ECS3702 - INTERNATIONAL TRADE

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ECS3702 - INTERNATIONAL TRADE

STUDY UNIT 1 – INTRODUCTION

1.1 INTRODUCTION

Autarky

International economics concerns the exchange of g of production and capital across national boundaries. We focuses on the flows of goods, servi oreign investment between countries. The module in international finance examines the exchange of fi ities and the monetary aspects of international economics.

In both international and domestic trade, voluntary d services increase the economic welfare of the parties concerned, whether they be individuals, com e fundamental proposition of all trade is that voluntary trade is mutually beneficial. There are a n ferences between domestic and international trade.

- Goods in different sovereign countries are priced in different national currencies. Thus the exchange of goods and services between countries also requires the exchange of different national currencies.
- Governments can impose a wide range of commercial policies on imports and exports of goods and services which are absent from domestic trade.

1.2 THE GLOBALIZATION OF THE WORLD ECONOMY

Globalization in 1870-1914 resulted from the Industrial Revolution in Europe and the opening up of new, resource-rich, but sparsely populated lands in North America (the United States and Canada), South America (Argentina. Chile, and Uruguay), Australia and New Zealand, and South Africa. These lands received millions of immigrants and vast amounts of foreign investments, principally from England, to open up new lands to food and raw material production. This period of modern globalization came to an end with the breakout of World War 1 in 1914.

The second period of rapid globalization started with the end of World War II in 1945 and extended to about 1980. It was characterized by the rapid increase of international trade as a result of the dismantling of the heavy trade protection that had been put in place during the Great Depression that started in the United States in 1929 and during World War II.

As all revolutions, however, today's globalization brings many benefits and advantages but also has some disadvantages;

- Although labor migration generally leads to the more efficient utilization of labor, it also leads to job losses and lower wages for less-skilled labor in advanced nations and harms ("brain drain") the nations of emigration.
- Financial globalization and unrestricted capital flows lead to the more efficient use of capital throughout the world, as well as provide opportunities for higher returns and risk diversification for individuals and corporations. But they also seem to lead to periodic international financial crises.
- Finally, are we running out of resources such as petroleum, other minerals, water? Is the world headed for a climate disaster?

Globalization is being blamed for world poverty and child labor in poor countries, job losses and lower wages in rich countries, as well as environmental pollution and climate change throughout the world. Globalization has many social, political, legal, and ethical aspects, and so economists need to work closely with other social and physical scientists, as well as with the entire civil society, to give globalization a more human face. Globalization is important because it increases efficiency in the production of material things; it is inevitable because we cannot hide or run away from it.

1.3 INTERNATIONAL TRADE AND THE NATION'S STANDARD OF LIVING

A rough measure of the economic relationship among nations, or their interdependence, is given by the ratio of their imports and exports of goods and services to their gross domestic product (GDP). The GDP refers to the total value of all goods and services produced in the nation in a year.

The United States relies to a relatively small extent on international trade. First of all, there are many commodities—coffee, bananas, cocoa, tea, scotch, cognac—that the country does not produce at all and it has no deposits of such minerals as tin, tungsten, and chromium, which are important to certain industrial processes, and it has only dwindling reserves of petroleum, copper, and many other minerals.

Much more important **quantitatively** for the nation's standard of living are the many products that are produced domestically but at a **higher cost than abroad**. We will see later that these account for most of the benefits or gains from trade.

In general, the economic interdependence among nations has been increasing over the years, as measured by the more rapid growth of world trade than world production but there are many other crucial ways in which nations are interdependent, so that economic events and policies in one nation significantly affect other nations (and vice versa). For example, if the United States stimulates its economy, increasing demand for goods and services, which stimulate the economies of other nations that export those commodities.
Finally, trade negotiations that reduce trade barriers across nations may lead to an increase in the exports of high-technology goods and thus to an increase in employment and wages in those industries in the United States, but also to an increase in imports of shoes and textiles, thereby reducing employment and wages in those sectors.

1.4 SOUTH AFRICA IN WORLD TRADE

South Africa, with an index of openness exceeding 20 percent, is a relatively **open economy**. However, the index declined between 1985 and 1994. The index measures exports as a percentage of GDP. During the 1980s, South Africa suffered severe **international sanctions**. Trade sanctions did not, however, affect the volume of exports significantly as South Africa remained the most important and reliable supplier of precious and base metals and minerals.
Of far greater concern were **financial sanctions**. South Africa experienced large-scale capital flight and relatively low economic growth over this period. To finance the outflow of capital, the country was compelled to reduce imports by imposing restrictive monetary and fiscal policies, which led to slow growth. Exports in 1985 were thus high relative to GDP, which was reflected in a high index of openness. By 1994, while exports continued to grow, the economy grew even more rapidly as financial sanctions were removed and foreign capital flowed into the country. Above-average growth in South African exports coupled with sluggish GDP growth pushed the index significantly higher, to about 27 percent in 2001.

The **gravity model** postulates that the bilateral trade between two countries is proportional, or positively related, to the product of the two countries' GDPs and to be smaller the greater the distance between the two countries. That is, the **larger and the closer** the two countries are, the larger the volume of trade between them is expected to be.

The United Kingdom, Japan, the United States and Germany have been South Africa's main trading partners for some time, although not always in that order. More recently, South Africa has increased its imports from China. South Africa got more than 40 percent of its imports from these five countries and sent more than 40 percent of its exports to them. As regards trading blocs, South Africa sent more than 34 percent of its exports to the European Union.

Since the mid-1980s, the US has diminished while the EU has increased in importance as regards trade with South Africa.
Another important trend that has emerged recently is that South Africa is increasingly becoming the port of entry into Africa, with significant amounts of imports being re-exported to other parts of Africa.
South Africa remains partly dependent on primary sector commodities for its exports, but the contribution by manufactured and semi-processed goods has grown significantly. Unlike many developing countries which depend on the exports of a few primary products, South Africa can be classed as a semi-industrialised country and the contribution of the industrial sector to exports is increasing steadily, motor vehicle exports contributed about 5 percent to South Africa's exports in 2006. Machinery and equipment are, as is to be expected for a developing economy, the most important of South Africa's imports. South Africa also imports the bulk of its oil needs, despite having a significant oil from coal capability in Sasol.
South African imports and exports as percentages of GDP for the period 1960 to 2007 show no significant trend for both exports and imports over the entire period. In the post 1994 period, however, an upward trend in both variables is evident. Generally, the share of exports and imports in GDP has averaged 25 percent over the period.

1.5 INTERNATIONAL ECONOMIC THEORIES AND POLICIES

The purpose of economic theory in general is to **predict and explain**. That is. economic theory abstracts from the details surrounding an economic event in order to isolate the few variables and relationships deemed most important in predicting and explaining the event.
Along these lines, international economic theory usually assumes

- **A two-nation**, **two-commodity, and two-factor world**.
- **No trade restrictions** to begin with
- **Perfect mobility of factors within the nations** but no international mobility
- **Perfect competition** in all commodity and factor markets
- **No transportation costs**.

Starting with the simplifying assumptions, international economic theory examines the

- Basis for and the **gains from trade**
- The reasons for and the **effects of trade restrictions**
- **Policies** directed at regulating the flows of international payments and receipts
- The **effects of these policies on a nation's welfare** and on the welfare of other nations
- The **effectiveness of macroeconomic policies** under different types of international monetary systems.

The Subject Matter of International Economics
This economic and financial interdependence of nations is affected by, and in turn influences, the political, social, cultural, and military relations among nations.
Specifically, international economics deals with international trade theory, international trade policy, the balance of payments and foreign exchange markets, and open-economy macroeconomics.

- **International trade theory** analyzes the basis and the gains from trade.
- **International trade policy** examines the reasons for and the effects of trade restrictions.
- **The balance of payments** measures a nation's total receipts from and the total payments to the rest of the world,
- **Foreign exchange markets** are the institutional framework for the exchange of one national currency for others.
- **Open-economy macroeconomics** deals with the mechanisms of adjustment in balance-of-payments disequilibria (deficits and surpluses). It analyzes the relationship between the internal and the external sectors and how they are interrelated or interdependent with the rest of the world economy under different international monetary systems.

International trade theory and policies are the **microeconomic** aspects of international economics because they deal with individual nations treated as single units and with the (relative) price of individual commodities.
On the other hand, since the **balance of payments** deals with total receipts and payments, as well as with adjustment and other economic policies that affect the level of national income and the general price level of the nation, these are often referred to as **open-economy macroeconomics** or international finance.

1.6 CURRENT INTERNATIONAL ECONOMIC PROBLEMS AND CHALLENGES

Economic problems and challenges being faced by the world economy. These include:

1. The deep financial and economic crisis
2. Trade protectionism in advanced countries
3. Excessive fluctuations and misalignment in exchange rates and financial crises
4. Structural imbalances in the USA, slow growth in Europe and Japan, and insufficient restructuring in transition economies
5. Deep poverty in many developing countries
6. Resource scarcity, environmental degradation, climate change, and unsustainable development.

These are the problems that the study of international economic theories and policies can help us understand and evaluate suggestions for their resolution. The most serious economic problem in the world today is the slow growth and high unemployment facing the United States and most other advanced countries.

- On the trade side, the most serious problem is rising protectionism in advanced countries in the context of a rapidly globalizing world.
- On the monetary side are the excessive volatility of exchange rates and their large and persistent misalignments.

A brief description of these problems and challenges follows:

1. **Slow Growth and High Unemployment in Advanced Economies after "the Great Recession "**
   In 2010 and 2011, advanced economies experienced slow growth and high unemployment as they came out the great recession. The 2008-2009 crisis started in the U.S. subprime (high-risk) housing mortgage market in August 2007 and then spread from there to the rest of the world. Nations responded by rescuing financial institutions, slashing interest rates and introducing economic stimulus packages. Even though the recession was officially over in 2010, slow growth and high unemployment remain the most serious economic problems facing most advanced nations.

2. **Trade Protectionism in Advanced Countries in a Rapidly Globalizing World**
   With free trade, each nation will specialize in the production of the commodities that it can produce most efficiently and, by exporting some of them, obtain more of other commodities than it could produce at home. In the real world, however, most nations impose some restrictions on the free flow of trade. Although invariably justified on national welfare grounds, trade restrictions are usually advocated by and greatly benefit a small minority of producers in the nation at the expense of the mostly silent majority of consumers.

3. **Excessive Fluctuations and Misalignment in Exchange Rates and Financial Crises**
   Periodic financial crises have also led to financial and economic instability and dampened growth in advanced and emerging markets such as the financial crisis in Southeast Asia in 1997 and in the United States in 2007. These can disrupt the pattern of international trade and specialization and can lead to unstable international financial conditions throughout the world.

4. **Structural Imbalances in Advanced Economies and Insufficient Restructuring in Transition Economies**
   National and regional challenges quickly become global economic problems in our interdependent world. The United States faces deep structural imbalances in that the United States is simply living beyond its means by borrowing excessively abroad. The result is huge capital inflows, an overvalued dollar, huge and unsustainable trade deficits, and unstable financial conditions. Transition economies (communist countries) require additional economic restructuring in order to establish full-fledged market economies and achieve more rapid growth. Inadequate growth in these areas dampens the growth of the entire world economy and leads to calls for protectionism.

5. **Deep Poverty in Many Developing Countries**
   Even though many developing countries, especially China and India, have been growing very rapidly, some of the poorest developing nations, particularly those of sub-Saharan Africa, face deep poverty, unmanageable international debts, economic stagnation, and widening international inequalities in living standards.

6. **Resource Scarcity, Environmental Degradation, Climate Change, and Unsustainable Development**
   Growth in rich countries and development in poor countries are now threatened by resource scarcity, environmental degradation, and climate change. The price of petroleum, food and other raw materials has risen sharply during the past few years. Environmental pollution is dramatic in some parts of China and the Amazon forest is rapidly being destroyed. And we are witnessing very dangerous climate changes that may have increasingly dramatic effects on life.

STUDY UNIT 2 – WHY NATIONS TRADE: THE CLASSICAL THEORY

2.1 INTRODUCTION

We at the historical development of trade theory from the seventeenth century through the first part of the twentieth century. We seeks to provide answers to the following questions:

1. What is the **basis for trade**?
2. What are the **gains from trade**?
3. What is the **pattern of trade**?

We first summarize the historical development of trade theory and then by discussing the theoretical principles used to explain the effects of international trade.

2.2 Mercantilists' Views On Trade

Mercantilists were a group of writers in Europe during the period 1500 to 1800, they were merchants, bankers, government officials and philosophers. International trade can be viewed as either a **zero sum game** or as a **positive sum game**. Their motivation for trade was self-interest and the gains of winners are offset by the losses of the losers, hence the expression "zero sum game".

According to the mercantilists, **the economic welfare of a country depends on a strong foreign trade surplus** and would contribute to greater spending and to an increase in domestic output, employment and prosperity. Mercantilists argued that to achieve these objectives, **governments should encourage exports** and **restrict imports** by imposing tariffs, quotas and other commercial policies. Self-interest was therefore the driving force behind trade. In this respect, the mercantilists were no different from the classical theorists. However, mercantilism fails to comprehend the further effect of a trade surplus.

For example:

- Hume showed that a favourable trade balance tends to lead to higher domestic inflation and reduced competitiveness and thus to greater imports in the long run.
- Smith attacked the mercantilists' view that the size of the world's economic pie is constant and that a nation's gain from trade is at the expense of its trading partners. According to Smith, world output is not a fixed quantity. Trade between countries allows them to take advantage of specialisation and the division of labour to improve their productivity and thereby increase world output.

Mercantilits views are important for two reasons;

1. The ideas of Adam Smith, David Ricardo, and other classical economists can best be understood if they are regarded as reactions to the mercantilists' views on trade and on the role of the government.
2. Today there seems to be a resurgence of neo-mercantilism, as nations plagued by high levels of unemployment seek to restrict imports in an effort to stimulate domestic production and employment.

2.3 CLASSICAL THEORISTS

The most prominent classical theorists are David Hume (1711 - 1776), Adam Smith (1723 - 1790), David Ricardo (1772 - 1823), Robert Torrens (1780 - 1864) and John Stuart Mill (1806 - 1873).

The classical theory of trade involves to explain international trade between countries through the principles of

- **Absolute advantage** advanced by Smith
- **Comparative advantage** advanced by David Ricardo.

2.3.1 Trade Based On Absolute Advantage (Adam Smith)

Unlike the mercantilists, Adam Smith believed that all nations would gain from free trade and advocated a policy of laissez-faire. Free trade, with each nation specialising in that commodity in which it has **absolute advantage would lead to an efficient allocation of world resources and would maximize world welfare**. Adam Smith started by stating the fact that for two nations to trade with each other voluntarily, both nations must gain, this meant:

- Factories could specialise in specific tasks resulting in a considerable increase in output and thus in trade.
- Resources are utilized in the most efficient way and the output of commodities will rise.
- Nations could also be expected to concentrate on producing goods they make most cheaply.
- He believed that productivity of labour was the main determinant of production costs.
- He therefore approached the determination of absolute advantage and trade from the supply side only and ignored the effects of changes in demand.

Laissez-faire - an economic system in which transactions between private parties are free from government interference such as regulations, privileges, tariffs, and subsidies.

The principle of absolute advantage explains both the **pattern of trade** and the **gains from trade**. However, the classical theory is based on a number of simplifying assumptions, these are:

1. Producers and consumers display **rational behaviour.**
2. There are only **two countries and two commodities**. Each good has identical characteristics and some of each good is consumed in both countries.
3. There is **full employment**.
4. **Labour is the only factor of production**.
5. Each country has a **fixed endowment of resources,** and all units of each particular **resource are identical**.
6. **Perfect competition exists**.
7. **Factors of production are mobile** between the two commodities and within the country, but not between countries.
8. **There are no barriers to trade.**
9. Production shows **constant returns to scale**, i.e. hours of labour per unit of production of a good do not change.
10. **No transport costs.**
11. The level of **technology is fixed for both countries**, although the technology may differ.

2.3.2 Illustration Of Absolute Advantage

	Country X	Country Y
Good A (units/hour)	24	42
Good B (units/hour)	12	7
Autarky prices	2A:1B	6A:1B

Autarky prices - (domestic terms of trade) refer to the rate at which a unit of one good exchanges for the other good in each country in the absence of trade between the two countries.

The following table shows the output per day of two countries on the basis of the above assumptions. Remember, in this model, each country produces either one or the other product.

- Country X is the more **efficient** producer of good B (12>7)
- Country 2 is the more **efficient** producer of good A (42>24)

Thus,

- Country 2 has an absolute advantage in the production of good A.
- Country X has an absolute advantage in the production of good B.

Such specialisation does not imply that the two countries will begin to trade, trade will depend on the terms of trade.

Country X, using all its resources, can produce either 24 units of good A or 12 units of good B. Country X, which has an absolute advantage in good B, can produce 2A if it gives up the production of 1B. The autarky prices of Country X are 2A:1B. Country X will not participate in trade if it cannot get at least 2A for 1B.

Country Y, by using all its resources, can produce 42A or 7B. Country Y, which has an absolute advantage in good A, can produce 6A if it gives up the production of 1B. Its domestic terms of trade are 6A:1B. Country X will not participate in trade if it cannot get at least 6A for 1B from Country I. It will be even better off if it can trade fewer than 6A for 1B.

For trade to take place between the two countries, the international terms of trade must fall between the two countries' domestic terms of trade, (2A<1B<6A).

2.3.3 Ricardian Theory Of Comparative Advantage (David Ricardo)

Contrary to Adam Smith, Ricardo argued that even if one country is more efficient than the other in both lines of production, there is still a basis of **mutually beneficial trade** as long as each country has comparative advantage in one of the products.

- The **principle of comparative advantage** explains how a country can still gain from trade, even if it has an absolute disadvantage in both goods. The first nation should specialize in the production and export of the commodity in which its **absolute disadvantage is smaller** (comparative advantage) and import the commodity in which it's **absolute disadvantage is greater** (comparative disadvantage).

According to Ricardian analysis, international specialisation must be based on comparative rather than absolute advantage. The crucial determinant of the commodity pattern of trade is the difference in the techniques of production which consists of the way in which labour (the only factor of production) is organized in the production process.

	Country X	Country Y
Good A (units/hour)	24	21
Good B (units/hour)	12	7
Autarky prices	2A:1B	3A:1B

The law of comparative advantage shows that mutually beneficial trade can still take place even under these circumstances.

- **Country Y** labour is almost as productive in good A but almost twice less productive as labour in country X in good B. **Country Y therefore has a comparative advantage in good A.**
- **Country X** has absolute advantage in both goods but its absolute advantage is greater in good B (12:7) than in good A (24:21), country X has a comparative advantage in good B.

The other way of looking at it is to use the domestic terms of trade (autarky prices) of the two countries.

- **County Y** autarky prices are 3A:1B.
- **County X** autarky prices are 2A:1B.

For every 1B produced in country X they forego 2A against 3A which is foregone in country Y for each unit of good B they produce. It is therefore cheaper to produce good B in country X than in country Y. It can also be said that it is cheaper to produce good A in country Y than in country X since the sacrifice of good B is lower in country Y (1/3) than in country X (1/2). The two countries can **produce and exchange the surplus of the goods** in which they have a comparative advantage.

- **Country X** will only trade if it can import at least 2A for each unit of B that it exports.
- **Country Y** will not trade if it has to export more than 3A for each unit of B it imports from country I.

For trade to take place, the international terms of trade must once again fall between the domestic terms of trade that is, 2A<1B<3A.

Note that in a two-nation, two-commodity world, once it is determined that one nation has a comparative advantage in one commodity, then the other nation must necessarily have a comparative advantage in the other commodity.

2.3.4 Equal Advantage

Where countries experience equal advantage, it means that the domestic terms of trade (domestic price ratios) are identical, for example 3A:1B in both countries. This is the case of no comparative advantage. In this situation, trade makes no sense. Both countries will want at least 3A for 1B but neither will be prepared to trade more than 3A for 1B.

2.4. GAINS FROM TRADE

Country I will be reluctant to trade if it received only 2A from country II for each unit of good B since it can produce exactly 2A by foregoing 1B. Country II will definitely not trade if it had to give up 3 units of A in exchange for 1 unit of B from country I. To illustrate that both nations gain from trade we suppose that the international terms are 1B: 2,5A, thus country I could exchange 12B for 18A with country II. Country I would gain 6A (or save ¼ hour of labour time). To see that country II would also gain, note that the 12B that country II receives from country I would require almost two hours (1,72) of labour time to produce in country II. Country II could use these 1,72 hours to produce 36 units of good A and give up only 18 units

2.5 COMPARATIVE ADVANTAGE AND OPPORTUNITY COSTS

Ricardo based his law of comparative advantage on a number of simplifying assumptions mentioned before:

1. Only two nations and two commodities
2. Free trade
3. Perfect mobility of labor within each nation but immobility between the two nations
4. Constant costs of production
5. No transportation costs
6. No technical change, and
7. The labor theory of value.

Although assumptions one through six can easily be relaxed, assumption seven (i.e., that the labor theory of value holds) is not valid and should not be used for explaining comparative advantage.

2.5.1 Comparative Advantage and the Labour Theory of Value

According to the **labour theory of value**, *the value of a commodity is determined by the value of labour that goes into the commodity. The amount of labour will determine the price*. The labour theory of value implies:

1. That either labour is the only factor of production or labour is used in fixed proportion in the production of all commodities and
2. That labour is homogeneous (i.e. all units are the same).

We know in reality that labour is not the only factor of production and that labour is not. We are also aware of the presence of other factors such as capital. We cannot therefore base the explanation of comparative advantage on the labour theory of value.

Labor is not the only factor of production, nor used in the same fixed proportion in the production of commodities. E.g:

- More capital equipment per worker is required to produce some products (steel) than to produce others (textiles).
- There is usually a possibility of substitution between labour, capital, and other factors in production of commodities.
- Labour is obviously not homogeneous but varies greatly in training, productivity, and wages.

In any event, the theory of comparative advantage need not be based on the labor theory of value but can be explained on the basis of the opportunity cost theory. To be noted is that Ricardo himself did not believe in the labor theory of value and used it only as a simple way to explain the law of comparative advantage.

2.5.2 The Opportunity Cost Theory

Haberler (1936) was the first person to base the theory of comparative advantage on the opportunity cost theory. The **law of comparative advantage** is also known as the **law of comparative cost**.

- **The opportunity cost theory states** - *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*.

This law does not make any assumptions about labour being the only factor of production nor being homogeneous. The country with a lower opportunity cost in the production of a commodity has a comparative advantage in that commodity.

Following our discussion, the domestic terms of trade were 2A:1B and 3A:1B for countries X and Y respectively. This means that in the absence of trade country X has to give up two units of good A for each unit of good B they produce. On the other hand country Y would give up 3 units of good A for each unit of good B they produce.

Thus, country X has comparative advantage in the production of good B over country Y. In the same way, the respective opportunity costs of producing one unit of good A in the two countries are 1/2 of good B and 1/3 of good B. Thus, country II will produce good A and export some of it in exchange for country I's good B.

