of Export Prices x Export Quantity}}{\text{Index of Import Prices}}$$

where T_y is the income terms of trade, T_c the commodity terms of trade and Q_x the export volume index.

It is required to mention here that Albert H. Imlah calculates this index by dividing the index of the exports by an index of the prices of imports. He calls it the "Export Gain from Trade Index"

As for example, taking 2001 as base year, if Px = 140, P_m = 70 and Q_x = 80 in 2001, then:

$$P_Y = \frac{140 \text{ x } 80}{70} = 160$$

It implies that there is improvement in the income terms of trade by 60 percent in 2011 compared with 2001. A rise in the index of income terms

of trade implies that a country can import more goods in exchange for its exports. A country's income terms of trade may improve but commodity terms of trade may deteriorate. Taking the import prices to be constant, if export prices fall, there will be an increase in the sales and value of exports.



CHECK YOUR PROGRESS

Q 1: State whether the following statements are True or False.

(a) There is a difference between gross and net barter terms of trade. (True/False)

(b) Specialisation in production through international trade results in increase in consumption of a country. (True/False)

Q 2: What is the income terms of trade? (Answer in about 30 words)

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6.7 FACTORS AFFECTING TERMS OF TRADE

Form the above discussion, we have learnt about net, gross and income terms of trade. In this section of the chapter, we will discuss about factors affecting terms of trade of a country. The terms of trade of a country are influenced by a number of factors which are discussed below.

- **Reciprocal Demand:** The terms of trade of a country depends upon reciprocal demand, i.e. "the strength and elasticity of each country's demand for the other country's product". Suppose there are two countries, Germany and England, which produce linen and cloth respectively. If Germany's demand for England's cloth becomes more intense (inelastic), the price of cloth rises more than the price of linen and the commodity terms of trade will moves against Germany and in favour of England. On the other hand, if England's demand for Germany's linen becomes more intense, the price of linen will rise more than the price of cloth, and the commodity terms of trade will move in favour of Germany and against England.

- **Changes in Technology:** Technological changes also affect terms of trade of a country. The terms of trade may improved or deteriorate with technological change.
- **Changes in Factor Endowments:** Changes in factor endowments of a country affect its terms of trade. Changes in factor endowments may increase exports or reduce them. With the taste remaining unchanged, this may lead to changes in the terms of trade.
- **Changes in Tastes:** Changes in tastes of the people of a country also influences its terms of trade with another country. Suppose England's tastes shifts from Germany's linen to its own cloth. In this situation, England would export less cloth to Germany and its demand for Germany's linen would also fall. Thus England's terms of trade would improve. On the contrary, a change in England's taste for Germany's linen would increase its demand and hence the terms of trade would deteriorate for England.
- **Economic Growth:** Economic growth is another important factor which affects the terms of trade. The rising of a country's national product or income over time is called economic growth. Given the taste and technology in a country, an increase in productive capacity may affect favourably or adversely its terms of trade.
- **Tariffs:** Tariff is a duty tax or duty imposed on goods when they enter and leave the national boundary. Tariff has an impact on the terms of trade of the country. An import tariff generally improves the terms of trade of the importing country.
- **Devaluation:** Devaluation raises the domestic price of imports and reduces the foreign price of exports of a country devaluing its currency in relation to the currency of another country. The effects of devaluation on the terms of trade have been much debated among economists. According to Prof. Fritz Machlup, *"Devaluation is supposed to improve the balance of trade. A reduction in the physical volume of imports in relation to physical volume of exports constitutes an adverse change in the gross barter terms of trade."*

Thus, devaluation will be successful only if the gross barter terms of trade become adverse.



CHECK YOUR PROGRESS

Q 3: State whether the following statements are True or False.

(a) Tariff has an impact on terms of trade of a country. (True/False)

(b) Professor Taussig devised the concept of gross barter terms of trade. (True/False)

Q 4: How does devaluation help in improving balance of trade? (Answer in about 30 words)

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6.8 INTERNATIONAL TRADE AND DOMESTIC PRICES

To what extent are domestic prices influenced by trade? The literature examining episodes of trade liberalization in developing countries focuses on the pass-through of tariffs onto consumer prices. The tariff pass-through elasticity indicates the extent to which prices are reduced for a 1 per cent reduction in tariff rates. There are various channels through which tariffs affect prices. Earlier literature focused on the imperfect competition among exporters, and showed that foreign exporters with market power may not allow tariff reductions to be fully reflected in prices, as they find it optimal to absorb a portion of the price effect.

On the other hand, the recent literature shows that domestic factors also affect the transmission of prices from a country's border to consumers. This implies that pass-through rates may be different across regions within the same country. In developing countries, certain markets are quite isolated and do not have full access to the rest of the economy. The price transmission in such rural markets is found to be lower than in the well-connected urban markets. In India, a 100 per cent reduction in tariffs implied

a close to 68 per cent reduction in domestic prices in urban areas, but only about a 49 per cent reduction in rural areas. The local infrastructure, especially transportation facilities such as paved roads and railways, may further affect the rate at which trade policy influences local prices, and the distance to the border or the distance to major ports could also be of importance. For example, Mexican provinces that are closer to the US border are found to have much higher tariff pass-through rates. The price transmission in the manufacturing industry is as high as 70 per cent at the US border, but declines to about 40 per cent when moving 1,000km away, and to about 20 per cent at 2,000km.

Even when markets are not isolated and there are no regional differences, there are still various factors that may lead to low pass-through rates, or different pass-through rates across products. The organization of the domestic market is expected to play an important role. In China, cities with a higher share of state-owned enterprises have especially low pass-through rates, potentially due to inflexible price-setting policies at these enterprises. A city with an average sized private sector, by Chinese standards, has about a 31 per cent pass-through rate; this rate increases by about two percentage points with each 10 percentage point increase in the size of the private sector. The lack of competition among retailers may also affect price transmission. Recent evidence in the exchange rate pass-through literature shows that the retail sector plays an important role in the extent to which exchange rates pass through onto consumer prices. The market penetration of imports is also important in determining the average effect on the price of a commodity. If imported varieties constitute only a small share of the market, then the average effect would be smaller, and the expectation would be to observe less of an impact on a household's budget.

Metzler's paradox: Metzler's paradox indicates the possibility that an import tariff will reduce the price of the imported good. However, this is based on a theoretical idea. That is, that the possibility exists does not indicate that it is so in reality. Thus, economist LloyedMetzler simply argued that it could occur.

One of the fundamental assumptions for this paradox to be possible is that the country that imposes the tariff on the imported product must be a large country with power to affect world demand for said good. In addition, it must also be fulfilled that the internal demand for said good is inelastic. In other words, a supply curve that does not change.

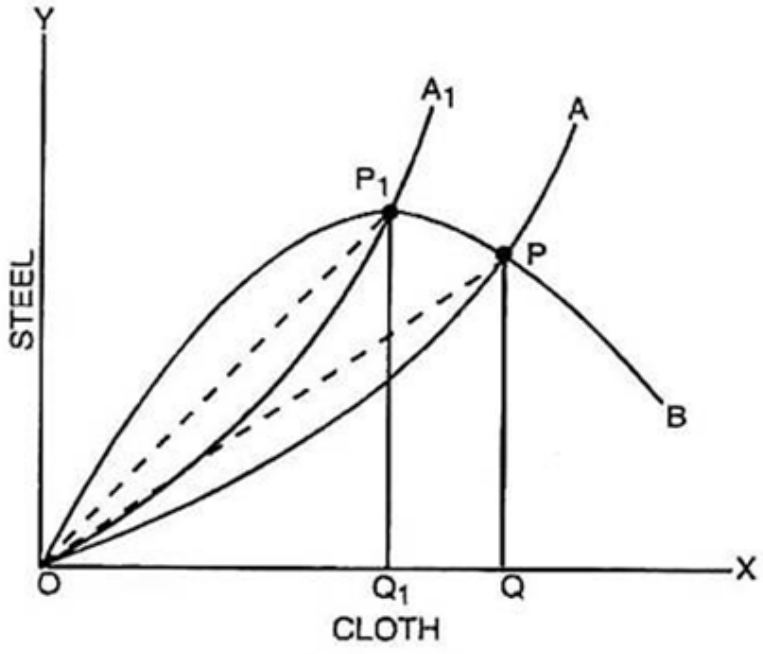
Explanation of the Metzler paradox: Metzler argued that a large country with the power to influence the demand for a certain product, when it imposes a tariff, could cause a reduction in demand that would lead to a drop in prices.