This is exactly what we concluded earlier with the law of comparative advantage based on the labor theory of value, but now our explanation is based on the opportunity cost theory.

	Country X	Country Y
Good A (units/hour)	24	21
Good B (units/hour)	12	7
Autarky prices	2A:1B	3A:1B

2.5.3 The Production Possibility Frontier under Constant Costs

The production possibilities frontier or curve shows the **alternative combinations of the two goods that a nation can produce** by fully utilizing all its resources with the best technology available to it. The table shows the production possibility schedules for the United States and the United Kingdom under the assumption of constant opportunity cost. The opportunity cost of producing any good will be constant and will be given by the domestic terms of trade. Costs can be constant when:

1. **Factors of production are perfect substitutes** for each other or used in fixed proportion in the production of both commodities, and
2. All units of the **same factor are of exactly the same quality**.

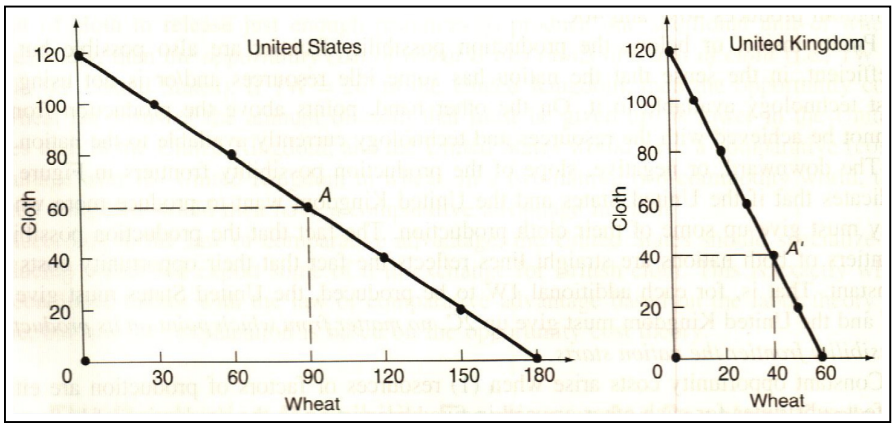
Under constant costs the production possibility frontier will be a straight line

United States		United Kingdom	
Wheat	**Cloth**	**Wheat**	**Cloth**
180	0	60	0
150	20	50	20
120	40	40	40
90	60	30	60
60	80	20	80
30	100	10	100
0	120	0	120
30W = 20C		10W = 20C	
1W = $^{2}/_{3}$C		1W = 2C	

We see that for each 30W that the U.S gives up, enough resources are released to produce 20C, i.e. 30W & 20C require the same resources. Thus, the opportunity cost of one unit of wheat in the United States is 1W = $^{2}/_{3}$C and remains constant.

We see that for each 10W that the U.K gives up, enough resources are released to produce 20C, i.e. 10W & 20C require the same resources. Thus, the opportunity cost of one unit of wheat in the United States is 1W = 2C and remains constant.

The United States and United Kingdom production possibility schedules given in the table and are graphed as production possibility frontiers which represents a combination of wheat and cloth that the nation can produce.



- Points inside, or below, the production possibility frontier are also **possible but are inefficient**, in the sense that the nation has some idle resources.
- Points above the production frontier **cannot be achieved** with the resources and technology currently available to the nation.
- The downward, or negative, slope of the production possibility frontiers indicates that if the U.S and the U.K want to produce more wheat, they must give up some of their cloth production.
- The fact that the production possibility frontiers of both nations are straight lines reflects the fact that their **opportunity costs are constant** no matter from which point on its production possibility frontier the nation starts.

Although opportunity costs are constant in each nation, they differ among nations, providing the basis for trade. Constant costs are not realistic, however. They are discussed only because they serve as a convenient introduction to the more realistic case of increasing costs.

2.6 THE BASIS FOR AND THE GAINS FROM TRADE UNDER CONSTANT COSTS

In autarky a country's consumption bundle is restricted to what it produces. The actual product mix is determined by demand conditions or preferences.

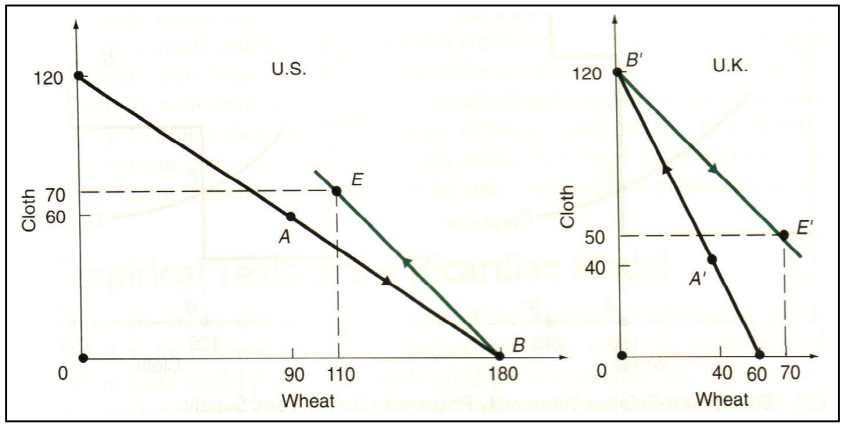
2.6.1 An illustration of the Gains from Trade

With trade each country will completely specialise in the commodity of its comparative advantage and exchange some of the surplus. Each country will produce along its production possibility frontier but the consumption frontier is now beyond the production frontier.

- **In the absence of trade**, the U.S might choose to produce and consume combination A (90W and 60C), and the U.K might choose combination A' (40W and 40C).
- **With trade possible**, the U.S would specialize in the production of wheat (the commodity of its comparative advantage) and produce at point B (180W and OC). Similarly, the U.K would specialize in the production of cloth and produce at B' (OW and 120C).
- If the U.S then exchanges 70W for 70C with the U.K, it ends up consuming at point E (110W and 70C), and the U.K ends up consuming at E' (70W and 50C).
- Thus, the U.S gains 20W and 1OC from trade (compared to point A), and the U.K gains 30W and IOC (compared point A')

The increased consumption of both wheat and cloth was made possible by the increased output as each nation specialized in the production of the commodity of its comparative advantage, i.e.:

- In the absence of trade, the U.S produced 90W and the U.K 40W, for a total of 130W. With specialization in production and trade, 180W are produced
- Similarly, in the absence of trade, the U.S produced 60C and the U.K 40C for a total of 100C. With specialization in production and trade, 120C are produced.



It is this increase in output of 50W and 20C resulting from specialization in production that is shared and represents their gains from trade. Recall that in the absence of trade, each nation would not specialize in the production of wheat or cloth.

2.7 EMPIRICAL TESTS OF THE RICARDIAN MODEL

MacDougall (1951, 1952) was the first study to test the Ricardian theory of comparative advantage. The study uses US and UK exports for 1937 to check if there was a relationship between labour productivity and exports. His findings supported the Ricardian theory, that is, the actual pattern of trade seems to be based on the different labour productivities in different industries in the two nations.

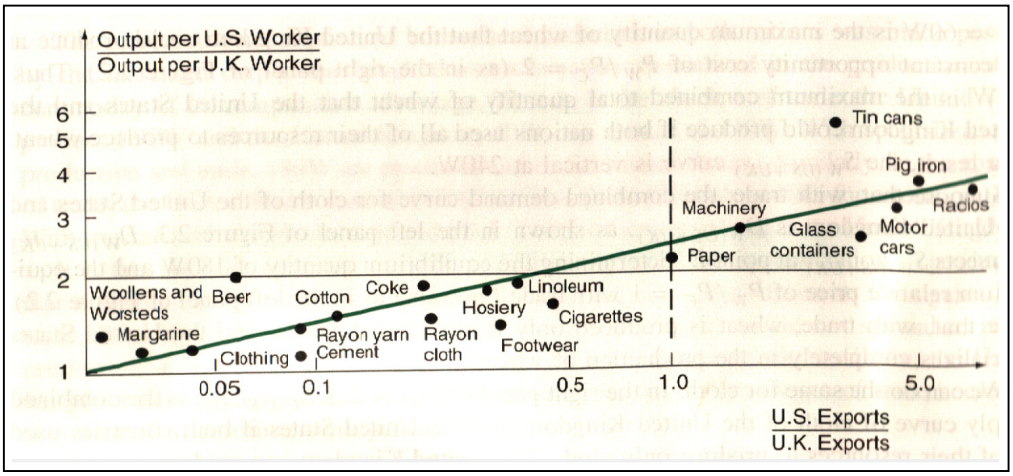
The first such empirical test of the Ricardian trade model was conducted by MacDougall in 1951 and 1952, using labor productivity and export data for 25 industries in the United States and the United Kingdom for the year 1937.

- Since wages were twice as high in the US as in the UK, MacDougall argued that costs of production would be lower in the US in those industries where **American labor was more than twice as productive** as British labor.
- These would be the industries in which **the United States had a comparative advantage** with respect to the United Kingdom and in which it would undersell the United Kingdom in third markets (i.e., in the rest of the world).
- The **United Kingdom would have a comparative advantage and undersell** the United States in those industries where the productivity of British labor was more than one-half the productivity of American labor.

- In his test MacDougall excluded trade between the United States and the United Kingdom because **tariffs varied widely from industry to industry, tending to offset the differences in labor productivity** between the two nations.
- At the same time, both nations faced generally equal tariffs in third markets. The exclusion of trade between the US and the UK did not bias the test because their exports to each other constituted less than 5 percent of their total exports.

The figure summarizes MacDougall's results.

- The **vertical axis** measures the ratio of output per U.S. worker to output per U.K. worker. The higher this ratio, the greater the relative productivity of U.S. labor.
- The **horizontal axis** measures the ratio of U.S. to U.K. exports to third markets. The higher this ratio, the larger are U.S. exports in relation to U.K. exports to the rest of the world.



The points in the figure exhibit a clear positive relationship between labor productivity and exports. That is, those industries where the productivity of labor is relatively higher in the United States than in the United Kingdom are the industries with the higher ratios of U.S. to U.K. exports. This was true for the 20 industries shown in the figure (out of the total of 25 industries studied by MacDougall).
The actual pattern of trade seems to be based on the different productivities in different industries in the two nations. Production costs other than labor costs, demand considerations, political ties, and various obstructions to the flow of international trade did not break the link between relative labor productivity and export shares.

One possible question remained:

- Why did the United States not capture the entire export market from the United Kingdom (rather than only a rising share of exports) in those industries where it enjoyed a cost advantage (i.e., where the ratio of the productivity of U.S. labor to U.K. labor was greater than 2)?

MacDougall answered that this was due mainly to product differentiation. That is, the output of the same industry in the United States and the United Kingdom is not homogeneous. An American car is not identical to a British car. Even if the American car is cheaper, some consumers in the rest of the world may still prefer the British car. Thus, the United Kingdom continues to export some cars even at a higher price. However, as the price difference grows, the United Kingdom's share of car exports can be expected to decline. The same is true for most other products. Similarly, the United States continues to export to third markets some commodities in which it has a cost disadvantage with respect to the United Kingdom.

Even though the simple Ricardian trade model has been empirically verified to a large extent, it has a serious shortcoming in that it assumes rather than explains comparative advantage.

- Ricardo and classical economists in general provided no explanation for the difference in labor productivity and comparative advantage between nations and
- they could not say much about the effect of international trade on the earnings of factors of production. By providing answers to both of these important questions, the **Heckscher-Ohlin model** theoretically improves on and extends the Ricardian model.

2.8 CRITICISMS OF THE CLASSICAL THEORY

Much of this criticism is due to the theory being seriously incomplete in many ways.

1. While the theory **bases trade on differences in productivity, it does not explain the reasons for these differences**.
2. It also makes **extreme predictions that are not fulfilled in the real world**. It predicts, for example, that countries will specialise entirely in the production of export goods and ignore the production of import-competing goods. In the real world this does not often happen.
3. The **theory also suggests that the greatest gains from trade occur between dissimilar countries**. But the greatest proportion of international trade takes place between industrialised, developed countries which have similar standards of living and similar levels of technology.
4. Some **criticisms are based on the unrealistic assumptions** of the classical theory. However, all economic theories simplify reality to some extent, so this criticism does not necessarily invalidate the classical theory. T
5. Some of the **assumptions can be modified easily** without having to discard the entire classical theory. For example, the assumption that there are only two goods can be modified to allow for the more realistic case of trade in more than two commodities. When two countries produce a large number of commodities, comparative advantage requires that the products be ranked by their comparative cost. Each country will export the product(s) in which its comparative advantage is most pronounced and import the product(s) in which it has the least comparative advantage.

STUDY UNIT 3 – THE STANDARD THEORY OF INTERNATIONAL TRADE

3.1 INTRODUCTION

The previous study unit outlines trade under constant costs. Constant costs are unrealistic as they do not obtain in practice.
This unit extends the previous unit by **introducing increasing costs and demand preferences**.
The **demand and supply conditions** will be used to analyse the equilibrium-relative commodity price in each country in the absence of trade.
The analysis will be extended to include **gains from trade with increasing costs**. We then see how these forces of supply and demand determine the **equilibrium-relative commodity price** in each nation in the absence of trade under increasing costs

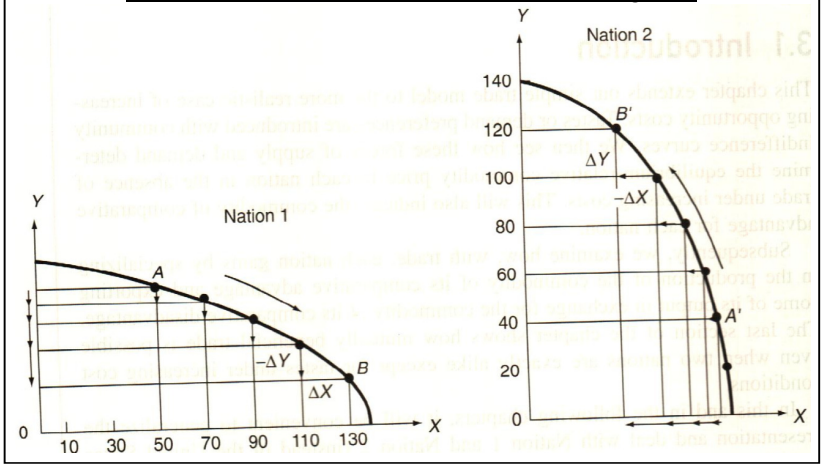
3.2 THE PRODUCTION FRONTIER WITH INCREASING COSTS

Increasing opportunity costs mean that a nation must **give up more and more of one commodity** to release just enough resources to produce each additional unit of another commodity.
With increasing costs the **production possibility frontier is concave from the origin**. Production possibility frontiers reflecting the increasing opportunity costs are illustrated in the figure:

- The slope of the production possibility frontier at each point is known as the **marginal rate of transformation (MRT).**
- MRT - the **amount of one commodity that a nation must give up to produce each a unit of the other commodity**.
- Thus, it is the same as the opportunity cost of a good.
- The MRT (slope) increases as we move down or up the production possibility frontier, showing increasing opportunity costs in each country of both commodities. Increasing opportunity costs are explained by:
    1. The fact that **factors of production are not homogeneous** and
    2. Factors of production are **not used in the same fixed proportion**. It therefore means that some resources are less efficient or less suited for the production of a particular product.

Illustration of Increasing Costs

Production Frontiers of Nation 1 and 2 with Increasing Costs



The figure shows the hypothetical production frontier of commodities X and Y for Nation 1 and Nation 2.
Both production frontiers are concave, i.e. each nation **incurs increasing opportunity costs** in the production of both commodities.
If nation 1 wants to produce more of commodity X, starting from point A on its production frontier. Since at point A the nation is already utilizing all of its resources with the best technology available, the nation can only **produce more of X by reducing the output of commodity Y** (negatively sloped).
We see that for each additional batch of 20X that Nation 1 produces, it must give up more and more Y.
The increasing opportunity costs in terms of Y that Nation 1 faces are reflected in the longer and longer downward arrows, and result in a production frontier that is concave from the origin.

Nation 1 also faces increasing opportunity costs in the production of Y, i.e. nation 1 has to give up increasing amounts of X for each additional batch of 20Y that it produces. We demonstrate increasing opportunity costs in the production of Y with the production frontier of Nation 2.
Moving upward from point A' along the production frontier of Nation 2, we observe **leftward arrows of increasing length**, reflecting the increasing amounts of X that Nation 2 must give up.
Concave production frontiers for both nations reflect increasing opportunity costs in the production of both commodities.

The Marginal Rate of Transformation

The marginal rate of transformation (MRT) of X for Y refers to the amount of Y that a nation must give up to produce each additional unit of X. Thus, **MRT is another name for the opportunity cost of X** given by the **(absolute) slope** of the production frontier at the point of production.

- The slope of the production frontier (MRT) of Nation 1 at point A is $^1/_4$, this means that Nation 1 must give up $^1/_4$ of a unit of Y to release just enough resources to produce one additional unit of X at this point. Similarly, if the slope, or MRT, equals 1 at point B, this means that Nation 1 must give up one unit of Y to produce one additional unit of X at this point
- Thus, a movement from point A down to point B along the production frontier of Nation 1 involves an increase in the slope (MRT) from $^1/_4$ (at point A) to 1 (at point B) and reflects the increasing opportunity costs in producing more X.
- This is in contrast to the case of a straight-line production frontier where the opportunity cost of X is constant regardless of the level of output and is given by the constant value of the slope (MRT) of the production frontier.

Reasons for Increasing Opportunity Costs and Different Production Frontiers

How do increasing opportunity costs arise? And why are they more realistic than constant opportunity costs? Increasing opportunity costs arise because resources or factors of production:

1. **are not homogeneous** (all units of the same factor are not identical or of the same quality) and
2. **are not used in the same fixed proportion** or intensity in the production of all commodities.

This means that as the nation produces more of a commodity, it must utilize resources that become progressively less efficient or less suited for the production of that commodity and give up more and more of the second commodity.

For example, suppose some of a nation's land is flat and suited for growing wheat, and some is hilly and better suited for grazing and milk production. The nation originally specialized in wheat but now wants to concentrate on producing milk. By transferring its hilly areas from wheat growing to grazing, the nation gives up very little wheat and obtains a great deal of milk. Thus, the opportunity cost of milk in terms of the amount of wheat given up is initially small. But if this transfer process continues, eventually flat land, which is better suited for wheat growing, will have to be used for grazing. As a result, the opportunity cost of milk will rise, and the production frontier will be concave from the origin.

The difference in the production frontiers of Nation 1 and Nation 2 in the figure is due to the fact that the two nations have:

1. **different factor endowments or resources** at their disposal and/or
2. **use different technologies** in production.

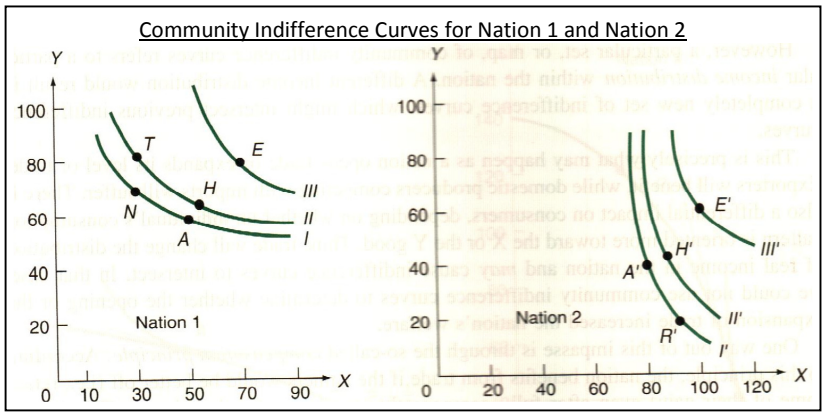
In the real world, the production frontiers of different nations will usually differ, since practically no two nations have identical factor endowments. As the supply or availability of factors and/or technology changes over time, a nation's production frontier shifts. The type and extent of these shifts depend on the type and extent of the changes that take place.

3.3 COMMUNITY INDIFFERENCE CURVES

We now introduce the **tastes, or demand preferences**, in a nation. These are given by community indifference curves.

- **A community indifference curve shows the various combinations of two commodities that yield equal satisfaction to the community or nation**.
- **Higher curves** refer to greater satisfaction, **lower curves** to less satisfaction.
- **Negatively sloped and convex** from the origin.
- **To be useful, they must not cross**. (Readers familiar with an individual's indifference curves will note that community indifference curves are almost completely analogous.)

Illustration of Community Indifference Curves



The figure shows three hypothetical indifference curves for Nation 1 and Nation 2. They **differ on the assumption that tastes, or demand preferences**, are different in the two nations.

- Points N and A give **equal satisfaction** to Nation 1, since they are both on indifference curve I.
- Points T and H refer to a **higher level of satisfaction**, since they are on a higher indifference curve (II).
- Point E refers to **still greater satisfaction**, since it is on indifference curve III.
- For Nation 2, A' = R' < H' < E'.

The community indifference curves are negatively sloped as a nation consumes more of X, it must consume less of Y if the nation is to have the same level of satisfaction.
If a nation continued to consume the same amount of Y as it increased its consumption of X, the nation would necessarily move to a higher indifference curve.

The Marginal Rate of Substitution

The marginal rate of substitution (MRS) of X for Y in consumption **refers to the amount of Y that a nation could give up for one extra unit of X and still remain on the same indifference curve**. This is given by the (absolute) slope of the community indifference curve at the point of consumption and declines as the nation moves down the curve, i.e. the slope, or MRS, of indifference curve I is greater at point N than at point A. Similarly, the slope, or MRS, of indifference curve I' is greater at point A' than at R'.
The decline in **MRS or absolute slope** is a reflection of the fact that the more of X and the less of Y a nation consumes, the more valuable to the nation is a unit of Y at the margin compared with a unit of X. Therefore, the nation can give up less and less of Y for each additional unit of X it wants.
Declining MRS means that community indifference curves are **convex from the origin**. Thus, while increasing opportunity cost in production is reflected in concave production frontiers, a declining marginal rate of substitution in consumption is reflected in convex community indifference curves.

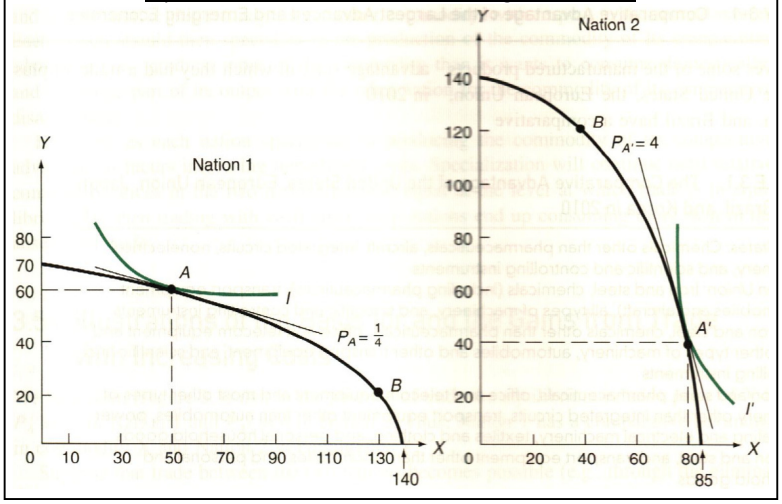
Some Difficulties with Community Indifference Curves

To be useful, community indifference curves **must not intersect.** A point of intersection would refer to equal satisfaction on two different community indifference curves, which is inconsistent with their definition.
A set of community indifference curves refers to a particular income distribution, a **different income distribution** would result in a completely new set of indifference curves, which might intersect previous indifference curves. This is what may happen as a nation opens trade or expands its level of trade. Exporters will benefit, while domestic producers will suffer.
There is also a differential impact on consumers, depending on whether an individual's consumption pattern is oriented more toward the X or the Y good. Thus, trade will change the distribution of real income in the nation and may cause indifference curves to intersect. In that case, we could not use community indifference curves to determine whether the opening or the expansion of trade increased the nation's welfare.

One way out of this impasse is through the so-called **compensation principle** - the nation benefits from trade if the gainers would be better off (i.e., retain some of their gain) even after fully compensating the losers for their losses.
This is true whether or not compensation actually occurs. (One way that compensation would occur is for government to tax enough of the gain to fully compensate the losers with subsidies or tax relief.) Alternatively, we could make a number of restrictive assumptions about tastes, incomes, and patterns of consumption that would preclude intersecting community indifference curves.

3.4 EQUILIBRIUM IN ISOLATION

Equilibrium in Isolation – Combines Figure 3.1 & 3.2



In this section we bring together:

- The **supply conditions** as indicated by the production possibility frontier
- The **demand conditions** as indicated by the community indifference curves in a nation.
- Before trade a nation attains equilibrium when it gets to the **highest possible indifference curve subject to its production possibility frontier.**
- Equilibrium occurs at the **point of tangency** between the production possibility frontier and the highest possible indifference curve**.**
- The **common slope** at the point of tangency gives the **internal equilibrium-relative commodity price** in the nation and
- Nation 1 is in equilibrium at point A and nation 2 at point A' in the absence of trade, or **autarky.**
- Reflects the **nation's comparative advantage**.

For Nation 1 equilibrium is at point A while for Nation 2 it is at point A'.

- Each nation consumes the commodity bundle that it produces.
- The respective equilibrium points maximize welfare in each nation.
- The respective equilibrium relative price of good X in both nations, we can see that is equal to ¼ in Nation 1 and equal to 4 in Nation 2. The lower equilibrium relative price of X in Nation 1 than in nation 2 indicates that:
    - **Nation 1 has comparative advantage in the production of good X.**
    - **Nation 2 has comparative advantage in the production of good Y.**

The different internal equilibrium commodity prices indicates differences in relative prices, i.e. comparative advantages. It follows that both nations can engage in mutually beneficial trade – Law of Comparative Advantage.
Some other point to note:

- Community indifference curves are convex from the origin and drawn as nonintersecting, there is only one such point of tangency, or equilibrium.
- We can be certain that one such equilibrium point exists because there are an infinite number of indifference curves
- Points on lower indifference curves are possible but would not maximize the nation's welfare.
- The nation cannot reach higher indifference curves with the resources and technology presently available.

Equilibrium-Relative Commodity Prices and Comparative Advantage

The **equilibrium-relative commodity price in isolation** is given by the slope of the tangent common to the nation's production frontier and indifference curve at the autarky point of production and consumption, i.e.:

- The equilibrium-relative price of X in isolation is $P_A = P_X/P_Y = {}^1/_4$ in nation 1
- The equilibrium-relative price of X in isolation is $P_{A'} = P_X/P_Y = 4$ in nation 2

Relative prices are different because their production frontiers and indifference curves differ in shape and location.
Since in isolation PA < PA' Nation 1 has a comparative advantage in commodity X and Nation 2 in commodity Y. It follows that both nations can gain if Nation 1 specializes in the production and export of X in exchange for Y from Nation 2
The figure show that the **forces of supply** (nation's production frontier) and the **forces of demand** (nation's indifference map) together determine the equilibrium-relative commodity prices in each nation in autarky.

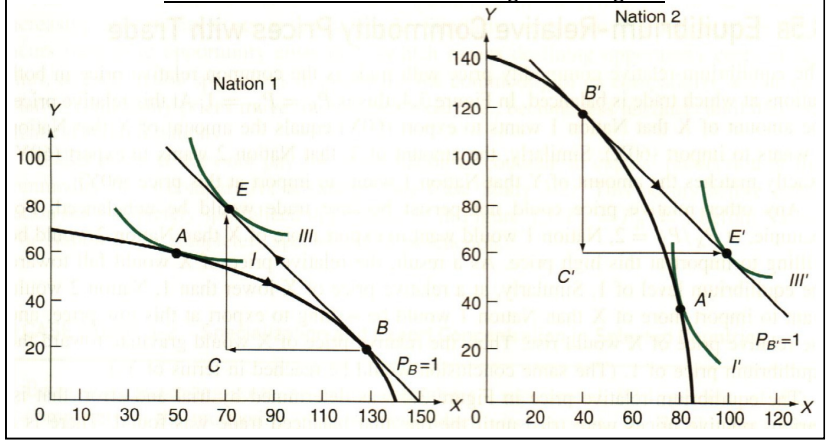
If indifference curve I had been of a different shape, it would have been tangent at a different point and would have determined a different relative price of X in Nation 1 and X for Nation 2. This is in contrast to the constant costs case, where the equilibrium Px/Py is constant regardless of the level of output and conditions of demand, and is given by the constant slope of the nation's production frontier.

3.5 THE BASIS FOR AND THE GAINS FROM TRADE WITH INCREASING COSTS

- A **difference in relative commodity prices** between two nations is a reflection of their comparative advantage and forms the basis for mutually beneficial trade.
- The nation with the **lower relative price for a commodity has a comparative advantage** in that commodity and
- A **comparative disadvantage in the other commodity**, with respect to the second nation.
- Each nation should then **specialize in the production of the commodity** of its comparative advantage and exchange part of its output with the other nation for the commodity of its comparative disadvantage.
- As each nation specializes in producing the commodity of its comparative advantage, it incurs increasing opportunity costs.
- Specialization will continue until relative commodity prices in the two nations become equal at the level at which trade is in equilibrium. By then trading with each other, both nations end up consuming more than in the absence of trade.\\

3.5.1 Illustrations of the Basis for and the Gains from Trade with Increasing Costs

The Gains from Trade with Increasing Costs – Fig. 3.4



We saw that:

- Nation 1 has comparative advantage in commodity X while
- Nation 2 has comparative advantage in commodity Y.
- In isolation the equilibrium relative price of X is P_A=1/4 in Nation 1 and P_A, = 4 in Nation 2.

With trade and specialization each nation produces more of the commodity of its comparative advantage and less of the other commodity. The international terms of trade are: $\boldsymbol{P_X / P_Y}$ **= 1 (PB=PB' =1).**
Thus:

- Nation 1 moves from point A to point B in production.
- Each nation will now be consuming on the international terms of trade line.
- Nation 1 will now consume at point E, which is on a higher indifference curve compared to point A.
- Nation 2 ends up consuming at point E', which is on a higher indifference curve compared to point A'
- The lines PB=PB'=1 represent the **equilibrium-relative price** at which trade is balanced.

The equilibrium-relative price with trade:

- Is the common relative prices at which trade is balanced.
- This means that at that relative price the amount of X Nation 1 wants to export will be **exactly equal to the amount** nation 2 wishes to import. The same can be said about commodity Y.
- At any other relative price trade will not be balanced and that will force the relative price to change towards its equilibrium value.
- The equilibrium relative price used in this illustration was arrived at through trial and error.

Incomplete Specialisation

Unlike what we saw in the previous study unit where countries were specializing completely, under increasing costs there is **incomplete specialization in production in both nations**, even in the case of a small country.

- As nation 1 specializes in the production of X, it incurs increasing opportunity costs in producing good X.
- As Nation 2 specializes in producing Y it incurs increasing opportunity costs in producing Y (i.e. declining opportunity costs in X).
- Thus, as each nation specializes in the commodity of its comparative advantage, **relative commodity prices move toward each other** until they are identical in both nations and this happens before complete specialization.

3.5.2 The Gains from Exchange and from Specialization

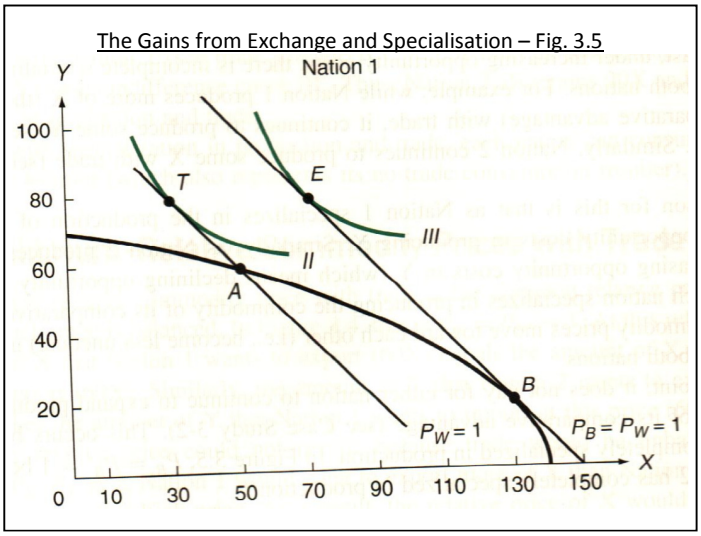
A nation's gains from trade are made up of two components:

1. **The gains from exchange**
2. **The gains from specialization**.

This figure illustrates the case of a small country with a domestic relative price of X of ¼ and facing a world relative price of P_W =1.

- Suppose for some reason Nation 1 could not specialize in the production of X with the opening of trade but continue to produce at point A (**isolation equilibrium point**), i.e. where MRT = ¼
- At point A, it could export its output of X (20 units) at the world relative price and get Y (20 units).
- It will be able to **consume at point T** which is on a higher indifference curve.
- The movement in consumption from point **A to point T measures the gains from exchange**.

The Gains from Exchange and Specialisation – Fig. 3.5



Also:

- If Nation 1 also specializes in the production of X, it would move to point B on its production possibility frontier and will be able to export more units of X (60) for Y(60) at the world relative price (P_W=1).
- This will enable Nation 1 to move to an even higher indifference curve III and consume at point E.
- The movement from point **T to point E measures the gains from specialization** in production.

Note that Nation 1 is not in equilibrium in production at point A with trade because MRT < P_W = 1. To be in equilibrium in production, Nation 1 should expand its production of X until it reaches point B, where P_B= P_W = 1. Nation 2's gains from trade can similarly be broken down into gains from exchange and gains from specialization.

STUDY UNIT 4 – THE BASIS OF TRADE: THE FACTOR PROPORTIONS THEORY

4.1 INTRODUCTION

The classical theory says that

1. Trade based on absolute or comparative advantage is mutually beneficial (the gains from trade) and that
2. A country will export goods in which it has such an advantage and import goods which can be produced more efficiently by other countries (the pattern of trade). This pattern of trade is determined by the differences in relative commodity prices between nations.

The classical theory, however, does not explain the reasons for the differences in relative commodity prices between nations (hence absolute or comparative advantage). According to the classical theory comparative advantage was based on the differences in labour productivity (the only factor of production) among nations. But they provided no explanation for such a difference in productivity.

The factor proportions theory studied extends the classical theory of trade by:

1. Explaining the **reason for the differences in relative commodity prices and comparative advantage**
2. Enables us to analyse the **effect of international trade on factor prices** within and across nations.

4.2 Assumptions of the Theory

The Heckscher- Ohlin theory is often called the factor proportions theory. It is based on a number of simplifying assumptions (some are implicit). These assumptions will be relaxed in the next study unit in order to make the theory more realistic.

4.2.1 The Assumptions

The Heckscher-Ohlin theory is based on the following assumptions:

1. There are **two nations** (Nation 1 and 2), **two homogeneous commodities** (commodity X and Y), and **two homogeneous factors of production** (labor and capital).
2. **The same technology** in production is used in both nations.
3. Commodity **X is labor intensive**, and commodity **Y is capital intensive** in both nations.
4. Both commodities are produced under **constant returns to scale** in both nations.
5. There is **incomplete specialization** in production in both nations.
6. **Tastes are equal** in both nations.
7. There is **perfect competition** in both commodities and factor markets in both nations.
8. There is **perfect factor mobility** within each nation but **no international factor mobility**.
9. There are **no transportation costs, tariffs**, or other obstructions to the free flow of international trade.
10. **All resources are fully employed** in both nations.
11. **International trade is balanced** between the two nations.

4.2.2 Meaning of the Assumptions

- **Assumption 1 – two nations, two factors, two commodities -** is made just for illustrative purposes. If it is relaxed the conclusions of the theory will remain unchanged.
- **Assumption 2 - same technology -** means that the two countries have access to the same production techniques. Thus, if factor prices were the same in the two countries producers will use same quantities of each factor. With different factor prices cost minimization entails producers in each country using more of the relatively cheaper factor.
- **Assumption 3 - different factor intensities, good X is labour intensive while good Y is capital intensive -** means that commodity X requires relatively more labour than commodity Y in both nations. Thus, the labour-capital ratio (L/K) is higher for commodity X than for commodity Y in both nations at the same relative factor prices. It does not mean that the L/K ratio is the same in the two nations.
- **Assumption 4 - constant returns to scale -** means that increasing the amount of the two factors used in the production of a commodity will increase the output in the same proportion. For example if both capital and labour are doubled output of the particular commodity will also double.
- **Assumption 5 - incomplete specialization in production in both nations -** means that even with free trade both nations continue to produce both commodities. This implies that neither of the two nations is "very small."
- **Assumption 6 - equal tastes in both nations -** means that demand preferences, as reflected by the shape of indifference curves, are identical in both nations.
- **Assumption 7 - perfect competition in both markets -** means that all economic agents are too small to affect the factor and commodity prices in both nations. It also means that there is perfect information of commodity prices and factor earnings in all parts of each nation.
- **Assumption 8 - perfect factor mobility within each nation but not internationally -** means that capital and labour move quickly between industries, to those industries offering higher rewards. But international factor price differences will persist indefinitely.
- **Assumption 9 - no barriers to trade -** means that specialization continues in production until relative (and absolute) commodity prices are the same in both nations with trade.
- **Assumption 10 - full employment -** means that there are no unemployed factors of production in either nation.
- **Assumption 11 - balanced trade -** means that the total value of each nation's exports equals the total value of the nation's imports.

4.3 FACTOR INTENSITY, FACTOR ABUNDANCE, AND THE SHAPE OF THE PRODUCTION FRONTIER

4.3.1 Concept of Factor Intensity

This concept is a **relative concept**. A commodity is said to be relatively intensive in the use of a given factor if the commodity uses more units of the particular factor per unit of the other factor than the other commodity, that is:

- **Commodity X is capital intensive** relative to commodity Y, then
- **Commodity Y is labour intensive** relative to commodity X.

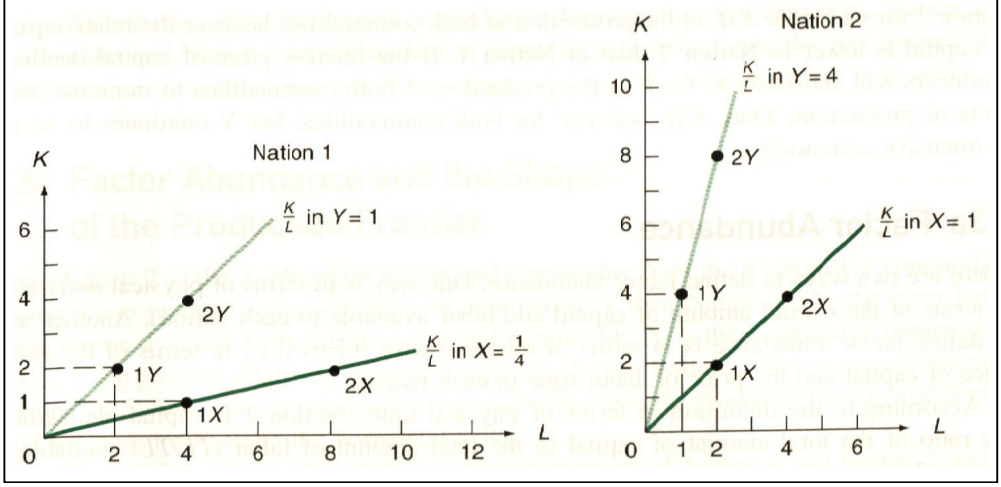
For example:

- If 4 units of capital (4K) and 2 units of labour (2L) are required to produce one unit of commodity Y, the capital-labour ratio is 2. That is, 4/2 in the production of Y.
- If at the same time 6 units of capital (6K) and 4 units of labour (4L) are required to produce one unit of commodity X, the capital-labour ratio is 1.5 that is, 6/4. In this case we say Y is capital intensive and X is labour intensive.

It is not the absolute amount of capital and labor used in the production of commodities X and Y that is important in measuring the capital and labor intensity of the two commodities, but **the amount of capital per unit of labor (K/L).**

Figure 5.1 illustrates the factor intensities of producing commodities X and Y in the two nations. The K/L ratio is given by the slope of the ray through the origin. The figure shows that commodity Y is the capital intensive in both nations **since its ray of origin is steeper** than that of commodity X. Nation 2 uses a higher K/L ratio in the production of both goods because the relative price of capital (r/w) is lower in nation 2 than in Nation 1. If the relative price of capital decreases, producers will substitute K for L in the production of both commodities to minimize costs of production, but Y remains the K-intensive commodity.

Factor Intensities for Commodities X and Y in Nations 1 and 2– Fig. 5.1



In Nation 1:

- Nation 1 can produce 1Y with 2K and 2L and 2Y with 4K and 4L because of constant returns to scale (assumption 4).
- Thus, $^{K}/_{L} = {}^{2}/_{2} = {}^{4}/_{4} = 1$ for Y. This is given by the **slope of 1 for the ray from the origin for commodity Y** in Nation 1.
- On the other hand, 1K and 4L are required to produce 1X, and 2K and 8L to produce 2X, in Nation 1.
- Thus, $^{K}/_{L} = {}^{1}/_{4}$ for X in Nation 1, i.e. a **slope of $^{1}/_{4}$ for the ray from the origin for commodity X** in Nation 1.
- Since the slope of the ray from the origin, is higher for commodity Y than for commodity X, we say that commodity Y is K intensive and commodity X is L intensive in Nation 1.

In Nation 2:

- Nation 2 can produce 1Y with 4K and 1L and 2Y with 8K and 2L because of constant returns to scale (assumption 4).
- Thus, $^{K}/_{L} = {}^{4}/_{1} = {}^{8}/_{2} = 4$ for Y. This is given by the **slope of 4 for the ray from the origin for commodity Y** in Nation 2.
- On the other hand, 2K and 2L are required to produce 1X, and 4K and 4L to produce 2X, in Nation 2.
- Thus, $^{K}/_{L} = {}^{2}/_{2}$ for X in Nation 1, i.e. a **slope of 1 for the ray from the origin for commodity X** in Nation 1.
- Since the slope of the ray from the origin, is higher for commodity Y than for commodity X, we say that commodity Y is K intensive and commodity X is L intensive in Nation 1.

Capital must be relatively cheaper in Nation 2 than in Nation 1 because even though commodity Y is K intensive in relation to commodity X in both nations, Nation 2 uses a higher K/L in producing both Y and X than Nation 1, why is this?

If the **relative price of capital falls**, producers would **substitute capital for labor in the production** of both commodities to minimize their costs of production. As a result, both commodities would become more K intensive. However, only if $^{K}/_{L}$ in the production of commodity Y exceeds $^{K}/_{L}$ in the production of commodity X at all possible relative factor prices can we say unequivocally that commodity Y is the K-intensive commodity.

To summarize:

- We say that commodity Y is **unequivocally the K-intensive commodity** if $^{K}/_{L}$ is higher for commodity Y than for commodity X at all possible relative factor prices.
- Nation 2 uses a higher $^{K}/_{L}$ in the production of both commodities because the **relative price of capital is lower** in Nation 2 than in Nation 1.
- If the **relative price of capital declines, producers will substitute K for L** in the production of both commodities to minimize their costs of production. Thus, $^{K}/_{L}$ will rise for both commodities, but Y continues to be the K-intensive commodity.

But why is capital relatively cheaper in Nation 2? To answer this question, we must define factor abundance and examine its relationship to factor prices.

4.3.2 Concept of Factor Abundance

There are two ways to define factor abundance:

1. **In terms of physical units** - in terms of the overall amount of capital and labor available to each nation (supply side)
2. **In terms of relative factor prices** - in terms of the rental price of capital and the price of labor time in each nation (supply and demand side)

According to the definition in **terms of physical units**:

- Nation 2 is **capital abundant if the ratio of the total amount of capital to the total amount of labor (T_k/T_L)** available in Nation 2 is greater than that in Nation 1 – $(T_k/T_L)_1 < (T_k/T_L)_2$
  Note that it is not the absolute amount of capital and labor available in each nation that is important but the ratio of the total amount of capital to the total amount of labor.
- Factor abundance in terms of physical units **considers only the supply of factors**

According to the definition in **terms of factor prices**:

- Nation 2 is **capital abundant if the ratio of the rental price of capital to the price of labor time (P_k/P_L)** is lower in Nation 2 than in Nation 1 - $(P_k/P_L)_1 > (P_k/P_L)_2$.
  The rental price of capital is usually the **interest rate (r)** and the price of labor time is the **wage rate (w), P_k/P_L = r/w.**
  Note it is not the absolute level of *r* that determines whether or not a nation is the *K*-abundant nation, but the ratio of the rental price of capital to the price of labor time (*r/w*).
- Factor abundance terms of relative factor prices **considers both demand and supply**

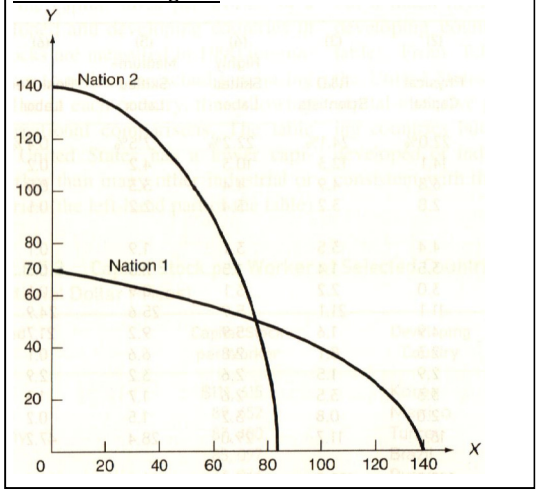
Factor prices are determined by both demand and supply. From principles of economics we have learnt that the demand for factor services is a derived demand, i.e. derived from the demand for the final commodity that requires the factor in its production.
With identical demand preferences in both nations, the two definitions of factor abundance give the same conclusions in our case.