According to Metzler, if the country imposes a tariff on the import of a product, obviously the total demand will be affected. In theory, by the law of supply and demand, a reduction in demand shifts the curve to the left.

According to Metzler, the diversion of productive resources from export industry to import replacement industry, as supposed in Stopler-Samuelson theorem (refer to Unit 3), can take place only if the domestic price of export item falls relative to the import-substitute. However, the imposition of tariff and consequent improvement in terms of trade signifies a rise in the ratio of export price to import price (PX/PM). In such a situation, the price of the abundant factor is likely to rise relative to that of the scarce factor.

It may lead to the conclusion that the tariff, through improvement in terms of trade will make the income distribution better in the tariff-imposing country. This refutation of Stopler-Samuelson theorem attempted by L.A. Metzler, was called as Metzler's Paradox. This paradox can be illustrated through Figure 6.2.

Figure 6.2: Metzler's paradox



In Figure 6.2, cloth is the exportable commodity and steel is the importable commodity. OB is the offer curve of the foreign country B. It becomes less elastic and negatively sloped from point P1. In the free trade situation, the exchange takes place at P where OA, the offer curve of the home country A and OB intersect each other. The quantity imported of steel is PQ and that of exportable commodity is OQ.

The terms of trade are measured by (QM/QX) = (PQ/OQ) = Slope of Line OP. The slope of line OP expresses the ratio of price of exportable commodity cloth (PX) to the price of importable commodity steel (PM). When tariff is imposed by country A and its offer curve shifts to the left, the exchange takes place at P1 where the terms of trade are more favourable for the home country. It is measured by PQ/OQ1 slope of line OP1.

The quantity imported has risen after tariff. Since the slope of OP1 is greater than of OP, the ratio of prices of two commodities (PX/PM) is higher after tariff. It implies a rise in wage rate relative to return on capital. Thus tariff benefits the abundant factor labour and hurts the scarce factor capital.

Metzler recognized that expected result from the imposition of tariff was an increase in the price of importable commodity in the home market but the relative price of imports would fall in the home market, when the following condition would apply:

ž = (1 – k)

Where η = demand elasticity of country B (foreign country) for the exports of country A (tariff imposing country), (1-k) = The marginal propensity to consume of its exports in country A.

If the demand elasticity of foreign country B for the export of country A is larger than the marginal propensity to consume of the exportable [η < (1-k)], the price of import of country A will rise. If this condition does not apply and [η > (1- k)], the domestic price of imports will instead fall due to tariff. Metzler's conclusion will hold and Stopler-Samuelson theorem will become invalid.

Larger is the marginal propensity to consume of a country of its exportable, larger will be the amount of its tariff revenues spent on the consumption of exportable good. Thus there will be excess demand for exportable good. Consequently, the price of that good will rise. At the same time, if the foreign country's demand elasticity for exportable good of tariff-imposing country is low, the demand for this good in that country will fall very slightly despite a rise in its relative price.

So under these circumstances, the excess demand for exportable good due to tariff in the home market will imply a relative fall in the price of imports. If it happens, the return to the factor intensive in the exportable that is abundant factor will rise and the return to scarce factor intensive in the import good will fall. Thus the income distribution, subsequent upon the imposition of tariff, will become favourable to the abundant factor and unfavourable to the scarce factor.

Criticisms of the Metzler paradox

- Among the main criticisms of Metzler's paradox is that of the size of the country. For this to happen, a country must have enough power so that the reduction in its consumption affects the world total.

In this sense, based on Metzler's criterion, a small country could cause an increase in the prices of a certain product if it imposes a tariff. This is why it is so important to indicate that first this would only be applicable to very large and powerful countries and, second, otherwise the effect would be the reverse.

- Furthermore, some economists have criticized this paradox because it is based on a very basic assumption. It does not take into account the factors that influence changes in supply and demand. It assumes that everything else remains constant (ceteris paribus). However, in the global economy it is practically impossible that when one variable is affected it does not directly affect other variables. Additionally, it is difficult to find industries whose supply curve (paradox assumption) is perfectly inelastic or very inelastic.

6.9 RELATION OF FOREIGN TRADE TO NATIONAL INCOME

Foreign trade plays an important role in the economies of backward as well as advanced countries of the world. This can be seen from the fact that in some of the countries like Canada, United Kingdom, Australia, etc., more than 20 per cent of the national income is derived from international trade. In America the value of total imports and exports is about 15 per cent of the national income.

The impact of international trade can be judged from the balance of payments of a country. When the exports of a country exceed its imports, there is a flow of money income in the country and the level of national income and employment goes up. On the other hand, when imports exceed exports, there is a withdrawal of national income. How much the volume and value of exports of a country will be depends upon the extent of the market for the goods of the country. The national, income has influence on the export of a country. The imports are however, affected by the size of national income. The larger the size of national income, the greater are the imports and vice versa. The marginal propensity of imports of a nation is small in a closed economy and greater in an open economy.

Equation/Formula of National Income: The national income equation thus is:

$$Y = C + I + G + X - M$$

Here:Y stands for national income; C stands for consumption expenditure; I stands for gross private investment; G stands for government consumption expenditure; X stands for volume and value of exports of goods and services; M stands for volume and value of imports of goods and services.

International Trade Multiplier: The Keynesian concept of multiplier is also used for explaining the effect of balance of payments supplies and deficit on national income and employment of a country.

When the country is having an export surplus in its balance of payment, the excess money received by the exporters is spent on consumer goods within the country. The income thus passes on from exporters to the producers of consumers goods. How much the national income will rise depends upon the value of the multiplier. If the export surplus in the balance of payment of a country is Rs200 crore and the multiplier is 10, the national income will rise by Rs2000 crore. If the multiplier is 4, the increase in national income will be Rs800 crore.



6.10 LET US SUM UP

- Terms of trade refers to the rate at which goods of one country is exchanged for the goods of another country.
- The net barter or commodity terms of trade is the ratio between the price of a country's export goods and import goods.
- The gross barter terms of trade is the ratio of total physical quantity of imports and exports. It was professor Taussig who first devised the concept of Gross Barter terms of trade.
- Income terms of trade is measured by multiplying volume of exports with the net barter terms of trade.

- The terms of trade of a country are influenced by various factors such as reciprocal demand, changes in factor endowments etc.
- Economist all over the world has put so much emphasis on international trade that it can be considered as an engine of growth.



6.11 FURTHER READING

1) Mannur, H. G. (1995). *International Economics - Theory and Practice.* Noida: Vikash Publishing House Pvt. Ltd
2) Paul, R.R. (2006). *Money, Banking and International Trade*. Jalandhar: Kalyani Publisher
3) Rana, K. C. &Verma, K. N. (1998). *Macroeconomic Analysis*. Jalandhar: Vishal Publications.



6.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: (a) True (b) True

Ans to Q No 2: The income terms of trade is the net barter terms of trade of a country multiplied by its export volume index. It can be expressed as:

$$T_y = T_c.Q_x = \frac{\text{Index of Export Prices x Export Quantity}}{\text{Index of Import Prices}}$$

where T_y is the income terms of trade, T_c the commodity terms of trade and Q_x the export volume index.

Ans to Q No 3: (a) True (b) True

Ans to Q No 4: Devaluation is supposed to improve the balance of trade. A reduction in the physical volume of imports in relation to physical volume of exports constitutes an adverse change in the gross barter terms of trade. Thus devaluation will be successful only if the gross barter terms of trade become adverse.



6.14 MODEL QUESTIONS

Short Questions (Answer each question in about 150 words)

Q 1: What is meant by terms of trade? Distinguish between net and gross barter terms of trade.