However, this is not always the case. When the two definitions contradict, it is **the definition according to factor prices that should be used**.
For example, it is conceivable that the demand for commodity Y (the K-intensive commodity), and therefore the demand for capital, could be so much higher in Nation 2 than in Nation 1 that the relative price of capital would be higher in Nation 2 than in Nation 1 (despite the relatively greater supply of capital in Nation 2). In that case, Nation 2 would be considered K abundant according to the definition in physical terms and L abundant according to the definition in terms of relative factor prices

4.3.3 Factor Abundance and the Production Frontier

In our analysis Nation 2 is K-abundant and commodity Y is K-intensive, Nation 2 can produce relative more of commodity Y than Nation 1. On the other hand Nation 1 is L-abundant and will therefore produce relative more of the L-intensive commodity, X. The respective production frontiers for the two nations are shown, the production frontier for Nation 1 is flatter than that of Nation 2.

The Shape of the Production Frontiers of Nation 1 and Nation 2– Fig. 5.2



4.4 FACTOR ENDOWMENTS AND THE FACTOR PROPORTIONS THEORY

In the early 1900s Eli Heckscher and Bertil Ohlin, both Swedish economists, proposed a theory based on factor proportions. Heckscher laid the foundations for the model in a paper first published in 1919. In 1933, his student Ohlin elaborated on the theory in a doctoral thesis. From the early 1930s, the ideas of Heckscher and Ohlin rapidly gained adherents.
The fundamental simplicity of their theory and its logical completeness appealed to economists. The model was found to be capable of providing insights into such issues as the effect of international trade on factor prices and the effect of economic growth on the pattern of international trade. Because of the seminal contributions of the two Swedish economists, the factor proportions theory is often simply called the Heckscher-Ohlin (H-O) theory.
The H-O theory can be presented in the form of two theorems:

1. **The H-O Theorem** - which predicts the pattern of trade
2. **The Factor Price Equalisation Theorem** - which deals with the effect of international trade on factor prices).

4.4.1 The Heckscher-Ohlin Theorem (Factor-Proportions or Factor Endowment Theory)

The H-O theorem explains comparative advantage rather than assume it as is the case in classical theory. If all the 11 assumptions hold the H-O theorem can be stated as follows:

- **A nation will export the commodity whose production requires the intensive use of the nation's relatively abundant and cheap factor and import the commodity whose production requires the intensive use of the nation's relatively scarce and expensive factor.**
  Thus, a capital abundant country will export capital intensive commodities, i.e. Nation 1 (L-abundant) will export commodity X (L-intensive) while Nation 2 (K-abundant) will export commodity Y (K-intensive).

The H-O theorem singles out differences in factor abundance, or factor endowments among nations as the reason for differences in relative commodity prices, and hence the basis for comparative advantage and international trade. For this reason the H-O model is often called the factor-proportions or factor endowment theory.

South Africa is relatively well endowed with unskilled labour and land (including natural resources). Capital and skilled labour are relatively scarce and expensive. According to the factor proportions theory, South Africa should export commodities that embody relatively large amounts of unskilled labour and land, while importing goods that make intensive use of skilled labour and capital. The observed pattern of trade is consistent with these implications of the theory. South Africa exports mainly mining, agricultural products and natural resources. Most imports into South Africa are more sophisticated manufactured goods which need relatively large amounts of capital and skilled labour to produce.

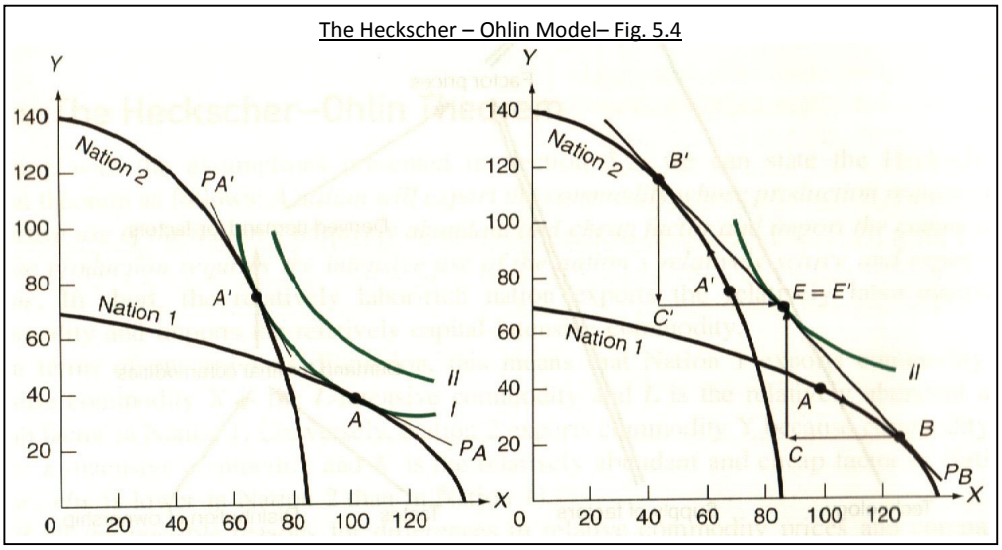
4.4.2 Illustration of the Heckscher-Ohlin Theory

Figure 5.4 in the textbook illustrates the welfare gains from trade in the two nations using the HO theory. **Students are expected to be able to illustrate such gains in the case of a single nation**.
We maintain our assumption regarding factor abundance and factor intensities in the two nations. Given that tastes are identical, the two nations face the same indifference map.
Before trade each nation produces and consumes at the point of tangency between its production frontier and the highest indifference curve (I). The internal relative commodity prices are given by the slopes of the tangents at the point of autarky equilibria (that is, point A and A').
With trade each nation specializes in and produces more of that commodity which is relative intensive in the relatively more abundant factor. Thus,

- Nation 1 specializes in commodity X and produces at point B, while
- Nation 2 produces at point B'.
- At these points the respective transformation curve are tangent to the common relative price line PB (international terms of trade).
- Nation 1 will export commodity X for commodity Y and will now consume at point E on a higher indifference curve II.
- Nation 2 will also benefit from trade as it will be able to move to a higher indifference curve (II).
- At this equilibrium nation 2's exports of commodity X are exactly equal to Nation 2's imports of the same commodity.

Illustration of the Heckscher-Ohlin Theory

The Heckscher – Ohlin Model– Fig. 5.4



- The left panel of the figure shows the production frontiers of Nation 1 and Nation 2.
- Nation 1's production frontier is skewed along the X-axis because **commodity X is the L-intensive** commodity. Nation 1 is the L-abundant nation, and both nations use the same technology.
- The two nations have equal tastes, they face the **same indifference map**. Indifference curve I (same for both nations) is tangent to Nation 1 's production frontier at point A and to Nation 2's production frontier at A'.
- Indifference curve I is the **highest indifference curve that Nation 1 and Nation 2 can reach in isolation**, and points A and A' represent their equilibrium points of production and consumption in the absence of trade.
  Note that although we assume that the two nations have identical tastes, the two nations need not be on the same indifference curve in isolation and end up on the same indifference map with trade.
- The ta**ngency of indifference curve I at po**ints A and A' defines the no-trade, or autarky, equilibrium-relative commodity prices of PA in Nation 1 and PA' in Nation 2. Since PA < PA', **Nation 1 has a comparative advantage in commodity X and Nation 2 has a comparative advantage in commodity Y.**

- The right panel shows that with trade **Nation 1 specializes in the production of commodity X, and Nation 2 specializes in the production of commodity Y** (s direction of the arrows on the production frontiers).
- Specialization in production proceeds until Nation 1 has reached point B and Nation 2 has reached point B', where the transformation curves of the two nations are tangent to the **common relative price line P_B.**
- Nation 1 will export commodity X for commodity Y and **consume at point E on indifference curve II (trade triangle BCE).**
- Nation 2 will export Y for X and consume at point E', which **coincides with point E (see trade triangle B'C'E').**
- Note that Nation 1's exports of commodity X equal Nation 2's imports of commodity X (BC = C'E').
- Similarly, Nation 2's exports of commodity Y equal Nation 1's imports of commodity Y (B'C' = CE).
- At $P_X/P_Y > P_B$, Nation 1 wants to export more of commodity X than Nation 2 wants to import at this high relative price of X, and P_X/P_Y falls toward P_B.
- On the contrary, at $P_X/P_Y < P_B$, Nation 1 wants to export less of commodity X than Nation 2 wants to import at this low relative price of X, and P_X/P_Y rises toward P_B.
- This tendency of P_X/P_Y could also be explained in terms of commodity Y.
- Also to be noted is that point E involves more of Y but less of X than point A. Nevertheless, Nation 1 gains from trade because **point E is on higher indifference curve II.**
- Similarly, even though point E' involves more X but less Y than point A', Nation 2 is also better off because **point E' is on higher indifference curve II.**
- This pattern of specialization in production and trade and consumption will remain the same until there is a change in the underlying demand or supply conditions in commodity and factor markets in either or both nations.

Note also that the H-O theory does not require identical tastes (i.e., equal indifference curves) in the two nations. It only requires that if tastes differ, they do not differ sufficiently to neutralize the tendency of different factor endowments and production possibility curves from leading to different relative commodity prices and comparative advantage in the two nations

4.5 FACTOR - PRICE EQUALIZATION AND INCOME DISTRIBUTION

The factor-price equalization theorem, which is really a corollary, since it follows directly from the H-O theorem and holds only if the H-O theorem holds. It is sometimes referred to as the Heckscher-Ohlin-Samuelson theorem (H-O-S).

4.5.1 The Factor price Equalization Theorem

Starting with the 11 assumptions, we can state the factor-price equalization (H-O-S) theorem as follows:

> *International trade will bring about equalization in the relative and absolute returns to homogeneous factors across nations*. *As such, international trade is a substitute for the international mobility of factors.*

This theorem says that international trade will cause the wage rate of homogenous labour and the rental price of capital (interest rate) to be the same in all trading nations. Both **relative and absolute factor prices** will be equalised.

- We know that in the absence of trade the relative price of **commodity X is lower in Nation 1 than in Nation 2** because the relative price of labor, or the wage rate, is lower in Nation 1.
- As Nation 1 specializes in the production of commodity X (L-intensive) and reduces its production of commodity Y (the K-intensive), the relative demand for labor rises, causing wages (w) to rise, while the relative demand for capital falls, causing the interest rate (r) to fall.
- The exact opposite occurs in Nation 2 which specializes in the production of Y and reduces its production of X with trade, its demand for L falls, causing w to fall, while its demand for K rises, causing r to rise.
- To summarize, international trade **causes w to rise in Nation 1 (the low-wage nation) and to fall in Nation 2 (the high-wage nation).**
    - Thus, **international trade reduces the pre-trade difference in w between the two nations.**
- Similarly, international trade causes r to fall in Nation 1 (K-expensive nation) and to rise in Nation 2 (K-cheap nation),
    - Thus, **international trade reduces the pre-trade difference in r between the two nations.**

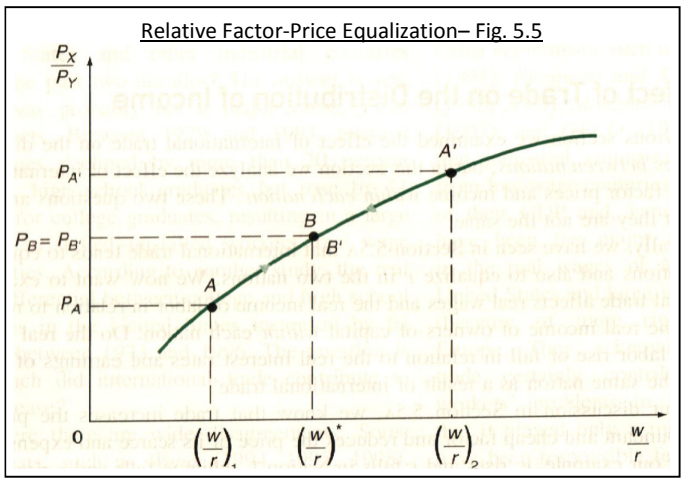
We can go further and demonstrate that international trade not only tends to reduce the international difference in the returns to homogeneous factors, but would in fact bring about complete equalization in relative factor prices when all of the assumptions made hold. This is so because as long as relative factor prices differ, relative commodity prices differ and trade continues to expand. But the expansion of trade reduces the difference in factor prices between nations. Thus, international trade keeps expanding until relative commodity prices are completely equalized, which means that relative factor prices have also become equal in the two nations.

We can show graphically that relative factor prices are equalized by trade in the two nations.

- In Figure 5.5, the relative price of labor (w/r) is measured along the horizontal axis
- the relative price of commodity X (P_X/P_Y) is measured along the vertical axis.
- Since each nation operates under perfect competition and uses the same technology, there is a one-to-one relationship between w/r and P_X/P_Y. That is, each w/r ratio is associated with a specific P_X/P_Y ratio.
- Before trade, Nation 1 is at point A, with w/r = $(\mathrm{w/r})_1$ and $P_X/P_Y = P_A$
- while Nation 2 is at point A', with w/r = $\left(\frac{\mathrm{w}}{\mathrm{r}}\right)_2$ and $P_X/P_Y = P_{A'}$
- With w/r lower in Nation 1 than in Nation 2 in the absence of trade, P_A is lower than P_A' so that Nation I has a comparative advantage in commodity X.
- As Nation 1 (L-abundant nation) specializes in the production of X (L-intensive commodity) and reduces the production of commodity Y, the demand for labor increases relative to the demand for capital and w/r rises in Nation 1. This causes P_X/P_Y to rise in Nation 1.
- On the other hand, as Nation 2 (K-abundant nation) specializes in the production of Y (K-intensive commodity), its relative demand for capital increases and r/w rises (i.e., w/r falls). This causes P_X/P_Y to rise (i.e., P_X/P_Y to fall).
- The process will continue until point B=B', at which P_B=P_B, and w/r = (w/r)* in both nations.

To summarize, P_X/P_Y will become equal as a result of trade, and this will occur only when w/r has also become equal in the two nations (as long as both nations continue to produce both commodities).
This shows the process by which **relative, not absolute**, factor prices are equalized. Equalization of **absolute factor prices** means that free international trade also equalizes the real wages for the same type of labor in the two nations and the real rate of interest for the same type of capital in the two nations.

Relative Factor-Price Equalization– Fig. 5.5



Trade acts as a substitute for the international mobility of factors of production in its effect on factor prices. With perfect mobility, labor and capital would migrate from the low-wage low-interest nation to the high-wage high-interest nation until wages and capital in the two nations became equal.
In either case, the result is **complete equalization in the absolute returns of homogeneous factors**.
With some (rather than perfect) international mobility of factors, a smaller volume of trade would be required to bring about equality in factor returns between the two nations.

4.5.2 Effect of trade on the Distribution of Income: The Stolper-Samuelson Theorem

In the previous section we saw that international trade tends to equalize factor prices between the two trading nations. We now analyze how international trade affects real factor prices and real incomes of the owners of the factors of production within each nation.
We have seen that international trade raises the price of the abundant and cheap factor of production and reduces the price of the scarce and expensive factor of production. In our example, the wage rate (w) rises and the interest rate (r) falls in Nation 1, while the opposite happens in Nation 2. Since both factors of production are assumed to remain fully employed before and after trade, the real income of labour and the real income of the owners of capital move in the same direction as the movement in factor prices. Thus, trade causes the real income of labour to rise and the real income of the owners of capital to fall in Nation 1 (the nation with cheap labour and expensive capital). On the other hand, trade causes the real income of labour to fall and the real income of the owners of capital to rise in Nation 2 (the nation with expensive labour and cheap capital). This is known as the **Stolper-Samuelson theorem**. In short, this **theorem states that the internal distribution of income will change in favour of each country's relatively abundant factor of production.**

4.5.3 The Specific-Factors Model

The effect of international trade on the distribution of income discussed in the previous section is based on the assumption that factors are perfectly mobile among the nation's industries or sectors. Although this is likely to be true in the long run, it may not be true in the short run, when some factors (say, capital) may be immobile or specific to some industry or sector. In this case, the conclusions of the Heckscher-Ohlin model on the effects of international trade on distribution need to be modified as explained by the **specific-factors model.**

Sppose that a nation that is relatively labor-abundant produces two commodities:

- commodity X, which is L intensive, and
- commodity Y, which is K intensive.

Both commodities are produced with labor and capital, but labor is mobile between the two industries while capital is specific to each industry. That is, the capital used in the production of X cannot be used in the production of Y, and vice versa.

- This is **like having three factors of production**: labor (mobile between X and Y), natural resources (arable land), which are used only in the production of X, and capital, which is used only in the production of Y.
- With the opening of trade, the **nation will specialize in the production** of and will export commodity X (the labor-intensive commodity) and import commodity Y (the specific capital-intensive commodity).

- This will **increase the relative price of X** (i.e., P_X/P_Y) and **the demand and nominal wage rate of labor in the nation**. Some labor will move from the production of Y to the production of X. Since labor is mobile between the two industries, industry Y will have to pay the higher going nominal wage rate for labor even while facing a reduction in P_X/P_Y and the transfer of some its labor to the production of X.

The effect of this on the **real wage rate of labor in the nation is ambiguous.**

- The reason is that the **increase in P_X/P_Y and in the derived demand for labor will be greater than the increase in the nominal wage rate** and so the real wage rate of labor falls in terms of commodity X.
- On the contrary, since the nominal wage rate increased but the price of commodity Y (the import-competing commodity) declined in the nation, the real wage rate increased in terms of commodity Y. Thus, **the real wage rate in the nation falls in terms of X but rises in terms of Y.**
- The effect on the real wage of labor is, therefore, ambiguous.
- The real wage and income will **fall for those workers who consume mainly commodity X and will increase for those workers who consume mainly commodity Y**.

The result for specific **capital is <u>not</u> ambiguous**.

- Since capital is specific to each industry, opening trade does not lead to any transfer of capital from the production of commodity Y to the production of commodity X in the nation.
- With more labor used with the given specific capital in the production of X (the nation's export commodity), the real return on capital in the production of X rises.
- On the contrary, with less labor used with the same amount of specific capital in the production of Y (the nation's import-competing commodity), the real return on the specific capital used in the production of Y falls.

The conclusion reached by the specific-factors model is that:

- **Trade will have an ambiguous effect on the nation's mobile factors, benefit the immobile factors specific to the nation's export commodities or sectors, and harm the immobile factors specific to the nation's import-competing commodities or sectors.**

In the previously mentioned example, the opening of trade will have an ambiguous effect on the real wage and income of labor (the nation's mobile factor), will increase the real return on the specific capital used in the production of X (the nation's export commodity), and will reduce the real return on the other specific factor used in the production of commodity Y (the nation's import-competing commodity). If the specific factor used in the production of X was natural resources, then opening of trade would increase the real return or rent on land, reduce the real return on capital used in the production of Y, and have an ambiguous effect on labor.

<u>4.5.4 Empirical Relevance</u>

This section discusses why the returns for homogenous factors of production are not equalized in the real world. The reason why trade has not equalized factor returns is that the simplifying assumptions on which the theory is based do not hold in the real world.

<u>**5.6** Empirical Tests of the Heckscher-Ohlin Model</u>

A model must be successfully tested empirically before it is accepted as a theory. If a model is contradicted by empirical evidence, it must be rejected and an alternative model drawn up.
We present the results of the original empirical test of the Heckscher-Ohlin model, conducted by Wassily Leontief. Since these results seemed to conflict with the model, many attempts were made to reconcile them with the model; in the process numerous other empirical tests were undertaken.

4.6.1 The Leontief Paradox

Using U.S. data for the year 1947, Wassily Leontief conducted the first empirical test of the Heckscher-Ohlin model. Since the United States was the most K-abundant nation in the world, Leontief expected to find that it exported K-intensive commodities and imported L-intensive commodities.
For this test, Leontief utilized the **input-output table of the U.S. economy to calculate the amount of labor and capital in a "representative bundle" of $1 million worth of U.S. exports and import substitutes for the year 1947.**

- To be noted is that Leontief estimated K/L for U.S. import substitutes rather than for imports.
- Import substitutes are commodities, such as automobiles, that the United States produces at home but also imports from abroad (because of incomplete specialization in production).
- Leontief was forced to use U.S. data on import substitutes because foreign production data on actual U.S. imports were not available. However, Leontief correctly reasoned that even though U.S. import substitutes would be more K intensive than actual imports (because K was relatively cheaper in the United States than abroad), they should still be less K intensive than U.S. exports if the H-0 model held true. Of course, the use of U.S. data on import substitutes, instead of foreign data on actual U.S. imports, also eliminated from the calculations commodities, such as coffee and bananas, not produced at all in the United States.
- U.S. import substitutes were about 30 percent more K-intensive than U.S. exports. That is, the United States seemed to export L-intensive commodities and import K-intensive commodities. This was the opposite of what the H-O model predicted, and it became known as the Leontief paradox.
- In the same study, Leontief tried to rationalize his results rather than reject the H-O model. He argued that what we had here was an optical illusion:
    - Since in 1947 U.S. labor was about three times as productive as foreign labor, the United States was really an L-abundant nation if we multiplied the U.S. labor force by 3 and compared this figure to the availability of capital in the nation.
    - Therefore, it was only appropriate that U.S. exports should be L-intensive in relation to U.S. import substitutes. This explanation is not acceptable, and Leontief himself subsequently withdrew it.
    - The reason is that while U.S. labor was definitely more productive than foreign labor (though the multiple of 3 used by Leontief was largely arbitrary), so was U.S. capital. Therefore, both U.S. labor and U.S. capital should be multiplied by a similar multiple, leaving the relative abundance of capital in the United States more or less unaffected.

4.6.2 Explanations of the Leontief paradox and Other Empirical Tests of the H-O Model

There have been a number of explanations to the Leontief's findings. Some of them were provided by Leontief himself. Most of these explanations and other subsequent empirical tests are discussed below. The possible explanations of the paradox include:

1. The superiority of U.S labour
2. The human capital (Kenen 1965)
3. Technology explanation (R & D)
4. Natural resources
5. Factor intensity reversals
6. Inter-country differences in demand or consumption patterns
7. Influence of tariffs.

1. The Year 1947 Was Too Close To World War II To Be Representative.
One possible explanation of the paradox is that the year 1947, used for the test, was *too close to World War II* to be representative. Leontief himself answered this criticism by repeating his study in 1956 using the 1947 input-output table of the U.S. economy but 1951 trade data. (The year 1951 is usually taken to mark the completion of postwar reconstruction.) This analysis showed that U.S. exports were only 6 percent more L intensive than U.S. import substitutes. Leontief had reduced the paradox but had not eliminated it.

2. Leontief Used a Two-Factor Model (L and K)
A more general source of bias is that Leontief used a two-factor model (L and K), thus abstracting from other factors such as *natural resources* (soil, climate, mineral deposits, forests, etc.). However, a commodity might be intensive in natural resources so that classifying it as either K or L intensive (with a two-factor model) would clearly be inappropriate. Furthermore, many production processes using natural resources—such as coal mining, steel production, and farming—also require large amounts of physical capital. The U.S. dependence on imports of many natural resources, therefore, might help explain the large capital intensity of U.S. import-competing industries.

3. U.S. Tariff Policy
U.S. tariff policy was another source of bias in the Leontief study. A tariff is nothing else than a tax on imports. As such, it reduces imports and stimulates the domestic production of import substitutes. In a 1956 study, Kravis found that the most heavily protected industries in the United States were the L-intensive industries. This biased the pattern of trade and reduced the labor intensity of U.S. import substitutes, thus contributing to the existence of the Leontief paradox.

4. Leontief Bias Towards Physical Capital
Perhaps the most important source of bias was the fact that Leontief included in his measure of capital only physical capital (machinery, equipment, buildings) and *completely ignored human capital* (education, job training, health embodied in workers) which increase their productivity. The implication is that since U.S. labor embodies more human capital than foreign labor, adding the human capital component to physical capital would make U.S. exports more K intensive relative to U.S. import substitutes.

5. Influence of Research and Development (R&D)
Somewhat related to human capital is the influence of research and development (R&D) on U.S. exports. *The "knowledge" capital resulting from R&D* leads to an increase in the value of output derived from a given stock of material and human resources. Even casual observation shows that most U.S. exports are R&D and skill intensive. Thus, human and knowledge capital are important considerations in determining the pattern of U.S. trade. These were not considered by Leontief in his study.

7. Human Capital Approach by Kravis, Keesing, Kenen, and Baldwin
In 1956, two studies by Kravis found that wages in U.S. exports industries in both 1947 and 1951 were about 15 percent higher than wages in U.S. import-competing industries. Kravis argued that the *higher wages in U.S. exports industries* were a reflection of the greater productivity and human capital in U.S. exports than in U.S. import substitutes.
In a 1966 study, Keesing found that *U.S. exports were more skill intensive* than the exports of nine other industrial nations for the year 1957. This reflected the fact that the United States had the most highly trained labor force, embodying more human capital than other nations.
In 1965, Kenen actually *estimated the human capital in U.S. exports and import-competing goods*, added these estimates to the physical capital requirements, and then recompute K/L for U.S. exports and U.S. import substitutes. Using 1947 data and without excluding products with an important natural resource content (as in the original Leontief study), Kenen succeeded in eliminating the Leontief paradox.
In 1971, Baldwin updated Leontief's study by using the 1958 U.S. input-output table and U.S. trade data for 1962. Baldwin found that excluding natural resource industries was not sufficient to eliminate the paradox unless human capital was included.

8. Leamers Multifactor World
In 1980 and 1984 publications, Learner argued that in a multifactor world we should compare the K/L ratio in *production versus consumption rather than in exports versus imports*. Taking this approach to Leontief's 1947 data, Learner (1984) found that the K/L ratio embodied in U.S. production was indeed greater than that embodied in U.S. consumption, so that the paradox disappeared. This was confirmed in a 1981 study by Stern and Maskus for the year 1972 and in a 1990 study by Salvatore and Barazesh for each year from 1958 to 1981 when natural resource industries were excluded.

9. More Complete 1967 Cross-Sectional Data on Trade
In a 1987 study, Bowen, Learner, and Sveikauskas, using more complete 1967 cross-sectional data on trade, *factor-input requirements, and factor endowments for 27 countries, 12 factors (resources), and many commodities*, found that the H-0 trade model was supported only about half of the time. Inflicting a blow on the validity of the H-0 model.
Subsequent research, however, does provide support for some restricted form of the H-0 trade model, In a 1993 study, Brecher and Choudhri found production evidence in support of the H-0 model for U.S.-Canadian trade; a 1994 study by Wood provided support for the H-O model for trade between developed and developing countries based on differences in their relative availability of skills and land, and so did a 1995 study by the World Bank.

10. Factor Endowments and Comparative Advantage
More evidence validating a qualified or restricted form of the H-O theory, using data on a large sample of developed and developing countries over the 1970-1992 period and *allowing for differences in technology among nations*, Harrigan and Zakrajsek (2000) show that factor endowments do explain comparative advantage. Schott provides "strong support for H-O specialization" by utilizing more disaggregated data, which shows that countries specialize in the particular subset of goods most suited to their specific factor endowments.

11. Davis and Weinstein
Additional evidence is provided by Davis and Weinstein (2001). They utilized the trade data of ten countries with the rest of the world. For 34 sectors, over the 1970-1995 period, and allowing for different technologies and factor prices across countries, the existence of non-traded goods, and transportation costs, Davis and Weinstein show that countries export commodities intensive in their relatively abundant and cheap factors of production and they do so in the predicted magnitudes.

Thus we can retain the **traditional Hecksher-Ohlin model** for explaining trade between developed and developing countries and a qualified or **restricted version of the H-0 model** for the much larger volume of trade among developed countries if the model is extended to allow for different technologies and factor prices across countries, as well as the existence of non-traded goods, economies of scale, product differentiation, and transportation costs. Some would argue that not much is left from the original H-O model and that all we have is a general factor-endowments trade model.

4.6.3 Factor Intensity Reversal

Factor-intensity reversal is where a commodity is L-intensive in the L-abundant nation and K-intensive in the K-abundant nation, i.e. if X is the L-intensive in Nation 1 (low-wage nation) and K-intensive in Nation 2 (high-wage nation).

- Factor-intensity reversal occurs because of the **elasticity of substitution of factors in production,** that is:
- The **degree or ease with which one factor can be substituted for another in production as the relative price of the factor declines**. E.g. the elasticity of substitution of L for K is much greater in the production of X than in the production of Y, i.e. It is easier to substitute L for K (or vice versa) in the production of X than in the production of Y.
- Factor-intensity reversal is more likely to occur the **greater is the difference in the elasticity of substitution** of L for K in the production of the two commodities. With a large elasticity of substitution of L for K in the production of X, Nation 1 will produce X with L-intensive techniques because its wages are low and nation 2 will produce X with L-intensive techniques because its wages are high.
- If at the same time the **elasticity of substitution of L for K is very low** in the production of Y, the two nations will be forced to use similar techniques in producing Y even though their relative factor prices may differ greatly. As a result, X will be the L-intensive commodity in Nation 1 and the K-intensive commodity in Nation 2.
- When factor-intensity reversal is present, **neither the H-0 theorem nor the factor-price equalization theorem holds**. The H-O model fails as it predicts that Nation 1 (L-abundant) would export commodity X (L-intensive) and that Nation 2 (K-abundant) would also export commodity X (K-intensive). Since the two nations cannot export the same homogeneous commodity to each other, the H-O model no longer predicts the pattern of trade.

- **With factor-intensity reversal, the factor-price equalization theorem also fails to hold**.
    - The reason for this is that as Nation 1 specializes in the production of commodity X and demands more L, the relative and the absolute wage rate will rise in Nation I (the low-wage nation).
    - Conversely, since Nation 2 cannot export commodity X to Nation 1, it will have to specialize in the production of and export commodity Y. Since commodity Y is the L-intensive commodity in Nation 2, the demand for L and thus wages will also rise in Nation 2.
    - What happens to the difference in relative and absolute wages between Nation 1 and Nation 2 depends on how fast wages rise in each nation. The difference in relative and absolute wages between the two nations could decline, increase, or remain unchanged as a result of international trade, so that the factor-price equalization theorem no longer holds.

That **factor-intensity reversal does occur in the real world** is beyond doubt. The question is how prevalent it is. If factor reversal is very prevalent, the entire H-O theory must be rejected. If it occurs but rarely, we can retain the H-O model and treat factor reversal as an exception. The frequency of factor reversal in the real world is an empirical question.

- The first empirical research conducted by Minhas in 1962, in which he found factor reversal to be fairly prevalent, occurring in about one-third of the cases that he studied. However, by correcting an important source of bias in the Minhas study, Leontief showed in 1964 that factor reversal occurred in only about 8 percent of the cases studied, and that if two industries with an important natural resource content were excluded, factor reversal occurred in only 1 percent of the cases.
- A study by Ball, published in 1966 and testing another aspect of Minhas's results, confirmed Leontief's conclusion that factor-intensity reversal seems to be a rather rare occurrence in the real world. As a result, the assumption that one commodity is L intensive and the other commodity is K intensive at all relevant relative factor prices generally holds, so that the H-0 model can be retained.

4.7 CRITICISMS OF THE FACTOR PROPORTIONS THEORY

Criticism of the factor proportions theory has been directed at both the assumptions of the theory and its inconsistencies with the empirical evidence. The main thrust of these criticisms is that the theory has little relevance to the real world.

- A major blow to the theory began with empirical tests carried out by Leontief in 1951. Given the relative capital abundance of the US, the factor proportions theory predicts that the USA should specialise in and export K-intensive goods and import L-intensive commodities. Leontief found the opposite, this became known as **the Leontief paradox**
- A strong **assumption is that tastes are identical** in the trading countries. When tastes and demand conditions are not identical, they may cause the prices of the same goods to differ substantially from what would be expected on the basis of their relative factor intensities. This is called **demand reversal** and results in a contradiction of the factor proportions theory.
- Another contradiction of the theory is **factor intensity reversal,** i.e. if X is produced using labour intensive methods becomes a capital intensive commodity. Both countries will want to specialise in and export the same commodity and thus no trade will occur. The theory is unable to predict the pattern of trade under these circumstances.
- Criticism has also been levelled at the simplifying assumption of zero transport costs. Clearly this is an unrealistic assumption but the theory can be modified to include positive transport costs fairly easily

Demand and factor intensity reversals weaken the conclusions of the factor proportions theory but do not necessarily invalidate it. This would depend on how widespread such contradictions to the theory are in the real world. The evidence here is mixed but does not seem to be sufficiently widespread to discard the factor proportions theory.

Also of concern are the assumptions of perfect competition, constant returns to scale and identical technology. Relaxing these assumptions gives rise to alternative explanations of international trade, which are discussed next.

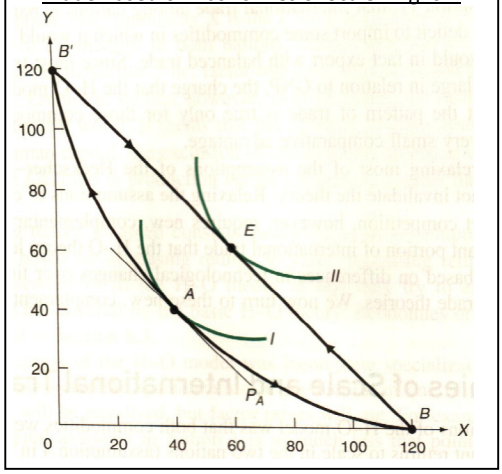
4.8 ALTERNATIVE THEORIES OF TRADE

We have seen in the preceding section that the H-O theory based **comparative advantage of differences in factor endowments between nations**. This theory is not able to a significant portion of today's international trade. Alternative (new) trade theories base international trade flows on economies of scale, imperfect competition and differences in the development and spread of new technologies over time among nations.

4.8.1 International Trade and Economies of Scale

Assumption number 4 of the H-O model was that both goods are produced under conditions of constant returns to scale in the two nations. It is here argued that with increasing returns to scale mutually beneficial trade between two countries is still possible. Increasing returns to scale refers to a situation where **output grows proportionately more than the increase in inputs or** factors of production. Economies of scale are usually accompanied by extensive product differentiation.

Trade Based on Economies of Scale– Fig. 6.1



- Increasing returns to scale occur because at a larger scale of operation a greater division of labor and specialization becomes possible. Workers specialize in repetitive tasks causing an increase in productivity.
- A larger scale of operation may permit the introduction of more specialized and productive machinery than would be feasible in a small scale operation.
- Figure 6.1 shows how mutually beneficial trade can be based on increasing returns to scale. If the two nations are assumed to be **identical in every respect,** we can use a single production frontier and a single indifference map to refer to both nations.
- Increasing returns to scale result in production frontiers that are **convex from the origin**.
- With **identical production frontiers and indifference maps**, the no-trade equilibrium relative commodity prices in the two nations are also identical, this is $P_X/P_Y = P_A$ in both nations and is given by the slope of the common tangent to the production frontier and indifference curve I at point A.
- With trade, Nation 1 could specialize in the production of X and produce at point B. Nation 2 would then specialize in the production of Y and produce at point B'.
- By then exchanging 60X for 60Y with each other, each nation would end up consuming at point E on indifference curve II, thus gaining 20X and 20Y.
- These gains from trade arise from economies of scale in the production of only one commodity in each nation. In the absence of trade, the two nations would produce both commodities.

Note: The no-trade equilibrium point A is unstable. If, for whatever reason, Nation 1 moves to the right of point A along its production frontier, the relative price of X (the slope of the production frontier) will fall and will continue to fall until Nation 1 becomes completely specialized in the production of commodity X and similarly for Nation 2.

Several additional aspects of the analysis and figure must be clarified.

1. It is a matter of complete **indifference which of the two nations specializes** in the production of commodity X or Y.
2. The **two nations need not be identical** for mutually beneficial trade to result from increasing returns to scale.
3. If economies of scale persist over a sufficiently long range of outputs a **monopoly or oligopoly** may occur.
4. An increase in international trade through **outsourcing and offshoring** are a source of international economies of scale. Economies of scale must also be clearly distinguished from external economies. The former refer to the **reduction in the average costs of production** as the firm's output expand and are thus internal to the firm. External economies refer to the reduction in each firm's average cost of production curve as output expands.
5. A nation exports those manufactured products for which a large domestic market exists and acquires the necessary experience and efficiency by doing this to be able to export these commodities to other nations with similar tastes and income levels. According to this **"preference similarity" or "overlapping demands" hypothesis**, trade in manufactures is likely to be largest among countries with similar tastes and income levels. While true in some cases, it also cannot explain why non-Christian nations like Japan and Korea export artificial Christmas trees and cards in the absence of a domestic market for these products.

4.8.2 International Trade and Imperfect Competition

A significant part of international trade is **intra-industry trade**, e.g. Germany exports motor cars to France, but it also imports motor cars from France. The imports and exports are similar. Germany and France endowments of skilled versus unskilled labour, capital and land are broadly the same. According to the factor proportions theory, they should have the same advantages and trade between them should be minimal. The factor proportions theory can explain inter-industry trade based on different goods from different industries, but cannot easily explain the growing volume of intra-industry trade.

Trade Based on Product Differentiation

International trade involves the exchange of differentiated products of the same industry. That is, a great deal of international trade is **intra-industry trade in differentiated products**, as opposed to **inter-industry trade in completely different product**s. Intra-industry trade arises in order to take advantage of important economies of scale in production. International competition forces each firm or plant in industrial countries to produce only one or a few varieties and styles of the same product to keep unit costs low. The nation then imports other varieties and styles. Intra industry trade benefits consumers because of the wider range of choices available at the lower prices made possible by economies of scale in production.

The importance of intra-industry trade became apparent when tariffs and other obstructions to the flow of trade among members of the European Union, or Common Market, were removed in 1958. Balassa found that the volume of trade surged, but most of the increase involved the exchange of differentiated products within each broad industrial classification. As tariffs were reduced and finally eliminated and trade expanded within the European Union, each plant could specialize in the production of only a few varieties and styles of a product, and unit costs fell sharply as a result.
Several other interesting considerations must be pointed out with respect to the intra-industry trade models developed by Helpman, Krugman, Lancaster, and others since 1979;

1. Trade in the H-O model is based on comparative advantage, intra-industry trade is based on product differentiation and economies of scale. Thus:
    - **Comparative advantage** trade is likely to be larger with greater difference in factor endowments among nations
    - **Intra-industry trade** is likely to be larger among industrial economies of similar size and factor proportions.
2. With differentiated products produced under economies of scale, **pretrade-relative commodity prices may no longer accurately predict the pattern of trade.** Specifically, a large country may produce a commodity at lower cost than a smaller country in the absence of trade because of larger national economics of scale. With trade, however, all countries can take advantage of economies of scale to the same extent, and the smaller country could conceivably undersell the larger nation in the same commodity.
3. The H-0 model predicts that trade will lower the return of the nation's scarce factor. With intra-industry trade based on economies of scale it is **possible for all factors to gain**.
4. Intra-industry trade is related to the sharp increase in international trade in parts and components of a product, or outsourcing. The utilization of **each nation's comparative advantage to minimize total production costs can be regarded as an extension of the basic H-O model to modern production conditions**.

The tentative conclusion that can be reached is that comparative advantage seems to determine the pattern of inter-industry trade, while economies of scale in differentiated products give rise to intra-industry trade. The more dissimilar are factor endowments, the more important are comparative advantage and inter-industry trade. On the other hand, intra-industry trade is likely to be dominant the more similar are factor endowments broadly defined.
Comparative advantage is somewhere in the background. Inter-industry trade reflects natural comparative advantage while intra-industry trade reflects acquired comparative advantage.

More importantly, the more recent empirical tests of the H-O theory discussed in Section 5.6 showed that by allowing for differences in technology and factor prices across countries, for the existence of nontraded goods and transportation costs, and by utilizing more disaggregated factor endowments and trade data, a great deal of intra-industry trade is in fact based on international differences in factor endowments and comparative costs. Thus, there seems to be much less conflict between intra-industry and the H-0 theories than might appear at first sight.

Measuring Intra-Industry Trade

The level of intra-industry trade is measured by the **intra-industry trade index (T):** Where

$$T = 1 - \frac{|X - M|}{X + M}$$

- **X** represents the value of exports
- **M** represents the value of imports of a particular industry or commodity group
- The **vertical bars** in the numerator of equation denote the absolute value.

The value of T ranges from 0 to 1

- **T = 0** when a country only exports or only imports the good in question (there is no intra-industry trade).
- **T = 1** if the exports and imports of a good are equal, (intra-industry trade is maximum).

There is a serious shortcoming in using the index T to measure the degree of intra-industry trade. This results from the fact that we get very different values for T, depending on how broadly we define the industry or product group, i.e. the **more broadly we define an industry, the greater will be the value of T.** The reason for this is that the more broadly an industry is defined, the more likely it is that a country will export some varieties of the differentiated product and import others. Thus, the T index must be used with caution. It can, nevertheless, be very useful in measuring differences in intra-industry trade in different industries and changes in intra-industry trade for the same industry over time

4.8.3 Trade based on dynamic technological differences

4.8.3.1 The Technological Gap Model

This was developed by Posner (1961). This model **stresses the time lag in the imitation process**. The model is based on the hypothesized impact of technological lags and leads in product innovation on the pattern of international trade in manufactured products.

As the most technologically advanced nation, the US exports a large number of new high-technology products. As foreign producers acquire the new technology, they eventually are able to conquer markets abroad, and even the U.S. market for the product, because of their lower labor costs. In the meantime, U.S. producers may have introduced still newer products and production processes and may be able to export these products based on the new technological gap established.

A shortcoming of this model, however, is that it does not explain the size of technological gaps and does not explore the reason that technological gaps arise or exactly how they are eliminated over time.

The models **argue that comparative advantage is not static but shifts over time** as a result of technical change through sustained innovative activity (through R & D). This is a supply-based theory and contends that the technologically-abundant countries would possess relative advantages in new products over less technologically developed nations

4.8.3.2 The Product Cycle Model

It was developed by Vernon (1966). This model **stresses product standardization**. When a new product is introduced, it usually requires highly skilled labour to produce. As the product matures and acquires mass acceptance, it becomes standardized and can be produced by mass production techniques and less skilled labour. Over time comparative advantage in the product shifts from the advanced nation that originally introduced it to less advanced nations, where labour is relatively cheap. The innovating country ends up as a net importer of the product. Vernon also pointed out that high-income and labor-saving products are most likely to be introduced in rich nations because:

1. The opportunities for doing so are greatest there
2. The development of these new products requires proximity to markets so as to benefit from consumer feedback in modifying the product
3. There is a need to provide service.

A classic example of the product cycle model is provided by the experience of U.S. and Japanese radio manufacturers since World War II. Immediately after the war, U.S. firms dominated the international market for radios, using vacuum tubes. However, within a few years, Japan was able to capture a large share of the market by copying U.S. technology and utilizing cheaper labor. The United States recaptured technological leadership with the development of transistors. But, once again, Japan imitated the technology and was able to undersell the United States. Subsequently, the United States reacquired its ability to compete successfully with Japan by introducing printed circuits.

It remains to be seen whether this latest technology will finally result in radios being labor or capital intensive and whether the United States will be able to stay in the market—or whether both the United States and Japan will eventually be displaced by still cheaper producers in such nations as Korea and Singapore.

In a 1967 study, Gruber, Mehtu, and Vernon found a **strong correlation between expenditures on R&D and export performance.** The authors took expenditures on research and development as a proxy for the temporary comparative advantage that firms and nations acquire in new products and new production processes. These results tend to support both the technological gap model and the closely related product cycle model.

The technological gap and product cycle models can be regarded as extensions of the basic **H**-O model into a technologically dynamic world, rather than as alternative trade models. In short, the product cycle model tries to explain **dynamic comparative advantage** for new products and new production processes, as opposed to the basic H-0 model, which explains **static comparative advantage.**

The **technological gap model emphasizes the time lag** in the imitation process, the **product cycle model stresses the standardization process**. Accordingly, the most highly industrialized economies are expected to export non-standardized products and more advanced technologies and import products embodying old or less advanced technologies.

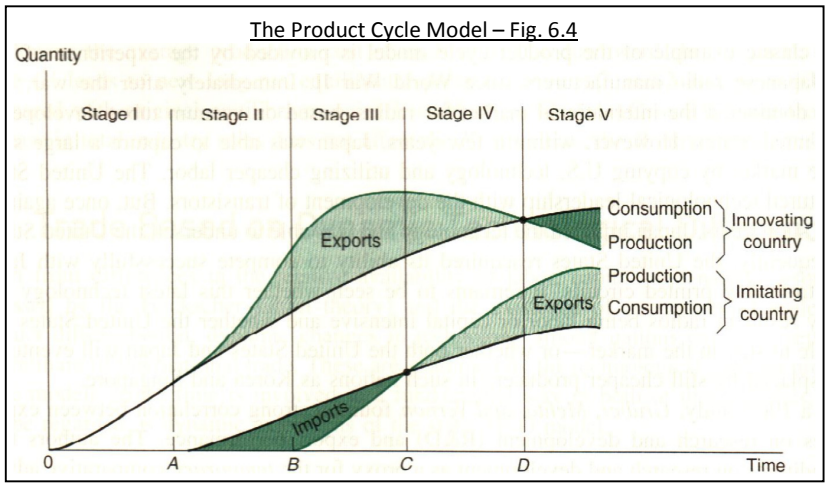
Illustration of the Product Cycle Model

The product cycle model identifies five different stages in the life cycle of a product from the point of view of the innovating and the imitating country.