Q 2: Evaluate the relationship between foreign trade and national income.

Q 3: Briefly discuss the concept of Metzler's paradox.

Long Questions (Answer each question in about 300-500 words)

Q 1: Explain the factors which influence the terms of trade of country?

Q 2: Explain the concept of income terms of trade.

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UNIT 7: TRADE, GROWTH AND IMMISERISATION

UNIT STRUCTURE

7.1 Learning Objectives

7.2 Introduction

7.3 Effects of Growth on Trade

- 7.3.1 Production Effects of Growth
- 7.3.2 Consumption Effects of Growth
- 7.3.3 Combined Production and Consumption Effects of Growth
- 7.3.4 Effects of Growth on Production, Trade, Welfare and Terms of Trade of a Small Country

7.4 Immiserising Growth

- 7.4.1 Explanation
- 7.4.2 Necessary Conditions for Immiserising Growth

7.5 Prebisch-Singer Thesis

- 7.5.1 Explanation
- 7.5.2 Criticisms

7.6 Let Us Sum Up

7.7 Further Reading

7.8 Model Questions

7.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- describe the relationship between economic growth and international trade
- analyse the production effect of growth on trade
- examine the consumption effect of growth on trade
- discuss the effects of growth on various economic aspects of a small country
- derive the meaning of immiserising growth and examine the immiserising growth in case of a developing and developed countries

- know the necessary conditions for immiserising growth
- critically examine the Prebisch-Singer hypothesis
- examine the how terms of trade get deteriorated in underdeveloped countries.

7.2 INTRODUCTION

The pure theory of international trade is concerned with given conditions of supply relating to factor endowments and technology. But these factors do not remain constant over the long-run. When they change, they bring about the growth of an economy. Economic growth may take the form of either factor accumulation or technical progress or both. This unit analyses the effects of factor accumulation or growth on production, consumption and terms of trade. Further, the concept and a few issues relating to immiserising growth has been discussed. Finally, the Prebisch-Singer hypothesis has also been discussed.

7.3 EFFECTS OF GROWTH ON TRADE

Economic growth has production and consumption effects on international trade.

7.3.1 Production Effects of Growth

As the process of economic growth facilitates the increased supplies of factor inputs, there can be some change in the domestic output of exportable commodities. The increased production of exportable goods brings about an expansion in the volume of trade. The large production of importable goods, on the other hand, causes a contraction in the volume of trade.Although the effect of factor growth upon production was analysed by Rybczynski in a quite simple manner, a more elaborate analysis on this issue was made by H.G. Johnson. He identified growth as neutral, export-biased, ultra-export biased, import-biased and ultra-import biased.

Growth is said to be neutral, when the output of both exportable and importable goods increases in the same proportion,

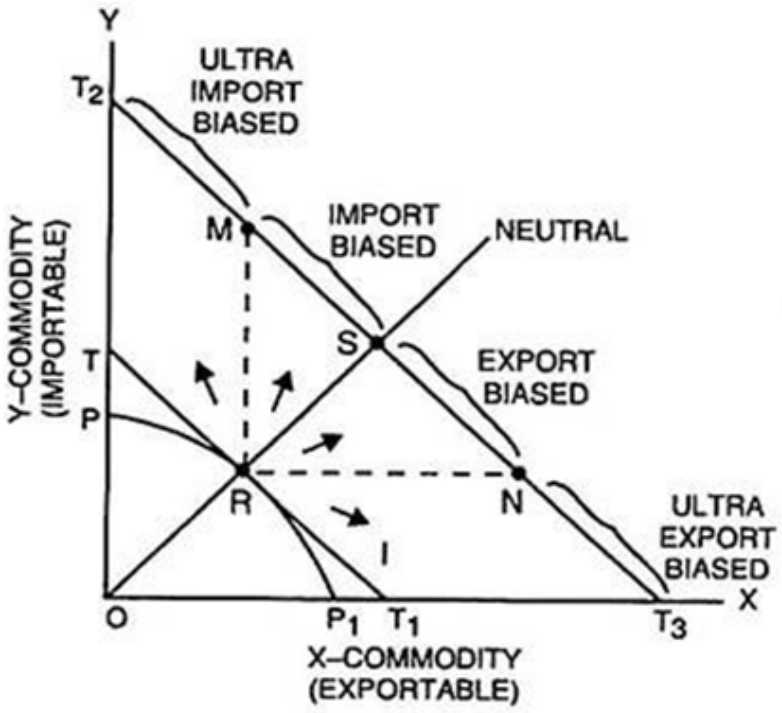
consequent upon accumulation of factors and growth. Growth is said to be export-biased or pro-trade, if the increase in the output of exportable goods is more than proportionate to an increase in the output of importable goods.The growth is supposed to be ultra-export-biased or ultra-trade-biased, if the increased production of exportable goods involves some reduction in the output of importable goods. In case, the growth reduces the production of exportable goods, it is said to be ultra-import- biased or ultra-anti-trade biased. When growth results in a more than proportionate increase in the output of importable goods than the exportable goods, it can be regarded as import-biased or anti- trade-biased.

Assumptions: The varying implications of growth for the international trade can be analysed on the basis of the following assumptions:

- The trade exists between two countries— A and B.
- The country A is the home country that experiences steady growth.
- There are two productive factors—labour and capital.
- The quantities of the two factors of production increase over the growth process.
- The trade is concerned with two commodities—X and Y.
- The X-commodity is the exportable and Y is the importable commodity of the home country.
- The commodity X is labour-intensive, while Y is capital-intensive.
- There is no change in the techniques of production.
- There is incomplete specialisation.
- The international terms of trade, measured by the ratio of price of exportable commodity to the price of importable commodity remain constant.

Explanation: Given the above assumptions the production effects of growth are expressed through Figure 7.1.

Figure 7.1: Production Effects of Growth



In Figure 7.1, the labour-intensive commodity X, which is the exportable commodity, is measured along the horizontal scale. The capital-intensive commodity Y, which is the importable commodity, is measured along the vertical scale. Originally PP_1 is the production possibility curve, given the factor supplies and technology. TT_1 is the term of trade line. The production takes place at R where TT_1 is tangent to the production possibility curve.As growth occurs, the factor supplies increase and the production possibility curve shifts to the right. The terms of trade line is T_2T_3 which runs parallel to the original terms of trade line TT_1. It signifies that international price ratio of X and Y remains unchanged despite growth. If production equilibrium occurs at S, the growth is neutral because there is equi-proportionate increase in output of two commodities and the two factors grow in the same proportion.If the production takes place in the range S and N, the growth is export biased. In this range, the proportionate change in the output of exportable commodity X is greater than the proportionate change in

the output of importable commodity Y. It also signifies that the use of labour is proportionately more than that of capital.

If the production equilibrium is determined in the range N to T_3, the growth is ultra-export biased because the increased production of exportable commodity X involves a reduced production of the importable commodity Y. In case the production equilibrium is determined in the range S to M, the growth is import-biased.In this range, the output of importable commodity increases more than proportionately compared with the increase in output of exportable commodity. In this type of growth, the use of capital is proportionately greater than the use of labour. If the production equilibrium gets determined in the range M to T_2, the growth is said to be ultra-import biased or ultra-anti-trade biased.

In this situation, the increased production of the importable commodity Y involves a decline in the production of exportable commodity X. The process of production in this range involves an increased use of capital with possibly no increase in labour. The ultra-export biased and ultra-import biased patterns of growth are the extreme cases in terms of their effects on the self-sufficiency or trade-dependence of a growing country and may exist in very few cases.

7.3.2 Consumption Effects of Growth

The process of growth in a given country denoted by the factor growth can bring about changes in its consumption pattern. If there is an increased consumption of the importable commodity, the volume of trade is likely to get enlarged. On the opposite, if the consumption of exportable commodity registers an increase, there is likely to be decline in the volume of trade. As in the case of production, Johnson has classified the consumption effects of factor growth as neutral, export-biased, ultra-export-biased, import-biased and ultra-import-biased.The process of growth in a country, expressed through increased factor supplies, can bring about an

increase in real income. This can result in changes in the consumption of exportable and importable commodities in varying quantities. The relative changes in the quantities consumed of these commodities determine the nature of growth process having varying implications for international trade.