- **Stage 1: New-product phase (time OA)** - The specialty product is produced and consumed only in the innovating country.
- **Stage 2: Product-growth phase (time AB)** - Production is perfected in the innovating country and increases rapidly to accommodate rising demand at home and abroad. There is not yet any foreign production of the product, so that the innovating country has a monopoly in both the home and export markets.
- **Stage 3: Product-maturity phase (time BC) -** The product becomes standardized, the innovating firm may find it profitable to license other firms to also manufacture the product. The imitating country starts producing the product for domestic consumption.
- **Stage 4: Product-decline stage (time CD) -** The imitating country, facing lower labor and other costs now that the product has become standardized and no longer requires development and engineering skills, begins to undersell the innovating country in third markets, and production of the product in the innovating country declines. Brand competition now gives way to price competition.
- **Stage 5: Product-decline stage (past time D) -** The imitating country starts underselling the innovating country in the innovators market, and production of the product in the innovating country declines rapidly or collapses. Technological diffusion, standardization, and lower costs abroad thus bring the end of the life cycle for the product.
  It is now time for the innovating country to concentrate attention on new technological innovations and to introduce new products. Stages IV and V are often referred to as the product-decline stage.

In recent years, the diffusion lag of new technologies has shortened considerably, so that we have witnessed a time compression of the product life cycle. That is, the time from the introduction of a new product in the innovating country to the time when the imitating country displaces the innovating country in third markets and in the innovating country itself has become shorter and shorter.

The Product Cycle Model – Fig. 6.4



STUDY UNIT 5 – TARIFF AND NONTARIFF BARRIERS TO TRADE

5.1 INTRODUCTION

The greater the volume of international trade, the greater the opportunities for growth and economic welfare. All nations impose some restrictions on the free flow of international trade. Free trade is not always mutually beneficial.

5.2 TARIFFS

5.2.1 Specific and ad valorem tariffs

A tariff is a tax or duty levied on the traded commodity as it crosses a national boundary.

- An **import tariff** is a duty on the imported commodity,
- An **export tariff** is a duty on the exported commodity.

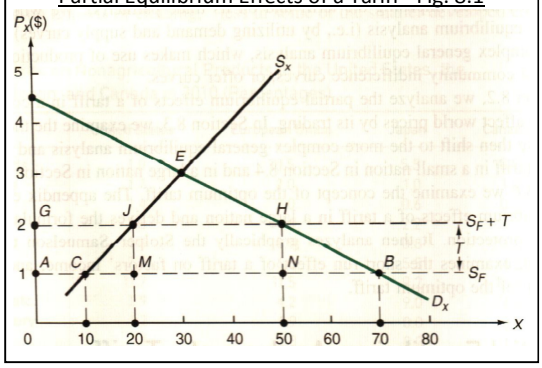
Tariffs can be ad valorem, specific, or compound.

- An **ad valorem tariff** is expressed as a fixed percentage of the value of the traded commodity - A 10 percent ad valorem tariff on bicycles would result in payment to customs of the sum of $10 on each $100 imported bicycle.
- A **specific tariff** is expressed as a fixed sum per physical unit of the traded commodity - A specific tariff of $10 on imported bicycles means that customs officials collect the fixed sum of $10 on each imported bicycle regardless of its
- A **compound tariff** is a combination of an ad valorem and a specific tariff - A compound duty of 5% ad valorem and a specific duty of $10 on imported bicycles would result in the collection of the sum of $15 on each S100 bicycle.

5.2.2 Partial Equilibrium Analysis of a Tariff

The partial equilibrium analysis of a tariff is most appropriate when a small nation imposes a tariff on imports competing with the output of a small domestic industry as the tariff will affect neither world prices (the nation is small) nor the rest of the economy (the industry is small).

Partial Equilibrium Effects of a Tariff– Fig. 8.1



5.2.2.1 Effects of a tariff

The **partial equilibrium effects** of a tariff can be analyzed with Figure 8.1.

- D_X Is the demand and S_X is the supply curve of good X in Nation 2.
- Nation 2 is now assumed to be small and so is industry X.
- In the absence of trade, equilibrium point E, at which 30X is demanded and supplied at P_X = $3 in Nation 2.
- With free trade at world prices of P_X = $1, Nation 2 will consume 70X (AB). With 10X (AC) produced domestically and 60X (CB) imported.
- The horizontal dashed line S_F represents the infinitely elastic free trade foreign supply curve of good X to Nation 2.
- If Nation 2 now imposes a 100 percent ad valorem tariff on the imports of commodity X, P_X in Nation 2 will rise to $2.
- At P_X = S2, Nation 2 will consume 50X (GH), which 20X (GJ) is produced domestically and 30X (JH) is imported.
- The horizontal dashed line S_F + T represents the new tariff-inclusive foreign supply curve of commodity X to Nation 2

Thus:

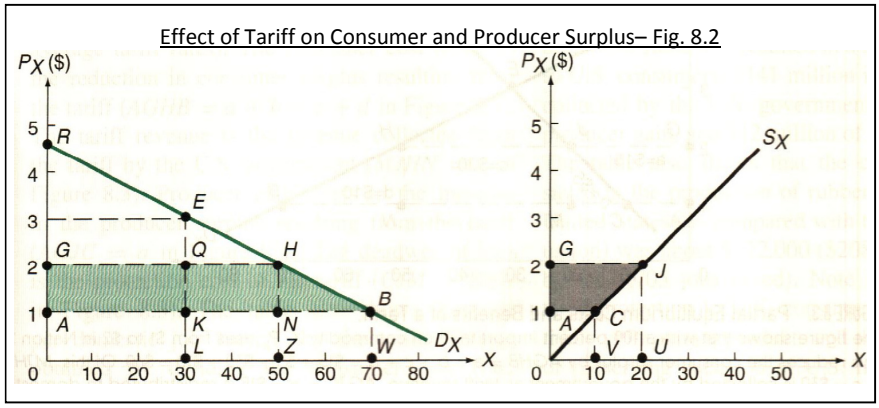
- The **consumption effect** - the reduction in domestic consumption equals 20X (BN)
- The **production effect -** the expansion of domestic production resulting from the tariff equals 10X (CM)
- The **trade effect** - the decline in imports equals 30X (BN + CM)
- The **revenue effect -** the revenue collected by the government equals $30 (SI on each of the 30X imported, or MJHN).

Note that for the same $1 increase in P_X in Nation 2 as a result of the tariff, the **more elastic and flatter D_X** is, the greater is the consumption effect. Similarly, **the more elastic S_X** is, the greater is the production effect. Thus, **the more elastic D_X and S_X are in Nation 2, the greater is the trade effect of the tariff** and the smaller is the revenue effect of the tariff.

Effect of a Tariff on Consumer and Producer Surplus

The increase in the price of commodity X from P_X = \$1 to P_X = \$2 as a result of the 100 percent tariff imposed on the importation of commodity X leads to a **reduction in consumer surplus** and an **increase in producer surplus**. These are examined and used to measure the costs and benefits of the tariff.

Effect of Tariff on Consumer and Producer Surplus– Fig. 8.2



- The left panel shows the **loss of consumer surplus,** area AGHB = \$60. The reason is:
- Before the tariff, consumers in Nation 2 consume 70X at P_X = \$1.
- Consumers pay for as much as they are willing to pay for the 70th unit (Point B)
- Consumers receive more satisfaction and would to pay more for **earlier units** of X.
- The difference between what consumers would pay and what they actually pay for that unit is called **consumer surplus**.
- Graphically, consumer surplus is measured by the **area under the demand curve above the going price, \$1**.

For example:

- The left panel shows consumers in would be willing to pay LE = \$3 for the 30th unit of commodity X. Since they only pay \$1, they receive a **consumer surplus of KE = \$2 on the 30th unit** of commodity X that they purchase.
- For the 50th unit of X, consumers would pay ZH = \$2. Since they only pay ZN = \$1, they receive **a consumer surplus of NH = \$1 on the 50th unit of X.**
- For the 70th unit of X, consumers are willing to pay WB = \$1. This is equal to the price that they actually pay, the **consumer surplus for the 70th unit of X is zero**.
- With the total of 70X being purchased at P_X = \$1 in the absence of the import tariff, the total consumer surplus in Nation 2 is equal to ARB - \$122.50 (\$3.50 times 70 divided by 2).
- This is the difference between what consumers would have been willing to pay (ORBW = \$192.50) and what they actually pay for 70X (OABW = \$70).

When Nation 2 imposes a 100 percent import tariff:

- The **price of** commodity **X rises** from P_X = \$1 to P_X = \$2
- **Purchases of commodity X fall** from 70X to 50X.
- With the tariff, **consumers pay OGHZ = \$100 for 50X**.
- The **consumer surplus shrinks** from ARB = \$122.50 to GRH = \$62.50 or by AGHB = S60 (the shaded area)
- The imposition of the 100 percent import tariff by Nation 2 thus leads to a **reduction in consumer surplus**.

In the right panel:

- The increase in producer surplus resulting from the tariff is given by shaded area AGJC = \$15. The reason is as follows:
- At free trade **P_X = \$1, domestic producers produce 10X** and receive OACV = \$10 in revenues.
- With the tariff and **P_X = \$2, they produce 20X** and receive OGJU = \$40.
- Of the \$30 increase (AGJC + VCJU) in the revenue of producers, VCJU = \$15 (the unshaded area under the S_X curve between 10X and 20X) represents the **increase in their costs of production**,
- While the remainder (shaded area AGJC = \$15) represents the **increase in rent or producer surplus**.
- This is defined as a payment that need not be made in the long run in order to induce domestic producers to supply the additional 10X with the tariff.
- The increase or producer surplus from a tariff is sometimes referred to as the **subsidy effect of the tariff.**

Costs and Benefits of a Tariff

Partial Equilibrium Costs and Benefits of a Tariff– Fig. 8.3

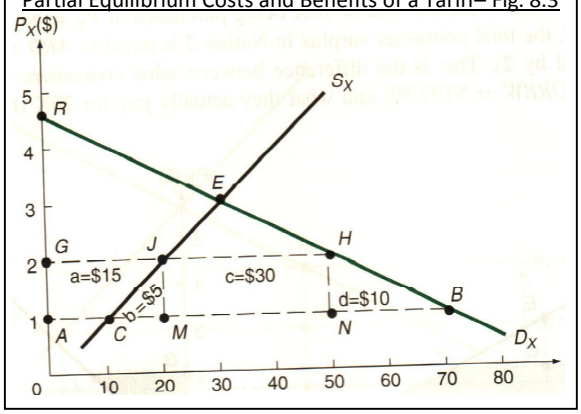


Figure 8.3 extends on figures 8.1 and 8.2. It shows that when Nation 2 imposes a 100 percent import tariff;

- The **price of commodity X** increases from P_X = \$1 to P_X = \$2.
- **Consumption falls** from AB = 70X to GH = 50X.
- **Production increases** from AC = 10X to GJ = 20X
- **Imports decline** from CB = 60X to JH = 30X.
- Government **import duties** of Nation 2 collects MJHN = \$30 in.
- **Consumer surplus** declines by AGHB = \$60.
- **Producer surplus** increases by AGJC — \$15.

Of the reduction of the consumer surplus of AGHB = a + b + c + d = \$60:

- **Government tariff revenue** collected is MJHN = c - \$30
- **Redistributed to domestic producers of commodity X** is AGJC = a = \$15 in the form of **increased producer surplus.**
- **The protection cost or deadweight loss** is the sum of the triangles CJM = b = \$5 and BHN = d = \$10.

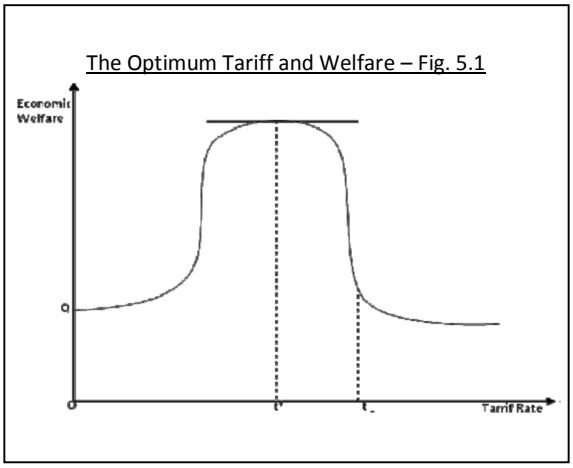
The **production component** (CJM = b = \$5) of the protection cost or deadweight loss arises because withthe tariff some domestic resources are transferred from the more efficient production of exportable commodity Y to the less efficient production of importable commodity X in Nation 2.
The **consumption component** (BHN = d = \$10) of the protection cost, or deadweight loss, arises because the tariff artificially increases P_X in relation to PY and distorts the pattern of consumption in Nation 2.

The tariff redistributes income from domestic consumers, who pay a higher price, to domestic producers of the commodity, who receive the higher price, and from the nation's abundant factor to the nation's scarce factor.
This leads to inefficiencies, **protection cost or deadweight loss**, of the tariff.
By dividing the loss of consumer surplus by the number of jobs "saved" in the industry because of the tariff or equivalent rate of protection, we can calculate the cost per domestic job saved.

5.3 THE OPTIMUM TARIFF

The **optimum tariff** is the rate of tariff that maximizes the net benefit resulting from the improvement in terms of trade and the reduction in the volume of trade.

The Optimum Tariff and Welfare – Fig. 5.1



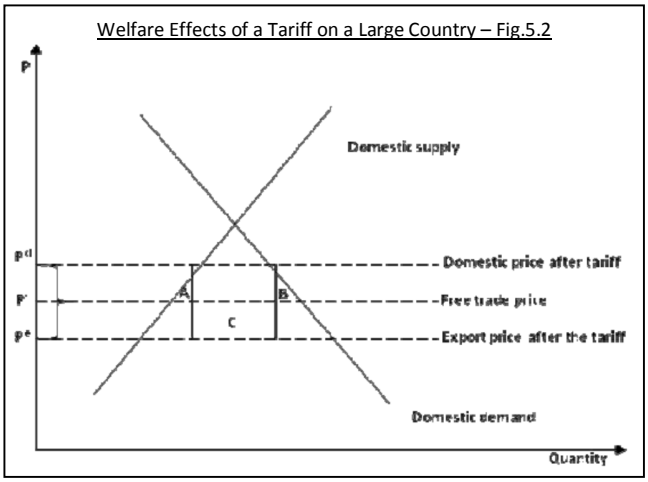
For a **small country the optimum tariff is always** zero because there is no improvement in terms of trade.

- **Q is the free trade welfare level.**
- As the tariff rate is increase from zero the level of welfare initially increases and gets to its maximum at a tariff rate t* (optimum tariff) then decreases to the autarky level as the tariff rate reaches the prohibitive level (t1).
- As can be seen from the diagram the country becomes worse off compared to the free trade situation when the tariff becomes prohibitive.

When a **large country imposes a tariff t**here are two opposing effects;

1. **Volume of trade declines** - the reduction in the volume of trade adversely affects the nation's welfare.
2. **Terms of trade improve** - the improvement in terms of trade tends to increase the nation's welfare.

The figure illustrates the welfare effects of a tariff for a large country.



- A tariff of magnitude *t* is imposed on imports of a product.
- This **raises the domestic price** of the product to P^d
- This also **lowers the foreign exporter price** to P^e
- The importing country is large and can force foreign suppliers to pay **part of the tariff in the form of a cut in export price**.
- Triangles A and B show the **decline in domestic welfare** as a result of the reduction in the volume of trade.
- Rectangle **C represents the improvement in the terms of trade**, which is the part of the tariff which is paid by the foreign exporters.
- **If area C is greater than A + B, then there is a net gain.**
- The optimum tariff is the tariff rate which **maximizes the net gain**, that is, [C – (A + B)]

5.4 THE RATE OF EFFECTIVE PROTECTION

The effective tariff rate of protection is the percentage increase in domestic value added per unit of output made possible by the tariff structure.

If imported goods are used as inputs for the local production of final goods, then the **nominal tariff rate is not the same as the effective tariff rate.** When this is the case;

- The rate of effective protection (calculated on the **domestic value added**) **exceeds the nominal tariff rate** (calculated on the value of the final commodity)
- A further implication is that to impose tariffs on both imported inputs and the final products of the industry is self-defeating as the tariff on the **imported inputs reduces the effective tariff protection on the final goods.**

Domestic value added is the price of the final good less the cost of the imported inputs going into production of the good, e.g.:

- Suppose that $80 of imported wool goes into the domestic production of a suit.
- Suppose the free trade price of the suit is $100 but the nation imposes a 10% nominal tariff on each imported suit.
- The price of suits to domestic consumers would then be $110. Of this:
  - $80 represents imported wool, $20 is domestic value added, $10 is the tariff.
- The $10 tariff on each imported suit represents a **10% nominal tariff rate,** calculated on the price of the final good, but corresponds to a **50% effective tariff rate**, calculated on the value added domestically to the suit (i.e., $10/$20 = 50%).
- **Consumers view** the $10 tariff increases the price of the suits they purchase by $10 or 10 percent.
- **Producers view** this $10 tariff as being 50 percent of the $20 portion of the suit produced domestically.
- The $10 tariff provides 50% of the value of domestic processing and represents a **much greater degree of protection** (five times more) than the 10 percent nominal tariff rate seems to indicate.

While the **nominal tariff rate is important to consumers** (because it indicates by how much the price of the final commodity increases as a result of the tariff), the **effective tariff rate is important to producers** because it indicates how much protection is actually provided to the domestic processing of the import-competing commodity.

- The effective protective rate for a final product increases as the nominal rate on it increases, and as the nominal rate on imported inputs decreases.
- Also, the greater the proportion of imported inputs in the final value of the locally produced good, the greater the difference between the nominal rate and the effective tariff rate.

It is this effective rate of tariff protection that is important to producers in stimulating the domestic production of suits. Whenever the imported input is admitted duty free or a lower tariff rate is imposed on the imported input than on the final commodity produced with the imported input, the effective rate of protection will exceed the nominal tariff rate.

5.5 NONTARIFF BARRIERS TO TRADE

The use of tariffs to protect local industries has been restricted by successive rounds of multilateral trade negotiations. Countries that are members of the World Trade Organisation (WTO) and signatories to successive agreements on tariffs and trade, have thus sought other means of protection. These are called **nontariff barriers (NTBs)** and include import quotas, voluntary export restraints, international cartels, anti-dumping provisions, and export subsidies.

5.5.1 Import quotas

A quota is a direct quantitative limit on the amount of a product that may enter a country. Import quotas on manufactured goods are prohibited by the WTO. However, many developed countries, including the US and those of the European Union (EU), impose import quotas on agricultural produce. Such quotas usually accompany price support for such products, to prevent foreign suppliers benefiting from the artificially high prices in the domestic market.

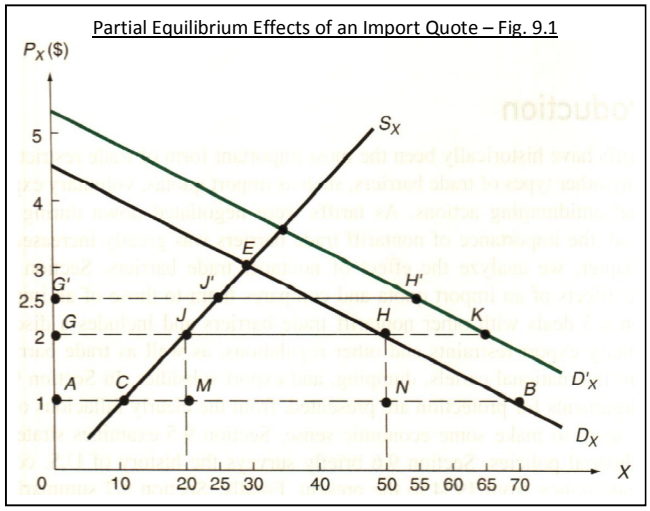
Effects of an Import Quota

Import quotas can be used:

- To **protect a domestic industry**,
- To **protect domestic agriculture**,
- And for **balance-of-payments reasons**.

Import quotas were very common in Western Europe immediately after World War II. Import quotas have been used by practically all industrial nations to protect their agriculture and by developing nations to stimulate import substitution of manufactured products and for balance-of-payments reasons.

Partial Equilibrium Effects of an Import Quote – Fig. 9.1



The partial equilibrium effects of an import quota can be illustrated

- D_X is the demand curve and S_X is the supply curve of commodity X for the nation.
- With **free trade at the world price** of P_X = \$1, the nation consumes 70X (AB), of which 10X (AC) is produced domestically and the remainder of 60X (CB) is imported.
- An **import quota of 30X (JH) raises the domestic price of X to P_X = \$2**, exactly as with a 100 percent ad valorem import tariff on commodity X.
- The reason is that only at P_X = \$2 does the quantity demanded of 50X (GH) equal the 20X (GJ) produced domestically plus the 30X (JH) allowed by the import quota.
- Thus, **consumption is reduced by 20X (BN)** and **domestic production is increased by 10X (CM)** with an import quota of 30X (JH), exactly as with the 100 percent import tariff.
- If the government auctioned off import licenses to the highest bidder in a competitive market, **the revenue effect would be \$30 given by area JHNM**, (\$1 on each of the 30X of the import quota),
- Then the import quota of 30X would be equivalent in every respect to an 'implicit' 100 percent import tariff.
- With an **upward shift of D_X to D'_X,** the given import quota of 30X (J'H') would result in:
  - The domestic price of X rising to P_X = \$2.50
  - Domestic production rising to 25X (G'J')
  - Domestic consumption rising from 50X to 55X (G'H').
- On the other hand, with the **given 100 percent import tariff** in the face of the shift from D_X to D'_X,
  - The price of X would remain unchanged at P_X = \$2 and
  - So would domestic production at 20X (GJ) but
  - Domestic consumption would rise to 65X (GK) and imports to 45X (JK).

Comparison of an Import Quota to an Import Tariff

The shift of D_X to D'_X in Figure 9.1 points to one of several important differences between an import quota and an equivalent (implicit) import tariff. That is:

1. **With a given import quota** - an increase in demand will result in a higher domestic price and greater domestic production than with an equivalent import tariff.
   With a given import tariff - an increase in demand will leave the domestic price and domestic production unchanged but will result in higher consumption and imports than with an equivalent import quota.
   Adjustment to any shift in D_X or S_X occurs in the domestic price with an (effective) import quota but in the quantity of imports with a tariff, an import quota completely replaces the market mechanism rather than simply altering it (as an import tariff does).

2. A second important difference is that the **quota involves the distribution of import licenses**. If the government does not auction off these licenses in a competitive market, firms that receive them will reap **monopoly profits.**
   Decisions for distributing licenses may be based on **arbitrary official judgments rather on efficiency considerations**.
   Due to monopoly profits, potential importers are likely to devote a great deal of effort to lobbying and even bribing government officials, i.e. **rent-seeking activities**. Thus, import quotas not only replace the **market mechanism** but also **result in waste** of the economy and contain the **seeds of corruption**.

3. Finally, an import quota **limits imports to the specified level with certainty**, while the trade effect of an **import tariff may be uncertain**. The reason for this is that the **shape or elasticity of D_X and S_X is often not known**, making it difficult to estimate the import tariff required to restrict imports to a desired level.
   Furthermore, **foreign exporters may absorb all or part of the tariff** by increasing their efficiency of operation or by accepting lower profits. As a result, the actual reduction in imports may be less than anticipated. **Exporters cannot do this with an import quota**.
   It is for this reason, and also because an import quota is less "visible," that domestic producers strongly prefer import quotas to import tariffs but since **import quotas are more restrictive than equivalent import tariffs**, society should generally resist these efforts.