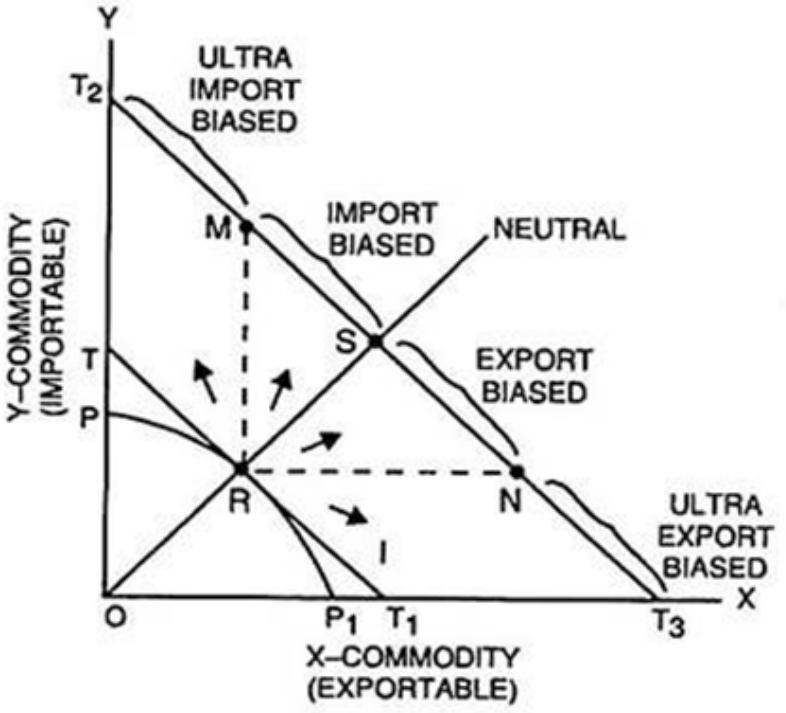
The growth process is said to be neutral, if the increase in the demand for exportable commodity (X) takes place in the same proportion in which the demand for importable commodity (Y) increases. Growth is import-biased or anti-trade-biased, if the increase in demand for importable good is less than proportionate compared with the increase in demand for exportable good.The process of growth can be regarded as ultra-import biased or ultra-anti-trade-biased, if the demand for importable commodity decreases in absolute terms. There is export-biased or pro-trade-biased growth, when the demand for importable commodity increases more than proportionately compared with the increased demand for the exportable commodity. When the demand for exportable commodity decreases in absolute terms, the growth process is said to be ultra-export biased or ultra-pro-trade biased.

H.G. Johnson pointed out that the output elasticity of demand for importable can measure the nature of growth in relation to trade. The growth process is import-biased, neutral or export- biased, if the output-elasticity of demand for importable commodity is less than, equal to or greater than unity respectively. If the output-elasticity of demand for importable commodity is negative, the growth process is ultra-import-biased. On the opposite, if the output elasticity of demand for exportable commodity is negative, the process of growth is ultra-export-biased.

The consumption effect of growth, given the constancy of tastes, terms of trade and distribution of income can be shown with the help of Figure 7.2. The original position of production and consumption equilibrium is determined at R. At this point, the terms of trade line TT_1 is tangent to the production possibility curve PP_1,

on the one hand, and tangent to the community indifference curve I, on the other. If growth takes place, the production equilibrium shifts to S. It is assumed that terms of trade remain unchanged so that the terms of trade line T_2T_3 is parallel to TT_1.

Figure 7.2: Consumption Effects of Growth



The consumption equilibrium may get determined at any position on T_2T_3 where it becomes tangent to some higher commodity indifference curve. If the consumption takes place at S, and there are proportionate increases in the consumption of two commodities, growth is neutral. If consumption takes place in the range S to M, the growth is export-biased as the demand for importable commodity Y increases at a proportionately greater rate than the demand for exportable commodity.

If consumption takes place in the range M to T_2, the consumption effect of growth is ultra-export-biased. In case, if consumption occurs in the range S to N, there is an import-biased consumption effect. When the consumption takes place in the range N to T_3, the consumption effect of growth is ultra-import- biased.

The output or income elasticity of demand for imports can determine the implication of growth on trade, if the growth results from some factor other than population growth. In this connection, H.G. Johnson writes:

[If growth is due to some other cause than population change, income per hand will rise, and the type of growth will depend on the average income elasticity of demand for imports. If imports are luxury goods, growth will be pro-trade-biased; if they are necessary goods, growth will be anti-trade-biased; if imports are inferior goods, growth will be ultra-anti-trade- biased and if exports are inferior goods, growth will be ultra-pro-trade-biased.]

So far in this analysis, it was supposed that the tastes pattern and distribution of income remain the same. With the expansion in income, subsequent to growth, there can be change in tastes pattern and income distribution. These factors can bring about significant change in the relative demand for the two commodities.

7.3.3 Combined Production and Consumption Effects of Growth

In a growing country, the total effect of growth represents the combined result of its effects on production and consumption.If there is complete specialisation in production, the country does not at all produce the importable commodity and the total effect of growth is determined entirely by the shift in consumption equilibrium due to the expansion of income. In such a situation, the overall effects of growth can again be neutral, export-biased, ultra-export biased, import-biased and ultra-import-biased depending upon the relative changes in the demand for imports and supply of exports.

If there is incomplete specialisation, and the given country produces both the commodities, the demand for her imports is measured by the excess of total demand for and the domestic supply of the concerned commodity. The total growth effect on the demand

for imports is, therefore, the net effect of the production and consumption effects of the importable commodity.This total effect determines the extent or direction of shift in the offer curve of the growing country. As shift takes place in the offer curve of the given country, it becomes possible to ascertain its impact on the volume and terms of international trade.If both consumption and production effects are neutral, the overall growth effect in the growing country, say A, is also neutral. But the domestic supply of importable commodity being a smaller proportion of the total production than the proportion of consumption of imports to the total consumption, the price of importable commodity is likely to be relatively higher than before. As a result, the terms of trade are likely to become worse, despite neutral overall growth.

The overall effect of growth will be export- biased, if any one of the following possibilities exists:

- The production effect is export-biased and consumption effect is neutral,
- The production effect is neutral and consumption effect is export-biased,
- Both consumption and production effects are export-biased.

The overall or total effect of growth will be import-biased, if:

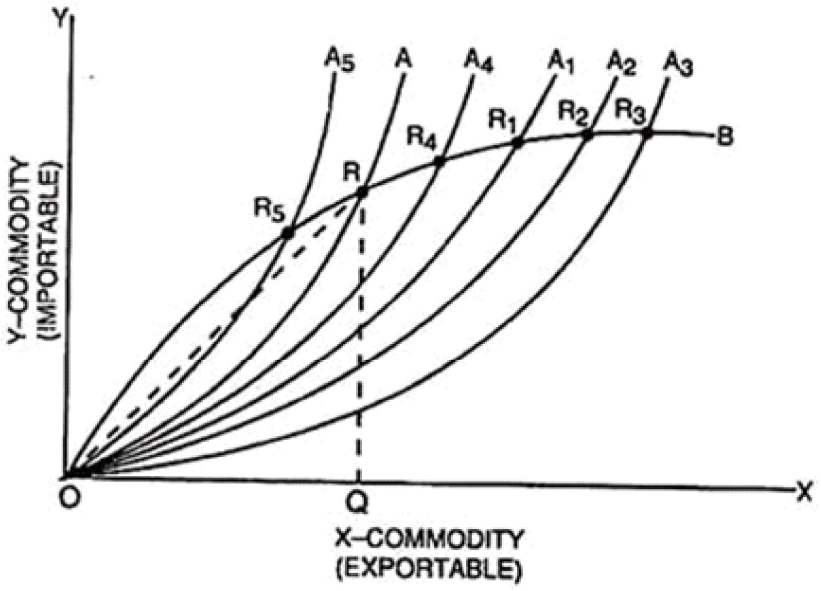
- The production effect is import-biased and consumption effect is neutral,
- The production effect is neutral and consumption effect is import-biased, and
- Both production and consumption effects are import- biased.

The overall effect of growth is ultra- export-biased when the production effect is ultra- export-biased. In such a situation, the absolute demand for imports increases by more than the entire increase in national income and the supply of exports rises more than its rise in case of export- biased growth. In this situation, the volume of trade gets enlarged but the deterioration in the terms of

trade of the home country is more than that occurs in case of the export-biased growth.

The overall effect of growth is ultra-import-biased, if there is an absolute increase in the domestic output of importable and there is an ultra-import bias in production. In this situation, there is an absolute decline in the demand for imports and the supply of exports. If the exportable commodity is not inferior, there will be an improvement in the terms of trade of the home country in this case. The overall or total growth effect has been explained with the help of Figure 7.3. In the figure, OA is the offer curve of home country A and OB is the offer curve of foreign country B. Originally the equilibrium takes place at R. OQ quantity of X is exported and RQ quantity of Y is imported. The terms of trade are determined by the slope of the line OR. As growth takes place in country A, its offer curve will undergo shifts while the offer curve of country B, not experiencing growth, will remain unchanged.

Figure 7.3: Overall or Total Effect of Growth



If the overall or total effect of growth is neutral, the offer curve of country A shifts to the right to OA_1 and the equilibrium takes place at R_1. It shows an increase in the volume of trade but there is worsening of terms of trade for country A. It means the neutral growth

bias results in the transfer of gain from country A increasingly to the foreign country. If the offer curve of country A shifts to the right to OA_2, the equilibrium takes place at R_2.The increase in export is proportionately more than that of imports. The volume of trade increases and the terms of trade for country A get worsened. If the growth is ultra-export-biased, the absolute demand for imports increases by more than the increase in national income and the exports increase by more than the rise in imports. As the offer curve shifts to the right of OA_2, say OA_3, there is an increase in the absolute volume of trade and the terms of trade get further worsened for the home country A.

If the growth is import-biased, the offer curve of A shifts to the left of OA_1 say OA_4, but to the right of original offer curve OA. In this case the demand for imports and supply of exports increase less than proportionately to the total output. The volume of trade increases, although there is anti-trade bias in respect of production or consumption or both.The terms of trade may still get worsened for country A. If the growth is ultra-import-biased, the offer curve of country A may shift to the left of OA, say OA_5. There is absolute reduction in the demand for imports and supply of exports resulting in the absolute reduction in the volume of trade but the terms of trade go in favour of the home country.

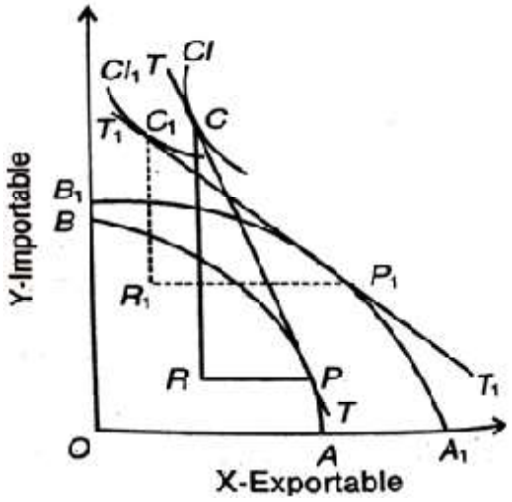
7.3.5 Effects Of Growth On Production, Trade, Welfare And Terms Of Trade Of A Small Country

To analyse the effects of growth on trade and welfare of a small country, we assume that (i) only one factor labour grows; (ii) there are two commodities X and Y; (iii) growth of labour increases the production of labour-intensive commodity X and decreases the production of capital-intensive commodity Y; and (iv) the international terms of trade remain constant for this country.

In the pre growth situation in Figure 7.4, the production possibility curve is BA and P is the production point where the terms

of trade line TT is tangent to it. C is the consumption point on the CI curve. CRP is the trade triangle whereby the country exports RP of X and imports RC of Y commodity.

Figure 7.4: Pre-Growth Situation

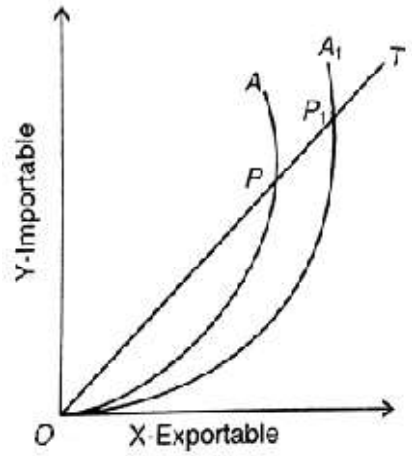


After the growth of labour, the production possibility curve shifts outward to B_1A_1. Note that the shift along the horizontal axis AA_1 is greater than BB_1 on the vertical axis representing capital even if there has been no increase in the growth of capital. This is because labour is also used in the production of Y commodity. The new production point is P_1 and the consumption point is C_1 where the constant T_1T_1 line is tangential. Point P_1 shows higher output of both X and Y commodities. The volume of trade also increases after labour growth at point P_1 because the new trade triangle $C_1R_1P_1$ is bigger than the pre-growth triangle CRP. Country's exports increase from RP to R_1P_1 and imports from RC to R_1C_1. The welfare of the country also increases because the new consumption point C_1 is on the higher curve CI_1 than the original point C on the CI curve. However, when there is labour growth in the country without capital growth the per capita availability of capital decreases. As a result, less capital is available per labour which reduces the per capita productivity of capital. Therefore, the availability of commodities per

person in the country is reduced which is likely to reduce the welfare of the commodity despite increase in the volume of output and trade.

As the growing country is small, it trades at constant international terms of trade even after growth because it is not in a position to influence international terms of trade. The straight line OT in Figure 7.5 shows constant terms of trade where the pre-growth trade point is P and the post-growth point is P_1 in country A. Even at constant terms of trade, the country exports and imports more quantities of X and Y commodities after growth, as point P, is above P on the OT line.

Figure 7.5: Constant Terms of Trade in a Small Country: Pre- and Post-Growth Stages



7.4 IMMISERISING GROWTH

The theory of immiserising growth relates to deterioration in the terms of trade of the country experiencing growth. Francis Ysidro Edgeworth was the first economist to suggest the possibility that economic growth may lead to the worsening of the terms of trade of the growing country to such a large extent that the gain in output resulting from growth may be wiped out by the adverse terms of trade. JagdishBhagwati calls this phenomenon "immiserising growth". In his words, *"Economic expansion increases output which, however, might lead to a sufficient deterioration in the terms of trade*

to offset the beneficial effect of expansion and reduce the real income of the growing country."

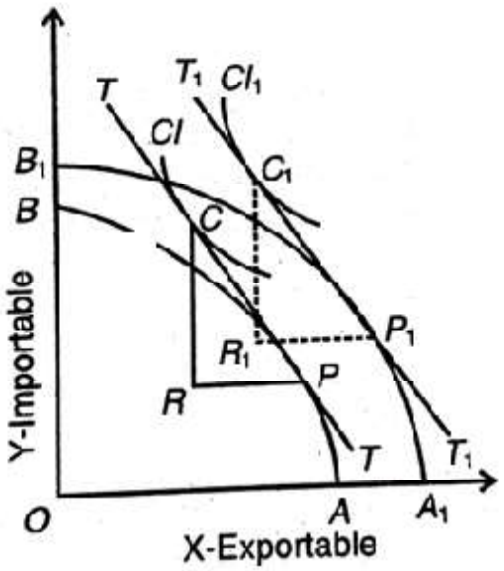
Assumptions: The theory of immiserising growth assumes that :

- There are two countries A and B.
- Country A is the domestic country which experiences economic growth.
- There are two commodities X and Y.
- Commodity X is an exportable and commodity Y is an importable.
- There is full employment of resources.
- There is mobility of resources between different countries.
- There is neutral technical progress.
- Growth takes place in the abundant factor labour.