5.5.2 Other Nontariff Barriers

Apart from the import quota the other nontariff barriers include voluntary export restraints, international cartels, local content requirements, anti-dumping provisions, and export subsidies.

Voluntary export restraints (VERs)

VER's are bilateral agreements between two governments in which the **exporting country agrees to limit its exports to the importing country**. The importing country induces another nation to reduce its exports of a commodity "voluntarily," under the threat of higher all-around trade restrictions, when these exports threaten an entire domestic industry. The importing country refrains from imposing more restrictive measures while the VER is adhered to. VERs became quite significant and covered about 10 percent of world trade but have been phased out (end of 1999) under the Uruguay Round multilateral trade agreement.

When voluntary export restraints are successful, they have all the **economic effects of an equivalent import quota**. The only difference being that they are **administered by the exporting country** and therefore the revenue effect or rents are captured by foreign exporters.

Voluntary export restraints were **less effective in limiting imports than import quotas** because the exporting nations agree only reluctantly to curb their exports. Foreign exporters also tend to fill their quota with higher-quality and higher-priced units of the product over time. Furthermore, as a rule, only major supplier countries were involved, leaving the door open for other nations to replace part of the exports of the major suppliers and also for transshipments through third countries.

International Cartels

International cartels are **agreements between foreign companies or governments to restrict output and exports** of a commodity with the aim of maximizing or increasing the total profits of the group. The most famous example is the Organisation of Petroleum Exporting Countries, or OPEC. Such cartels are able to raise prices by restricting output and exports of the commodity concerned, as OPEC did to the oil price in the 1970s. The producer countries gain at the expense of the consumer countries.

Cartels are difficult to maintain in the long run because there is always an incentive for individual member countries to cheat and to raise exports above the agreed limits. Non-member countries (free riders) benefit from the higher prices and increase output accordingly. These factors led to a dramatic decline in the oil price in the 1980s.

In addition, when **good substitutes for the commodity are available**, the attempt by an international cartel to restrict output and exports in order to increase prices and profits will only lead buyers to shift to substitute commodities.

Anti-Dumping Import Duties

Anti-dumping import duties are **taxes on goods that are deemed to have been imported at prices lower than those or the same good** in the exporting country's domestic market. There are three categories of dumping which you should be aware of:

1. **Sporadic dumping –** is the temporary sale of a commodity at below cost or at a lower price abroad in order to drive foreign producers out of business, after which prices are raised to take advantage of the newly acquired monopoly power abroad
2. **Predatory dumping -** is the temporary sale of a commodity at below cost or at a lower price abroad
3. **Persistent dumping -** or international price discrimination, is the continuous tendency of a domestic monopolist to maximize total profits by selling the commodity at a higher price in the domestic market (which is insulated by transportation costs and trade barriers) than internationally (where it must meet the competition of foreign producers).

It is not always easy to decide whether or not dumping has occurred, or to distinguish between the different types of dumping in practice. Anti-dumping import duties are permitted by the WTO, but the importing country has to prove that dumping has taken place and show injury to the competing domestic industry.

Trade restrictions to counteract predatory dumping are used to protect domestic industries from unfair competition from abroad. These restrictions usually take the form of **antidumping duties to offset price differentials**, or the **threat to impose such duties**. By so doing, they discourage imports and increase their own production and profits. In some cases of persistent and sporadic dumping, the benefit to consumers from low prices may actually exceed the possible production losses of domestic producers.

Export Subsidies

Export subsidies are direct **payments made by government to a nation's exporters** or potential exporters and or low interest loans to foreign buyers to stimulate the nation's exports. It is not a restriction but gives domestic companies an unfair advantage, helping them to increase their exports at the expense of foreign competitors in world markets. They can be regarded as a **form of dumping**. Although export subsidies are illegal by international agreement, many nations provide them in disguised and not-so-disguised forms.

Such subsidies are common, despite being prohibited by the WTO. In South Africa, various exporters benefited from the General Export Incentive Scheme (GEIS) during the 1980s and early 1990s. However, South Africa has ended such subsidies as part of its commitment to the most recent Uruguay Round of multilateral trade negotiations concluded in 1994.

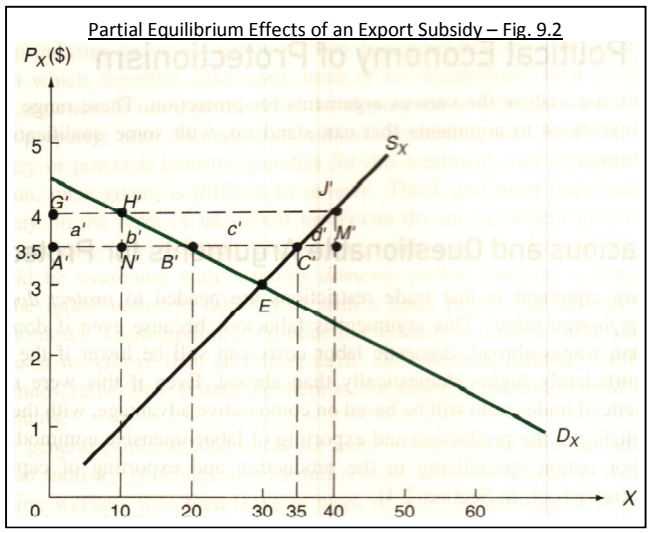
Some large projects that are believed to be of strategic importance also benefit from subsidies, such as the aircraft industries in the US and the EU.

Analysis of Export Subsidies

In the figure:

- D_X is the demand curve and S_X is the supply curve
- Free trade world price for X = $3.50, Nation 2 would:
  - Produce 35X (A'C')
  - Consume 20X (A'B')
  - Export the remaining 15X (B'C).
- That is, at prices above $3 (point E). Nation 2 became an exporter rather than being an importer of commodity X.
- If the government of Nation 2 (small country) now provides a subsidy of $0.50 on each unit of commodity X exported (equal to an ad valorem subsidy of 16.7%) P_X rises to $4.00 for domestic producers and consumers of commodity X.
- At P_X = $4, Nation 2:
  - Produces 40X (G'J'),
  - Consumes 10X (G'H), and
  - Exports 30X (H'J').
- The higher price of X benefits producers, harms consumers and Nation 2 incurs the cost of the subsidy, specifically;
  - Domestic consumers lose $7.50 (area a' + b')
  - Domestic producers gain $18.75 (area a' + b' + c')
  - The government subsidy is $15 (area b' +c' + d')

Partial Equilibrium Effects of an Export Subsidy – Fig. 9.2



- Note that area d' is not part of the gain in producer surplus as it represents the rising domestic cost of producing more units of commodity X.
- Nation 2 incurs the protection cost or deadweight loss of $3.75 (triangles B'H'N' = b' = $2.50 and C'J'M' = d' = $1.25)

Since domestic producers gain less than the sum of the loss of domestic consumers and the cost of the subsidy to Nation 2's taxpayers (Nation 2 incurs a net loss equal to the deadweight loss of $3.75). **Why would Nation 2 subsidize exports?**

- Domestic producers may successfully lobby the government for the subsidy or
- Nation 2's government may want to promote industry X, if industry X is a desired high-technology industry.

Note that foreign consumers gain because they receive 30X instead of 15X at P_X = $3-50 with the subsidy. If Nation 2 were not a small nation, it would also face a decline in its terms of trade because of the need to reduce P_X in order to be able to export more of commodity X.

5.6 ARGUMENTS FOR PROTECTION

The analysis above shows that a tariff leads to a misallocation of resources and deadweight efficiency losses. Are there any serious arguments for protection, beyond the special pleading and lobbying of specific interest groups? Arguments for protection in competitive markets include:

- **Fallacious arguments**:
  - Protection of domestic labour against cheap foreign labour
  - The scientific tariff
- **Questionable arguments**:
  - To reduce domestic unemployment
  - To cure a BOP deficit
- **Arguments which can be qualified**:
  - The infant industry argument,
  - To protect strategic industries like national defence
  - Optimum tariff argument
  - Some tariffs are “bargaining tariffs” to force other nations to agree to a mutual reduction in tariffs

Fallacious Arguments

1. **Protection of domestic labour against cheap foreign labour -** If domestic wages are higher than wages abroad, domestic labor costs can still be lower if the productivity of labor is higher domestically than abroad. Even if this were not the case, mutually beneficial trade could be based on *comparative advantage*, with the cheap-labor nation specializing and exporting of labor-intensive commodities, and visa-versa.
2. **The scientific tariff -** This is the tariff rate that would make the price of imports equal to domestic prices and allow domestic producers to meet foreign competition.

Questionable Arguments

1. **Reduce domestic unemployment**
2. **to cure a deficit in the nation's balance of payments**

Protection would reduce domestic unemployment and a balance-of-payments deficit by leading to the substitution of imports with domestic production. When protection is used to reduce domestic unemployment and the nation's balance-of-payments deficit, it causes greater unemployment and worsened balance of payments abroad. As a result, other nations are likely to retaliate, and all nations lose in the end. Domestic unemployment and deficits in the nation's balance of payments should be corrected with appropriate monetary, fiscal, and trade policies rather than with trade restrictions.

Arguments which can be Qualified

1. **Infant industry argument**
2. **Protect strategic industries -** Trade restrictions may be advocated to protect domestic industries important for national defense but direct production subsidies are generally better than tariff protection.
3. **Optimum tariff argument -** if a nation is large enough to affect its terms of trade, the nation can exploit its market power and improve its terms of trade and welfare with an optimum tariff. However, other nations are likely to retaliate so that in the end of nations lose.
4. **Bargaining tariffs -** Tariffs to force other nations to agree to a mutual reduction in tariffs

Infant industry argument

It holds that a nation may have a potential comparative advantage in a commodity, but because of lack of know-how and the initial small level of output and cannot compete successfully with more established foreign firms. Temporary trade protection is then justified until it can meet foreign competition, achieve economies of scale, and reflect the nation's long-run comparative advantage, when, protection is to be removed. For this argument to be valid, the return in the grown-up industry must be sufficiently high also to offset the higher prices paid by domestic consumers of the commodity during the infancy period.
The infant-industry argument for protection is correct but requires several important qualifications which take away most of its significance:

1. More **justified for developing nations** than for industrial nations.
2. It is **difficult to identity which industry** qualifies and experience has shown that protection is difficult to remove.
3. What trade protection (import tariff) can do, an **equivalent production subsidy to the infant industry can do better**. The reason is that a purely domestic distortion such as this should be overcome with a purely domestic policy rather than with a trade policy that also distorts relative prices and domestic consumption. A **production subsidy is a more direct** form of aid and is **easier to remove** than an import tariff. One practical difficulty is that a **subsidy requires revenues**, rather than generating.

The general principle also holds for every other type of **domestic distortion**. E.g. If an industry generates an *external economy* (a benefit to society) there is likely to be underinvestment as the industry does not receive the full benefit from its investments.

- One way to encourage the industry and confer **greater external economies on society would be to restrict imports**. This stimulates the industry, but it also increases the price of the product to domestic consumers.
- A better policy would be to **provide a direct subsidy to the industry**. This would stimulate the industry without the consumption distortion and loss to consumers that result from trade restrictions.
- **A direct tax would also be better than a tariff** to discourage activities (such as automobile travel) that give rise to external diseconomies (pollution) because the tax does not distort relative prices and consumption.

STUDY UNIT 6 – TRADE LIBERALIZATION AND ECONOMIC INTEGRATION

6.1 INTERNATIONAL AND REGIONAL APPROACHES TO FREE TRADE

In previous study units, the main conclusion was that import protection is harmful and that its objectives can be achieved with less damage to economic welfare by other means. As the costs of protection became more apparent in the long run, many countries began lowering such barriers to trade unilaterally. Yet many countries have taken the view that improving access to domestic markets must be matched by similar access in foreign markets and have demanded reciprocity in trade:
There have been two basic approaches in this regard:

1. **Globally -** The World Trade Organisation (WTO) gives a framework to multilateral efforts to liberalise trade. The formal WTO succeeded the informal General Agreement on Tariffs and Trade (GATT) in 1995.
2. **Regionally -** A number of organisations have sought to liberalise trade between selected member countries, thereby increasing the level of economic integration between them.

6.2 THE INTERNATIONAL APPROACH AND THE WTO

The WTO is a global organization that was established in 1995 which sets ground rules for international trade and provides a framework for liberalizing trade. It has a membership of 147 countries. It is devoted to the promotion of international trade in general and the reduction of tariff barriers in particular. The member countries hold periodic negotiating conferences in which tariff "concessions" are exchanged. One of its rules is the non-discrimination between sources of supply known as the unconditional most favoured nation (MFN) principle. This means that reductions in tariffs agreed upon by any two or more partners are then extended to all member nations. The WTO sets and regulates a code of international trade conduct, which contains three fundamental principles:

1. The **principle of non-discrimination**
2. A **general prohibition of export subsidies** (except for agriculture) **and import quotas** (developing countries exempt)
3. A **requirement that any new tariff be offset by a reduction in other tariffs**.

The organization also monitors national trade policies and provide assistance and training for developing countries. Member WTO/GATT completed eight major conferences (known as rounds) and several minor ones to negotiate tariff concessions, the most recent being the Uruguay Round (1986-1993).

The functions of WTO are much broader than those of GATT, which it replaced. The fundamental principles on which the WTO is based include the following:

1. **Unconditional most favoured nation (MFN)** - Requires a country to treat all trading partners alike (no discrimination). The tariff rate levied on a commodity and tariff concessions exchanged between any two countries must be extended to all member countries. Customs unions and free trade areas are exceptions.
2. **Equal and fair national treatment -** Requires a country to treat foreign firms operating within its borders in the same way it treats its own firms. This is a principle of non-discrimination between domestic and foreign firms.
3. **Reciprocity -** Involves "our" country will treat your" country's firms in the same way that "your" country will treat "our" country's firms.
4. **Mutual recognition -** Each EU member recognizes the product standards applied by other member countries.
5. **Fast track voting procedure -** Relates to trade promotion. This talks about the U.S Congress voting on negotiated trade agreements without amendments.

Developing countries are treated differently in three respects:

1. They receive **preferences in the industrial country markets**- a modification of the MFN rule.
2. The rule of **reciprocity does not apply to them.** They obtain concessions exchanged among the developed countries without having to reciprocate themselves.
3. They are **exempt from the prohibition on quotas and export subsidies**.

The Uruguay Round

In December 1993 the Uruguay Round, the eighth round of trade negotiations in which 123 countries participated, was completed. The agreement was signed by most countries on April 15, 1994, and took effect on July 1, 1995. The aim was:

- To establish **rules for checking the proliferation** of the new protectionism and reverse its trend
- **Bring services, agriculture, and foreign investments into the negotiations**
- **Negotiate international rules for the protection of intellectual property rights**
- **Improve the dispute settlement mechanism** by ensuring more timely decisions and compliance with GATT rulings.

The major provisions of the accord were the following:

1. **Tariffs -** Tariffs on industrial products were to be reduced, goods with zero tariffs was to increase, tariffs were removed altogether on pharmaceuticals, construction equipment, medical equipment, paper products, and steel.
2. **Quotas -** Nations were to replace quotas on agricultural imports and imports of textiles and apparel with less restrictive tariff. Tariffs on agricultural products were to be reduced in developing in industrial nations.
3. **Antidumping -** Provided tougher and quicker action to resolve disputes of antidumping laws but did not ban the use.
4. **Subsidies -** The volume of subsidized agricultural exports was to be reduced by 21 percent over a six-year period; government subsidies for industrial research were limited to 50 percent of applied research costs.
5. **Safeguards -** Nations could temporarily raise tariffs or other restrictions against an import surge that harmed domestic industry and barred countries from administering health and safety standards unless based on scientific evidence.
6. **Intellectual property -** The agreement provided for 20-year protection of patents, trademarks, and copyrights, but it allowed a 10-year phase-in period for patent protection in pharmaceuticals for developing countries.
7. **Services -** The US failed to secure the markets many developing nations for its banks and security firms, and did not succeed in having the European Union lift restrictions on showing of American films and TV programs in Europe.
8. **Other industry provisions -** The US and Europe agreed to continue talking about further limiting government subsidies to civil aircraft makers, opening up the distance telephone market, and limiting European subsidies to steelmakers.
9. **Trade-related investment measures -** The agreement phased out the requirement that foreign investors (such as automakers) buy supplies locally or export as much as they import.
10. **World Trade Organization -** The agreement also called for the replacement of the General Agreement on Tariffs and Trade (GATT) secretariat with the World Trade Organization (WTO) in Geneva. Trade disputes were also to be settled by a vote of two-thirds or three-quarters of the nations rather than unanimously as under GATT.

Outstanding Trade Problems and the Doha Round

Despite the great benefits resulting from the successful completion of the Uruguay Round, many serious trade problems remain, these problems include:

1. **Continued widespread trade protectionism**. Advanced nations often seek to protect domestic production and jobs from foreign competition and use strategic trade and industrial policies to encourage new high-tech industries, and so do emerging market economies.
2. **Subsidies and tariffs on agricultural products remain very high**: antidumping measures and safeguards are still possible and frequently abused.
3. W**orld to break up into three major trading blocs**: the European Union (EU), the North America Free Trade Area (NAFTA), and an Asian bloc. Although these could be regarded as a freer trading system, they can also lead to, protectionism and interbloc trade conflicts.
4. **Establishment of labor and environmental standards**. These are supposed to ensure a "leveling of working conditions" between developed and developing countries and avoid "social dumping" by the latter. The danger is that the movement to establish labor and environmental standards can easily be captured by protectionistic forces.

An attempt was made to launch a "Millennium Round" of trade negotiations at the WTO Trade Conference held in Seattle in December 1999. The attempt failed because:

1. Developing countries were adamantly opposed to *labor and environmental standards* on the agenda.
2. The EU and Japan objected to the agenda of the *complete liberalization of trade in agricultural products*.
3. The United States objected to discussing *competition and investment policies* that the European Union wanted.

6.3 THE REGIONAL APPROACH

Countries have sought to increase economic integration at the regional level. Economic integration refers to the commercial policy of discriminatively reducing or eliminating trade barriers. The degree of integration range from preferential trade areas, customs unions, common markets and economic unions.

1. **Preferential trade agreements (PTAs)** - Reduce tariffs or other trade barriers between the member countries concerned. Each country retains its own trade barriers with nonmember countries.
2. **Free trade areas (FTAs)** - Similar to PTAs, but trade barriers between the member countries are removed completely. A recent example is the North American Free Trade Agreement (NAFTA and the Southern African Development Community (SADC).
3. **Customs unions** - Are FTAs which harmonise their trade policies with the rest of the world, for example by having a common tariff on trade with non-member countries, e.g. SACU. South Africa sets the common external tariff and administers the customs revenue pool which are shared unequally between the member countries. The smaller economies get a disproportionately larger share of the pooled revenues.
4. **A common market** - Is a customs union which, in addition, also allows factors of production (labour and capital) to move freely between the member countries.
5. **An economic union** - Is the tightest (or most advanced) form of economic integration. Besides free trade and mobility of the factors of production, the member countries harmonise or even unify monetary and fiscal policies.

The effects of economic integration on allocative efficiency and welfare can be shown using the example of a customs union. The formation of a customs union has both **static and dynamic effects**.
The potential **dynamic effects** as a result of a customs union include increased competition, the scope for greater economies of scale from an enlarged market, stimulus to investment and better utilization of economic resources.

Trade-Creating Customs Union

The **static, partial equilibrium effects** of forming a customs union are measured in terms of **trade creation** and **trade diversion**.

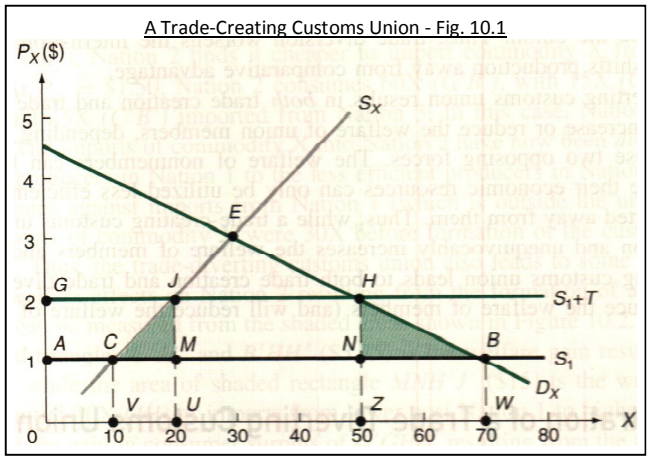
- **Trade creation** occurs when some domestic production in a nation that is a member of the customs union is replaced by lower-cost imports from another member nation.
- **A trade-creating customs union** also increases the welfare of nonmembers because some of the increase in its real income spills over into increased imports from the rest of the world.

Assuming that all economic resources are fully employed before and after formation of the customs union, this increases the welfare of member nations because it leads to greater specialization in production based on comparative advantage.

Trade-Diverting Custom Union

- Trade diversion occurs when **lower-cost imports** from outside the union are replaced by **higher cost imports** from a member. This results because of the **preferential trade treatment given to member nation**s.
- Trade diversion reduces welfare as it shifts production from **more efficient** producers outside the customs union to **less efficient** producers inside the union.
- Trade diversion worsens the allocation of resources and **shifts production away from comparative advantage.**
- A trade-diverting customs union results in both trade creation and trade diversion, and therefore can increase or reduce the welfare of union members, depending on the **relative strength of these two opposing forces**.
- The welfare of nonmembers can be expected to decline because their economic resources can only be utilized less efficiently than before trade was diverted away from them.
- A trade-diverting customs union has both **trade creating and trade diverting effects.**
- The net welfare position depends on the **magnitudes of the two opposing effects**.