7.4.1 Explanation

Given these assumptions, the case of immiserising growth is illustrated in Figure 7.6. BA is the production possibility curve in the pre growth situation. The country is producing at production point P where the terms of trade line TT is tangent to the BA curve, and consuming at point C, where the terms of trade line is tangent to the commodity indifference curve CL.

Figure 7.6: Immiserising Growth



The country imports CR of commodity Y and exports RP of commodity X. Suppose economic growth occurs which pushes its production possibility curve outwards to B_1A_1. But the terms of trade deteriorate to offset the gain from growth so that the relevant price (or terms of trade) line is T_1T_1 which is tangent to the production possibility curve B_1A_1 at point P_1 and to the community indifference curve CI_1 at point C_1. As a result of growth, the country is worse off than in the pre-growth situation by dropping to a lower community indifference curve CI_1 from CI. Consequently, the consumption of importable is reduced from CR to C_1R_1 and the production of exportable is increased from RP to R_1P_1.

7.4.2 Necessary Conditions for Immiserising Growth

According to Bhagwati, the following are the necessary conditions for immiserising growth to occur:

- The country's growth is biased in favour of its export sector.
- The growing country is large in the world market so that increase in the supply of its exportable affects the world trade.
- The foreign demand for the country's exportable is inelastic.
- The demand for importable increases with growth.
- There is free trade in the world market without any tariffs or price distortions.

Thus the theory of immiserising growth is applicable to those developing countries which are heavily dependent on world trade, are large, and produce a large portion of the world market of a primary commodity whose demand is inelastic. Brazil is a case in point where a bumper coffee crop bids down the world price of coffee so that Brazil's terms of trade worsen and the country experiences the immiserisinggrowth phenomenon. So the theory of immiserisation growth highlights the fact that the worsening of the terms of trade outweighs the gains from a large volume of production to such an extent that welfare is decreased.

Johnson regards the theory of immiserising growth as a curiosum because with the expansion in output and exports, the welfare of the society declines in a growing country. The remedy to this problem for developing countries is industrialisation by import substitution. They should produce industrial goods with high prices and high income elasticity of demand, either for exports or for domestic market.

7.5 PREBISCH-SINGER THESIS

There is empirical evidence related to the fact that the terms of trade have been continuously moving against the developing countries. On the basis of exports statistics concerning the United Kingdom between 1870 and 1940, Raul Prebisch demonstrated that the terms of trade had secular tendency to move against the primary products and in favour of the manufactured and capital goods.

This viewpoint has been strongly supported by H. W. Singer. The essence of Prebisch-Singer thesis is that the peripheral or LDC's(Less Developed Countries) had to export large amounts of their primary products in order to import manufactured goods from the industrially advanced countries. The deterioration of terms of trade has been a major inhibitory factor in the growth of the LDC's.

Prebisch and Singer maintain that there has been technical progress in the advanced countries, the fruit of which have not percolated to the LDC's. In addition, the industrialised countries have maintained a monopoly control over the production of industrial goods. They could manipulate the prices of manufactured goods in their favour and against the interest of the LDC's.

Except the success of OPEC (Oil & Petroleum Exporting Countries) in raising the prices of crude oil since mid 1970's, there has been a relative decline in the international prices of farm and plantation products, minerals and forest products. Consequently, the terms of trade have remained unfavourable to the developing countries.

Assumptions:

- As income rises in the advanced countries, the pattern of demand shifts from primary products to the manufactured products due to Engel's law.
- There is slow rise in demand for products in the developed countries.
- The export market for product of LDC's is competitive.
- The export market for products of developed countries is monopolistic.
- Wages and prices are low in LDC's.
- The appearance of substitutes for products of LDC's reduces demand for them.
- The benefit of increased productivity is not passed by the producers of manufactured products in advanced countries to the LDC's through lower prices.
- The economic growth in the LDC's is indicated by income terms of trade.

7.5.1 Explanation

Prebisch assumes that the capacity to import or income terms of trade is the determining factor of economic growth in LDCs and the terms of trade is the most important 'conduit' for transmission of productivity gains from cyclical centers (DCs) to the peripheral countries (LDCs). His contention is that in the organic growth of the world economy, the primary producing LDCs have failed to share in the gains of this world economic growth generated by the DCs and the reason for this has been their declining capacity to import. He points out on the basis of the United Kingdom's terms of trade with the LDCs that between the 1870s and the 1930s there was secular downward trend in the prices of primary goods relative to the prices of manufactured goods. They give the following reasons for deterioration in the TOT (Terms of Trade) of LDCs.

- **Technical Progress.** Technical progress increases the income of workers and entrepreneurs and a high price for their goods,

some of them are exported to the LDCs. But the benefits of technical progress do not flow to the LDCs. As a result, wages of workers do not rise. Prices of their primary goods which they exports in relation to their imports fall, thereby worsening their TOT. This has been due to technical progress in raw material saving products like synthetic, jute and rubber, rayon etc. which have adversely affected the traditional exports of LDCs.

- **Relation between Incomes and Productivity.** According toPrebisch, the incomes of entrepreneurs and productive factors increase relatively more than productivity in DCs, the increase in incomes is less than that in productivity in LDCs for two reasons:
  - *Population Pressure:*Population pressure in LDCs due to increase in population and surplus manpower have led to the rise in labour supply which is absorbed mainly in those sectors where labour productivity is already very-low. Consequently, the level of wages falls further.
  - *Weak Trade Unions:* Trade unions are mostly non-existent in the large unorganised sector of LDCs and where they exist, as in the organised sector, they are very weak. They are, therefore, incapable of raising wages for their workers. On the other hand, trade unions being very strong in DCs are highly successful in raising wages of their members.
- **Monopoly Elements.** Another cause for deterioration in TOT of LDCs, according to Prebisch, has been monopoly elements in product markets of DCs. The DCs have a high degree of monopoly power in manufactured industrial and capital goods for which they charge high prices from LDCs. On the other hand, the world prices of primary products of LDCs are low because they are not properly organised. As a result, the TOTs have remained unfavourable for the LDCs.

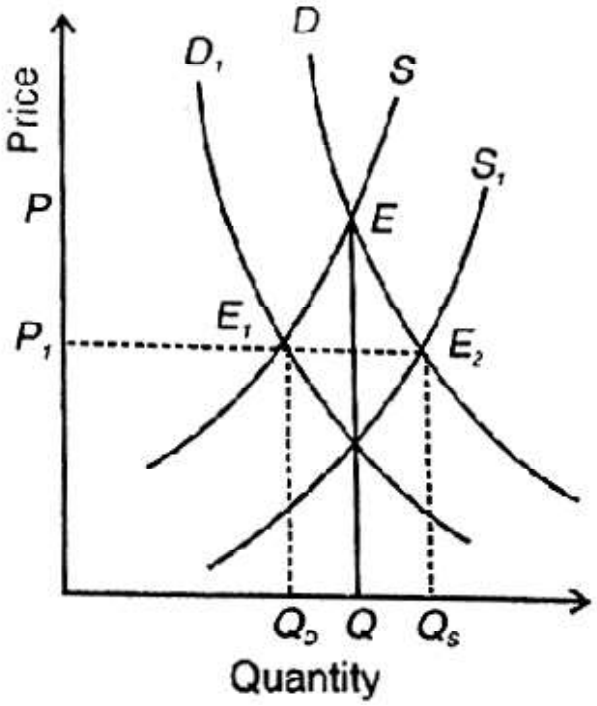
- **Effects of Cyclical Instability and Balance of Payments Difficulties.** Prebisch points out that, after the opening up of LDCs to world markets, there has been phenomenal rise in their exports. But this has not contributed much to the development of the rest of the economy of these countries, as the export sector has developed to the utter neglect of the other sectors of the economy. On the other hand, too much dependence on exports has exposed these economies to international fluctuations in the demand for and prices of their products. During a depression, the TOT become adverse and foreign exchange earnings fall steeply. As a result, they suffer from unfavourable balance of payments. But they are unable to take advantage of a fall in prices of their products by increasing their exports due to the inelastic nature of supply of their export goods which are mainly agricultural and mineral products. Similarly, they are unable to benefit from a boom in world market. An improvement in their terms of trade due to a boom is not accompanied by an increase in output and employment due to market imperfections, inadequate overhead capital and structural maladjustments. On the contrary, increased export earnings lead to inflationary pressure, misallocation of investment expenditure and to balance of payments difficulties. As a result, there has been a secular deterioration in the income terms of trade (or the capacity to import) of LDCs.
- **Effects of Foreign Investments.** Singer's contention is that the opening of the LDC's to foreign trade and investment tended to inhibit their development since the purpose and effect of these investments have been to open up new sources of food for people and for the machines of developed countries. The specialisation of LDCs in exports of food and raw materials to industrialised countries, largely as a result of investment by the latter has been unfortunate for the LDCs for three reasons (i) The investing countries have reaped the larger share of the

cumulative multiplier effects of foreign investment as a result of heavy profit remittances abroad. (ii) It has "diverted the underdeveloped countries into types of activity offering less scope for technical progress, internal and external economies taken by themselves..." (iii) It has led to the deterioration in the terms of the trade of LDCs.

Of the three factors, the last one has been crucial in impoverishing the LDCs because the developed countries have gained in the form of higher wages and profits by exporting manufactured articles to the LDCs at higher prices whereas the gains in food and raw material production in LDCs have been dissipated in price reductions thereby against benefitting the developed countries. This is reflected in rapidly rising standards of living of the latter as against the former. The operation of Engel's Law has been a major factor in accentuating price differentials between the 'peripheral' and the 'centre'. As incomes rise, the demand for food rises more slowly than the demand for manufactured articles. As a result of technical progress in manufacturing, there is reduction in the amount of raw materials used per unit of output. Thus, the demand for raw materials falls. This fall in demand along with low price elasticity of demand for both raw materials and food results in large price falls, both cyclically and structurally. 'At the same time, the short-run supply is said to be equally inelastic and equally subject to erratic shifts occasioned by forces of nature; a drought or disease can decimate a crop or the weather may produce a bumper harvest. Consequently, prices are said to be very volatile. In general price fluctuations in the post-war period have, however, been more often caused by changes in demand than by changes in supply.'

This is illustrated in Fig. 7 where D and S represent world demand and supply curves of primary products which are inelastic.

Figure 7.7: Effects of Foreign Investment in LDCs



In Figure 7.7, the demand and supply curves intersect at point E where OQ quantity is demanded and supplied at OP price. A small increase in supply from S to S_1 sets the new equilibrium at point E_2. This shows that a small increase in supply by QQ_1 leads to a large fall in price by PP_1. Similarly, a small decrease in demand from D to D_1 establishes the new equilibrium at E_1 so that a small fall in demand by QQ_D brings about a large fall in price by PP_1. Thus the developed countries have enjoyed beneficial cumulative effects in their dual capacity as consumers of imported food and raw materials at low prices and as producers of high-priced exportable manufactured articles, whereas the LDCs suffered both as producers of low priced food and raw materials and consumers of high-priced food and raw materials and consumers of high-priced imported manufactures.

- According to Singer, the fairly widespread impression that this trend toward deterioration in the terms of trade of primary

producers has been reversed since pre-war days has not been borne out by facts. The LDCs have failed to benefit from high prices for their primary products because they use the profits for expanding their production rather than investing them in capital goods. Conversely, when prices are low they do not have the means to industrialize, though the desire is great. Here again it seems, writes Singer, "that the under-developed countries are in danger of falling between two stools: failing to industrialize in a boom because things are as good as they are, and failing to industrialize in a slump because things are as bad as they are."

- **Debt Problems of LDCs.** Another reason which Singer advances for deterioration in TOT of LDCs in recent years has been their mounting debt. First, a large amount of proceeds from exports are utilised to repay their debts instead of paying for imports. Second, to repay their debts, LDCs compete with each other to increase their export earnings.
- **Immiserising Growth.** According to Bhagwati, immiserising growth in LDCs leads to deterioration in the TOT of LDCs when (i) the economy's growth leads to the production of more exportable; (ii) the demand for exports is inelastic; and (iii) growth reduces the domestic production of importable at constant commodity prices.
- **Shortage of Intermediate Products.** Linder' points towards the shortage of intermediate products in LDCs as the cause for deterioration in their terms of trade. Due to the shortage of such products in relation to their expanding demand, they are imported at relatively higher prices than the prices of exportable. These price differences, results in deteriorating in TOT.
- **Weak Bargaining Power.** Most of the primary products exported by LDCs to DCs are perishable. So they have to accept the conditions laid down by the DCs because of their weak bargaining power. The price and quantity conditions for exports

are always against the LDCs which leads to worsening of their TOT.

- **Lack of Adaptability in Production.** The raw materials and agricultural products of LDCs lack in adaptability to their world prices. When their world prices start declining the producers of primary products cannot switch over production to some other goods whose prices are not decreasing. This leads to deteriorating in their TOT

7.5.2 Criticisms

- **Not Firm Basis for Inference:** The inference of secular deterioration of terms of trade for the LDC's rests upon the exports of primary vis-a-vis manufactured products. In this regards, it should be remembered that the LDC's export wide variety of primary products. Sometimes they export also certain manufactured products. They, at the same time, do not import only manufactured products but also a number of primary products. It is, therefore, not proper to draw a firm inference about terms of trade just on the basis of primary versus manufactured exports.
- **Faulty Statement of Gains and Losses of Primary Exporters:** JagdishBhagwati has pointed out that the index of terms of trade employed in this thesis understates the gains of exporters of primary products. At the same time, there is over-statement of losses of primary producers.
- **Faulty Index of TOT:** The Prebisch- Singer hypothesis rests upon the index, which is the inverse of the British commodity terms of trade. This index overlooks the qualitative changes in products, appearance of new varieties of products, services like transport etc. The generalisation based on British terms of trade for the period 1870 to 1930, according to Kindleberger, is not true for the other developed countries of Europe.

- **Neglect of Supply Conditions:** In the determination of terms of trade, the Prebisch-Singer thesis considers only demand conditions. The supply conditions, which are likely to change significantly over time, have been neglected. The relative prices, in fact, depend not only upon the demand conditions but also on the supply conditions.
- **Little Effect of Monopoly Power:** One of the arguments in support of this thesis was that the higher degree of monopoly power existing in industry than in agriculture led to secular deterioration of terms of trade for the developing countries. In this connection, it was also agreed that the monopoly element prohibited the percolation of benefits of technical progress to the LDC's. The empirical evidence has not supported such a line of argument.
- **Inapplicability of Engel's Law:** The secular decline in the demand for primary products in developed countries was attributed to Engel's Law. But this is not true because this law is applicable to food and not to the raw materials, which constitute sizeable proportion of exports from, the LDC's.
- **Benefits from Foreign Investment:** The deterioration of the terms of trade for the LDC's is sometimes linked not to non-transmission of productivity gains to them by advanced countries through lower prices of manufactured goods, yet the benefits from foreign investments have percolated to the LDC's through the product innovations, product improvement and product diversification. These benefits can amply offset any adverse effects of foreign investment upon terms of trade and the process of growth.
- **Difficult to Assess Variation in Demand for Primary Products:** The secular deterioration in terms of trade of the LDC's during 1870 to 1930 period was supposed to be on account of the declining world demand for primary products. During that period, there were tremendous changes in world

population, production techniques, living standards and means of transport. Given those extensive developments, it is extremely difficult to assess precisely the changes in world demand for primary products and the impact of those changes upon the terms of trade.

- **Export Instability and Price Variations:** The Prebisch-Singer thesis suggested that export instability in the LDC's was basically due to variations in prices of primary products relative to those of manufactured products. Mc Been, on the contrary, held that the export instability in those countries could be on account of quantity variations rather than the price variations.
- **Development of Export Sector not at the Expense of Domestic Sector:** In this thesis, Singer contended that foreign investments in poor countries, no doubt, enlarged the export sector but it was at the expense of the growth of domestic sector. This contention is, however, not always true because the foreign investments have not always crowded out the domestic investment. If foreign investments have helped exclusively the growth of export sector, even that should be treated as acceptable because some growth is better than no growth. It is far-fetched to relate worsening of terms of trade to the non-growth of domestic sector.

Despite all the objections raised against the Prebisch-Singer thesis, the empirical evidence has accumulated in support of it. The studies made by UNCTAD for 1950-61 and 1960-73 periods showed that there was a relative decline in the terms of trade of LDC's vis-a-vis the developed countries. A study attempted by Thirlwall and Bergevin for the period 1973-82 indicated that there was an annual decline of terms of trade of LDC's for all the primary commodity exports at the rate of 0.36 percent.On the basis of their study related to exports of manufactured products for LDC's to the advanced countries during 1970-87 period, Singer and Sarkar found that the terms of trade of LDC's declined by about 1 percent per annum.

Even the World Development Report 1955 recognised that the world prices of primary products declined sharply during I980's and the terms of trade of LDC's deteriorated during 1980-93 period.



7.6 LET US SUM UP

- As the process of economic growth facilitates the increased supplies of factor inputs, there can be some change in the domestic output of exportable commodities. The increased production of exportable goods brings about an expansion in the volume of trade. The large production of importable goods, on the other hand, causes a contraction in the volume of trade.
- Growth is said to be neutral, when the output of both exportable and importable goods increases in the same proportion, consequent upon accumulation of factors and growth.
- Growth is said to be export-biased or pro-trade, if the increase in the output of exportable goods is more than proportionate to an increase in the output of importable goods.
- The growth is supposed to be ultra-export-biased or ultra-trade-biased, if the increased production of exportable goods involves some reduction in the output of importable goods.
- In case, the growth reduces the production of exportable goods, it is said to be ultra-import- biased or ultra-anti-trade biased. When growth results in a more than proportionate increase in the output of importable goods than the exportable goods, it can be regarded as import-biased or anti- trade-biased.
- The process of growth in a given country denoted by the factor growth can bring about changes in its consumption pattern. If there is an increased consumption of the importable commodity, the volume of trade is likely to get enlarged.
- On the opposite, if the consumption of exportable commodity registers an increase, there is likely to be decline in the volume of trade.

- H.G. Johnson pointed out that the output elasticity of demand for importables can measure the nature of growth in relation to trade.
- The growth process is import-biased, neutral or export- biased, if the output-elasticity of demand for importable commodity is less than, equal to or greater than unity respectively.
- If the output-elasticity of demand for importable commodity is negative, the growth process is ultra-import-biased.
- On the opposite, if the output elasticity of demand for exportable commodity is negative, the process of growth is ultra-export-biased.
- In a growing country, the total effect of growth represents the combined result of its effects on production and consumption. If there is complete specialisation in production, the country does not at all produce the importable commodity and the total effect of growth is determined entirely by the shift in consumption equilibrium due to the expansion of income. In such a situation, the overall effects of growth can again be neutral, export-biased, ultra-export biased, import-biased and ultra-import-biased depending upon the relative changes in the demand for imports and supply of exports.
- The overall effect of growth will be export- biased, if any one of the following possibilities exists:
  - The production effect is export-biased and consumption effect is neutral,
  - The production effect is neutral and consumption effect is export-biased,
  - Both consumption and production effects are export-biased.
- The overall or total effect of growth will be import-biased, if:
  - The production effect is import-biased and consumption effect is neutral,
  - The production effect is neutral and consumption effect is import-biased, and
  - Both production and consumption effects are import- biased.
- The overall effect of growth is ultra- export-biased when the production effect is ultra- export-biased. In such a situation, the absolute demand for imports increases by more than the entire

increase in national income and the supply of exports rises more than its rise in case of export- biased growth. In this situation, the volume of trade gets enlarged but the deterioration in the terms of trade of the home country is more than that occurs in case of the export-biased growth.

- The overall effect of growth is ultra-import-biased, if there is an absolute increase in the domestic output of importable and there is an ultra-import bias in production. In this situation, there is an absolute decline in the demand for imports and the supply of exports. If the exportable commodity is not inferior, there will be an improvement in the terms of trade of the home country in this case.
- The theory of immiserising growth relates to deterioration in the terms of trade of the country experiencing growth. Edgeworth was the first economist to suggest the possibility that economic growth may lead to the worsening of the terms of trade of the growing country to such a large extent that the gain in output resulting from growth may be wiped out by the adverse terms of trade. JagdishBhagwati calls this phenomenon “immiserising growth”.
- According to Bhagwati, the following are the necessary conditions for immiserising growth to occur:
  - The country’s growth is biased in favour of its export sector.
  - The growing country is large in the world market so that increase in the supply of its exportable affects the world trade.
  - The foreign demand for the country’s exportable is inelastic.
  - The demand for importable increases with growth.
  - There is free trade in the world market without any tariffs or price distortions.
- There is empirical evidence related to the fact that the terms of trade have been continuously moving against the developing countries. On the basis of exports statistics concerning the United Kingdom between 1870 and 1940, Raul Prebisch demonstrated that the terms of trade had secular tendency to move against the primary products and in favour of the manufactured and capital goods.



7.7 FURTHER READING

(1) Bhatia, H.L. (2016). International Economics. New Delhi: Vikas Publishing.

(2) Jhingan, M.L. (2009). International Economics, New Delhi: Varinda Publications.

(3) Krugman, P. (2018). International Trade: Theory and Policy. Delhi: Pearson.

(4) Murthy, G. (2008).International Economic Relations, New Delhi: Gyan Publishing House.

(5) Salvatore, D. (2013). International Economics. New Delhi: John Wiley & Sons.

(6) Vaish, M.C. and Singh, S. (2018) International Economics, Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.



7.8 MODEL QUESTIONS

A) Short Questions.(Answer the following questions in about 100-150 words)

Q 1: Discuss the production effects of growth.

Q 2: Discuss the consumption effects of growth.

Q 3: Discuss the concept of immiserisinggrowth.

Q 4: State the necessary conditions of immiserising growth.

Q 5: Discuss the Prebisch-Singer thesis with special reference to effects of foreign investment in the production of LDCs

B) Essay type questions.(Answer the following questions in about 500 words)

Q 1: Discuss the effects of growth on trade.

Q 2: Discuss the effects of growth on production, trade, welfare and terms of trade of a small country.

Q 3: Critically discuss the Prebisch-Singer Thesis on terms of trade and growth.

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Name of the Paper: Course Code:

Centre for Internal Quality Assurance (CIQA)
Krishna Kanta Handiqui State Open University
City Office, Housefed Complex, Guwahati- 06

Learner's Feedback on Course

Dear Learner,

Regarding the course as mentioned above, we would like to know your opinions and comments so as to improve the quality of self learning materials in future. Please respond to the following statements by ticking the number you feel most reflect your opinion. After completion of the additional comments, please detach the page and send/mail the same to us at the address given below.

The Director, Centre for Internal Quality Assurance, KKHandiqui State Open University
Housefed Complex, Dispur, Guwahati- 781006
(E-mail id: ciqa@kkhsou.in)

1. Approximately how many hours did you spend for studying the units in the course?

2. Please give your opinions (by √ mark) to the following items based on your reading of the block:

Sl. No.	Statements	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I.	The SLMs of the course fulfil the learning objectives set out in the beginning of each unit					
II.	The units of the SLM could satisfy my academic needs and expectations					
III.	The Unit writers have excellent knowledge about the course contents					
IV.	Language and contents of the units were presented at a level which I could readily understand					
V.	Ample opportunity for participation in the activities provided in the units					
VI.	Used enough Illustrations (Diagrams, tables etc.) for conceptual clarity					
VII.	Quality of content is engaging, relevant, and up-to-date					
VIII.	The self check questions are very helpful					
IX.	The Possible/model questions and the answers to check my progress have benefited me a lot					

Additional Comments: *(Please feel free to provide your open comments)*

1. Which aspects of the SLM, according to you, worked well?

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2. What sort of changes/improvements do you feel KKHSOU could implement to improve the overall quality of the SLM?

Thank you for taking the time to complete this form.

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