Illustration of a Trade-Creating Customs Union

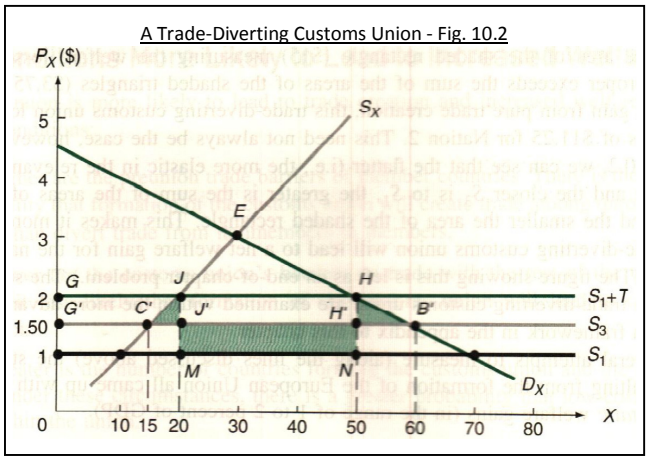


- D_X is the demand curve and S_X is the supply curve of X.
- The **free trade price** of X is P_X = \$1 in Nation 1 and P_X = \$1.50 in Nation 3 (or rest of the world). Nation 2 is assumed to be **too small to affect these prices**.
- If Nation 2 imposes a **nondiscriminatory ad valorem tariff** of 100% on all imports of X, Nation 2 will import X from Nation 1 at P_X = \$2
- At P_X = \$2, Nation 2 would **consume 50X** (GH) with;
    - Produced **domestically 20X** (GJ)
    - **Import 30X** (JH) from Nation 1.
- Nation 2 also **collects \$30** (MJHN) in tariff revenues.
- S_1 is Nation 1's **perfectly elastic supply** curve of commodity X to Nation 2 under free trade, and S_1+ T is the tariff-inclusive supply curve.
- Nation 2 does not import X from Nation 3 because the tariff-inclusive price of X imported would be P_X = \$3.
- If Nation 2 now **forms a customs union** with Nation 1 (removes tariffs on its imports from Nation 1 only), P_X = \$1 in Nation 2. At this price:
    - Nation 2 **consumes 70X** (AB) of commodity X, with
    - 10X (AC) **produced domestically** and
    - 60X (CB) **imported** from Nation 1.
- In this case, **Nation 2 collects no tariff** revenue.
- The benefit to consumers in Nation 2 resulting from the formation of the customs union is equal to AGHB, i.e. the increase in the consumer surplus.
- However, only part of this represents a net gain for Nation 2 as a whole. That is
    - AGJC represents a **reduction in rent**, or producer surplus, while
    - MJHN represents the **loss of tariff revenues**.
- This leaves the sum of the area of shaded triangles CJM and BHN, or S15, as the **net static welfare gain** for Nation 2.
- Triangle CJM is the production component of the welfare gain from trade creation and results from shifting the production of 10X (CM) from less efficient domestic producers in Nation 2 (at a cost of VUJC) to more efficient producers in Nation 1 (at a cost of VUMC).
- Triangle BHN is the **consumption component of the welfare gain** from trade creation and results from the increase in consumption of 20X (NB) in Nation 2, giving a benefit of ZWBH with an expenditure of only ZWBN.

NOTE:

- A trade-creating customs union leads only to trade creation and unequivocably **increases the welfare of members** and nonmembers
- A trade-diverting customs union leads to both trade creation and trade diversion, and c**an increase or reduce the welfare of members** and will **reduce the welfare of the rest of the world**.

Illustration of a Trade-Diverting Customs Union



- D_X is the demand curve and S_X is the supply curve of X Nation 2.
- S_1 and S_3 are the free trade **perfectly elastic supply** curves of Nation 1 and Nation 3, respectively.
- With a **nondiscriminatory 100% tariff** on imports of X, Nation 2 imports X from Nation 1 at P_X = \$2, along S_1+ T (as Figure 10.1).
- At P_X = \$2, Nation 2 would:
  - **consume 50X** (GH) with
  - Produced **domestically 20X** (GJ)
  - **Import 30X (**JH) from Nation 1.
- Nation 2 also **collects S30 (JMNH) in tariff revenues**.
- If Nation 2 now forms a customs union with Nation 3 only (removes tariffs on imports from Nation 3 only), Nation 2 finds it **cheaper to import commodity X** from Nation 3 at P_X = \$1.50.
- At P_X = \$1.50, Nation 2:
  - **Consumes 60X** (G'B') with:
  - 15X (G'C') **produced domestically**
  - 45X (C'B') **imported from Nation 3**.
- In this case, **Nation 2 collects no tariff revenue**.
- The imports of commodity X in Nation 2 have been diverted from the **more efficient producers** in Nation 1 to the **less efficient producers** in Nation 3 because the tariff **discriminates against imports** from Nation 1 (outside the union).
- Nation 2's imports of commodity X were 30X before formation of the union and 45X afterward. Thus, the trade-**diverting customs union also leads to some trade creation**.

The **static welfare effects** on Nation 2 resulting from the formation of a customs union with Nation 3 can be measured from the shaded areas shown in Figure 10.2.

- The sum of the areas C'JJ' and B'HH' (\$3.75) is the **welfare gain resulting from pure trade creation**
- the area of shaded rectangle MNH'J' (\$15) is the **welfare loss** from diverting the initial 30X (JH) of imports from lower cost Nation 1 to higher cost Nation 3.
- Of the **gain in consumer surplus** of G'GHB' resulting from the formation of the customs union, G'GJC' represents a **transfer from producer to consumer surplus** in Nation 2 and therefore washes out (i.e., leaves **no net gain or loss** for Nation 2 as a whole).
- Of the JMNH (\$30) **tariff revenue** collected by Nation 2 before the formation of the customs union with Nation 3, J'JHH' is **transferred to consumers** in Nation 2 in the form of the lower price of commodity X after the formation of the customs union.
- This leaves only shaded triangles C'JJ' and B'HH' as the **net gain to Nation 2** and shaded rectangle MNH'J' as the still unaccounted for loss of tariff revenue.

Since the area of the shaded rectangle (\$15) measuring the welfare loss from trade diversion proper exceeds the sum of the areas of the shaded triangles (\$3.75) measuring the welfare gain from pure trade creation, this trade-diverting customs union leads to a net welfare loss of S11.25 for Nation 2. This need not always be the case, however.
Looking at Figure 10.2, we can see that the flatter (i.e. the more elastic in the relevant range) D_X and S_X are and the closer S_3 is to S_1, the greater is the sum of the areas of the shaded triangles and the smaller the area of the shaded rectangle. This makes it more likely that even a trade-diverting customs union will lead to a net welfare gain for the nation joining the union.

The Theory of the Second Best

The theory of the second best, which states that if all the conditions required to maximize welfare or reach Pareto optimum cannot be satisfied, **trying to satisfy as many of these conditions as possible does not necessarily or usually lead to the second-best position.**
Free trade leads to the most efficient utilization of world resources and thus maximizes world output and welfare. It was widely believed that any movement **toward freer trade would also increase welfare**.
To the extent that a customs union does not increase trade barriers against the rest of the world, the elimination of trade barriers among union members represents a movement toward freer trade. As such, it was believed to increase the welfare of member and nonmember nations alike.
However, **Vimer** showed that the formation of a customs union could **increase or reduce the welfare of member nations** and of the rest of the world, depending on the circumstances under which it takes place.
Thus, forming a customs union and removing trade barriers only among the members will not necessarily produce the second-best welfare position (as evidenced by the fact that welfare can rise or fall).

Conditions More Likely to Lead to Increased Welfare

A customs union is more likely to lead to trade creation and increased welfare under the following conditions:

1. **The higher are the preunion trade barriers of member countries.**
2. **The lower are the customs union's barriers on trade with the rest of the world**.
3. **The greater is the number of countries forming the customs union and the larger their size.**
4. **The more competitive rather than complementary are the economies of member nations**. There are then greater opportunities for specialization in production and trade creation with the formation of the customs union.
5. **The closer geographically are the members of the customs union.**
6. **The greater is the preunion trade and economic relationship among potential members of the customs union.**

The European Union (EU) has had greater success than the European Free Trade Association (EPTA) because the nations forming the EU were much more competitive than complementary, were closer geographically, and had greater preunion trade than the EFTA nations.

Other Static Welfare Effects of Customs Unions

- The **administration savings from the elimination of customs officers, border patrols, and so on,** for trade among member nations. This benefit arises whether the customs union is trade creating or trade diverting.
- **A trade-diverting customs union**, by reducing its demand for imports from and its supply of exports to the rest of the world, is **likely to lead to an improvement in the collective terms of trade of the customs union.** This can be shown graphically by an inward shift in the customs union's offer curve.
  However, **for a trade-creating customs union**, the opposite is likely to be true, since part of the increase in real income resulting from formation of the customs union spills over into a greater demand for imports from the rest of the world.
- Any customs union, by acting as a single unit in international trade negotiations, is lik**ely to have much more bargaining power than all of its members separately**.

Dynamic Benefits from Customs Unions

Nations forming a customs union are likely to receive several important dynamic benefits. These are due to increased competition, economies of scale, stimulus to investment, and better utilization of economic resources.

1. **The greatest dynamic benefit from the formation of a customs union is increased competition.**
   Poducers are likely to grow sluggish and complacent behind trade barriers. When a customs union is formed and trade barriers eliminated, producers in each nation must become more efficient to meet the competition of other producers within the union. A customs union must be careful that such oligopolistic practices as collusion and market-sharing agreements may arise.
2. **Economies of scale are likely to result from the enlarged market.**
   It must be pointed out that even a small nation that is not a member of any customs union can overcome the smallness of its domestic market and achieve substantial economies of scale in production by exporting to the rest of the world.
3. **The stimulus to investment to take advantage of the enlarged market and to meet the increased competition.**
   Furthermore, the formation of a customs union is likely to spur outsiders to set up production facilities within the customs union to avoid the (discriminatory) trade barriers imposed on nonunion products. These are the so-called tariff factories.
4. **The free community-wide movement of labor and capital is likely to result in better utilization of the economic resources**.

These dynamic gains from the formation of a customs union are presumed to be much greater than the static gains. Recent empirical studies seem to indicate that **these dynamic gains are about five to six times larger than the static gains**.
Joining a customs union because of the static and dynamic benefits that it provides is only a **second-best solution**. The best policy may be for a nation to **unilaterally eliminate all trade barriers.**
For a nation such as the United States that is large enough to affect its terms of trade, however, the efficiency benefits resulting from unilaterally eliminating its trade barriers must be weighed against the worsening of its terms of trade. The unilateral elimination of all trade barriers would also be difficult politically because of strong opposition from the very vocal and influential minorities that would be hurt. A related question is whether regional blocs are building blocks or stumbling blocks to free multilateral trade. Some economists believe that regional blocs permit more rapid trade liberalization. Others feel that they retard multilateral trade liberalization and lead to potential interbloc conflicts.

STUDY UNIT 7 – INTERNAL RESOURCE MOVEMENTS AND MULTI-NATINATIONAL CORPORATIONS

7.1 MOBILITY OF THE FACTORS OF PRODUCTION

Trade theory only looks at the movement of commodities between national borders. The factor proportions theory assumes that factors of production are mobile between industries within a country but that they are completely immobile between countries. There is significant mobility of labour, capital and technology between countries. Of the three, capital is the most mobile as it is affected less by barriers to migration such as language, immigration control measures, legal restrictions, social norms, patents and cultural differences.

The greater **mobility of capital** means that it can migrate more easily in search of the highest expected **return on investment** in different countries. The greater the mobility of a factor of production, the greater the tendency for the returns thereon to be equalised between countries and industries. Market forces thus ensure that returns increase in the former country and fall in the latter until they are equal. Investors usually compare differences in expected risk-adjusted returns in deciding where to invest their capital.

There are two main forms of foreign investments:

1. **Direct foreign investment (DFI**) aims at gaining control over a foreign company. DFI tends to be less volatile and contributes to greater transfers of skills and technology than the more speculative portfolio investments in financial markets. Direct foreign investments are generally more stable, long-term investments, whereas foreign portfolio investments can easily be withdrawn as fickle investor sentiment changes.
2. **Portfolio investors** are purely financial assets, such as bonds, denominated in a national currency. They look purely at the expected returns on their investments in foreign financial markets and do not intend to gain control over the companies concerned.

Host countries generally prefer DFI to portfolio investment, particularly developing countries wanting to establish sustainable increases in economic growth rather than a boom-bust growth pattern.

7.2 MOTIVES FOR INTERNATIONAL CAPITAL FLOWS

Motives for Portfolio Investment

The basic motive for international portfolio investments is to earn **higher returns abroad**. According to the basic (two-nation) Heckscher-Ohlin model, returns on capital are originally higher in the nation having the lower overall capital-labor ratio but it cannot account for observed **two-way capital flows.** That is, if returns on securities are lower in one nation than in another nation, this could explain the flow of capital investments from the former nation to the latter but is inconsistent with the simultaneous flow of capital in the opposite direction.

To explain two-way international capital flows, investors are interested not only in the rate of return but also in the risk associated with a particular investment. The risk with bonds consists of **bankruptcy** and the **variability in their market value**. Thus, investors maximize returns for a given level of risk and generally accept a higher risk only if returns are higher.
For example, suppose that we deal with stocks and **measure risk by the variability of returns** about the average. Suppose also that both stocks A and B have a rate of return of 30 percent on average, but there is a fifty-fifty chance that the yield will be either 20 percent or 40 percent on stock A and 10 percent or 50 percent on stock B. Stock B is then clearly riskier than stock A. Since both stocks have the same yield on the average, investors should purchase stock A to minimize risks.
However, if the yield on stock A falls when the yield on stock B rises and vice versa (i.e., if changes in yields are inversely, or negatively, correlated over time), then by holding both stocks, the investor can still receive a yield of 30 percent on average but with a much lower risk. That is, the risk of a lower than average yield on stock A at any point is more or less matched by the tendency for the yield on stock B to be higher than average at the same time. As a result, the risk of a portfolio including both stock A and stock B is substantially reduced.

Portfolio theory thus tells us that by investing in securities with yields that are inversely related over time, a given yield can be obtained at a smaller risk or a higher yield can be obtained for the same level of risk for the portfolio as a whole. Since yields on foreign securities are more likely to be inversely related to yields on domestic securities, a portfolio including both domestic and foreign securities can have a higher average yield and/or lower risk than a portfolio containing only domestic securities. To achieve such a balanced portfolio, a two-way capital flow may be required.
For example, if stock A (with the same average yield but lower risk than stock B) is available in one country, while stock B (with yields inversely related to the yields on stock A) is available in another country, investors purchase both stock A and B to achieve a balanced portfolio. **Risk diversification can thus explain two-way international portfolio investments.**

Investors must determine for themselves what the average returns and variabilities are likely to be in deciding which stocks to purchase. It is possible that some investors in each nation think that stocks in the other nation are a better buy. This provides an additional explanation for two-way international portfolio investments.

Motives for Direct Foreign Investment

Direct foreign investments are motivated by a number of other reasons. These include:

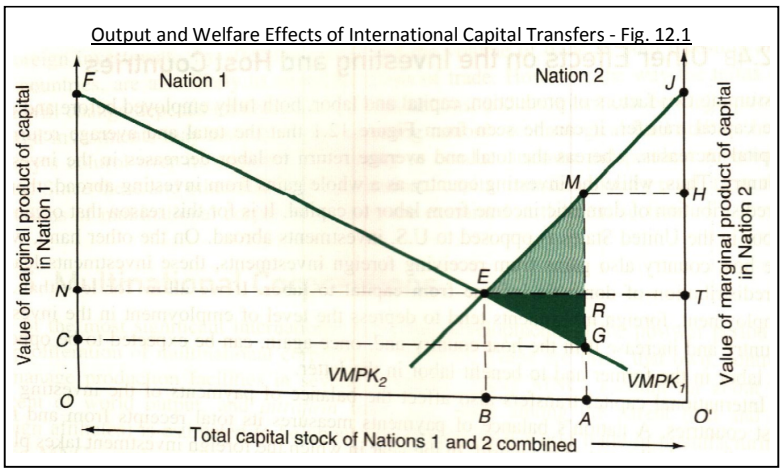
1. Earn a **higher return**.
2. **Horizontal integration** - Large corporations often have unique production knowledge that they want to retain direct control over. It is the production abroad of a differentiated product that is also produced at home,
3. **Vertical integration -** To obtain control of a needed raw material and thus ensure an uninterrupted supply at the lowest possible cost. Vertical integration can also go forward into the ownership of sales or distribution networks;
4. **Avoid tariffs** and other restrictions on trade;
5. To take **advantage of government subsidies to encourage direct foreign investments;**
6. **To enter a foreign oligopolistic market** so as to share in the profits;
7. To **buy a promising foreign firm** to avoid its future competition; and
8. It is a large foreign multinational corporation which can obtain the **necessary financing to enter the market.**

FDI in South Africa

Despite the relatively small size of our economy, DFI has also played an important role in South Africa, especially in the mining industry. South Africa is typical of a developing country where capital is scarce and the returns on inward foreign investments are relatively high. Most developing countries are much larger host countries for such investment than they are source countries. This tendency was even more pronounced in South Africa as a result of the imposition of exchange controls. Such controls greatly curtailed the amount of outward foreign investment that might otherwise have taken place (exchange controls were probably also a disincentive to inward foreign investment, but this was still higher than the very limited amounts of outward investment). The liberalisation of exchange controls in the 1990s has led to a significant increase in offshore investments by South African companies.
Between 1970 to 1985, South Africa relied heavily on foreign saving (that is, a net inflow of foreign capital including both DFI and portfolio investments), averaging about 2 percent of gross domestic product (GDP) a year. However, with the worsening political situation and the imposition of financial sanctions in the mid-1980s, this pattern reversed itself and the country became a net exporter of capital as foreign investors withdrew their capital. Between 1985 to 1993, annual capital outflows averaged 2,5 percent of GDP.
International investor confidence in South Africa has gradually improved following the historic 1994 non-racial election. For example, net capital inflows amounted to R14,7 billion in 1998,R3,8 billion in 2002 and R45,7 billion in 2004. These inflows were, however, largely for portfolio investment. Such inflows of financial capital affect the balance of payments rather than production or income directly. They are easily reversed when sentiment towards emerging markets like South Africa turns negative, as happened during the emerging markets crisis in 1997 and 1998, and the local foreign exchange liquidity crisis in 2001. However, in 2005, South Africa experienced significant foreign direct investment in the banking sector as the result of a UK domiciled bank obtaining the controlling interest in a local bank (SARB 2006a:28). In that year the net capital inflow was recorded as R68,4 billion.

7.3 WELFARE EFFECTS OF INTERNATIONAL CAPITAL FLOWS

7.3.1 Effects on the Investing and host countries



- Two nations, 1 and 2, with a total **combined capital stock** of 00', of this:
  - OA belongs to Nation 1
  - O'A belongs to Nation 2.
- VMKP_1 and VMKP_2 curves give the value of the **marginal product of capital** in Nation 1 and Nation 2 for various levels of investments.
- Under competitive conditions, **the value of the marginal product of capital represents the return**, or yield, on capital.
- In isolation, Nation 1 invests its entire capital stock OA domestically at a yield of OC.
- The total product (measured by the area under the value of the **marginal product curve**) is thus OFGA, of which OCGA goes to **owners of capital** in Nation 1 and the remainder of CFG goes to **other cooperating factors**, such as labor and land. Similarly,

- Nation 2 in isolation invests its entire stock O'A domestically at a yield of O'H.
- Total product is O'JMA, of which O'HMA goes to **owners of capital** in and the remainder of HJM goes to **other cooperating factors**.
- Let us assume that free international capital movements are allowed.
  - Since the return on capital is higher in Nation 2 (O'H) than in Nation 1 (OC), AB of capital flows from Nation 1 to Nation 2 so as to **equalize at BE (= ON = O'T) the rate of return on capital** in the two nations.
- **Total domestic product** in Nation 1 is now OFEB, to which must be added ABER as the total return on foreign investments, giving a total national income of OFERA (ERG greater than before foreign investments).
- With **free international capital flows**
  - the **total return on capital** in Nation 1 increases to ONRA,
  - the total **return on other cooperating factors** decreases to NFE.
- The inflow of AB of foreign capital into **Nation 2 lowers the rate of return on capital** from O'H to O'T.
- Total domestic product in Nation 2 grows from O'JMA to O'JEB.
- Of the increase in total product of ABEM, ABER goes to foreign investors, so that ERM remains as the net gain in total product accruing to Nation 2.
- The total return to **domestic owners of capital falls** from O'HMA to O'TRA
- While the total return to other cooperating factors rises from HJM to TJE.
- From the point of view of the world as a whole (i.e. the two nations combined) **total product increased** from OFGA + O'JMA to OFEB + O'JEB, or by ERG + ERM = EGM (the shaded area of the figure).

Thus, international capital flows **increase the efficiency in the allocation of resources internationally** and **increase world output and welfare**. Note that the steeper the VMKP_1 and VMKP_2 curves are, **the greater is the total gain from international capital flows.**

7.3.2 Other Effects on the Investing and host countries

Assuming two factors of production, capital and labor, both fully employed before and after the capital transfer, it can be seen from Figure 12.1 that:

1. **The total and average return on capital increases,**
2. **The total and average return to labor decreases in the investing country.**

This means:

1. The investing country as a whole gains but there is a **redistribution of domestic income from labor to capital**.
2. The host country also gains but these investments lead to a **redistribution of domestic income from capital to labor**.

If we allow for less than full employment foreign investments tend to depress the level of employment in the investing country and increase it in the host country and can be expected to be opposed by labor in the former and to benefit labor in the latter.

Other effects include:

1. **Balance of payments** - In the year in which the foreign investment takes place, the foreign expenditures of the investing country increase and cause a balance-of-payments deficit and an improvement in the host nation's balance of payments in the year in which it receives the foreign investment.
2. **Increased exports of capital goods and other products -** The initial capital transfer and increased expenditures abroad of the investing country are likely to be mitigated by increased exports of capital goods and other products and by the **subsequent flow of profits** to the investing country. The "payback" period for the initial capital transfer is between five and ten years. Foreign investments may lead to the replacement of the investing country's exports and even to imports of commodities. While the immediate effect on the balance of payments is negative, the **long-run effects are less certain.** These **short-run and long-run balance-of-payments effects are mostly neutralized**.
3. **Different rates of taxation and foreign earnings** - Another important welfare effect of foreign investments on both the investing and host countries results from different rates of taxation and foreign earnings in various countries. As a result, the tax base and the amount of taxes collected decline in the investing country and rise in the host country.
4. **Terms of trade** - Foreign investments are also likely to affect the terms of trade by affecting output and the volume of trade of both investing and host countries. The change depends on conditions in both nations. Foreign investments may also affect the investing nation's technological lead and the host country's control over its economy and ability to conduct its own independent economic policy.

7.4 MULTINATIONAL CORPORATIONS

MNC's are firms that own, control, or manage production facilities in several countries. Today MNC's account for about 25 percent of world output, and intrafirm trade is estimated to be about one-third of total world trade in manufacturing. Most international direct investments today are undertaken by MNC's. In the process, the parent firm usually provides its foreign affiliates with managerial expertise, technology, parts, and a marketing organization in return for some of the affiliates' output and earnings.

7.4.1 Reasons for the existence of Multinational Corporations

1. **The competitive advantage** from a global network of production and distribution. This arises from:
    - **Vertical integration**, most MNCs can ensure their supply of foreign raw materials and intermediate products and circumvent, with more efficient intrafirm trade, the imperfections often found in foreign markets.
    - **Horizontal integration** through foreign affiliates, MNCs can better protect and exploit their monopoly power, adapt their products to local conditions and tastes, and ensure consistent product quality.
    - **Economies of scale** in production, **financing**, **research and development**, and gathering of **market information**.
    - **International capital markets** - Greater access, better terms, better position to finance large projects.
    - **Information Gathering** - foreign affiliates funnel information from around the world to the parent firm, placing it in a better position than national firms to evaluate, anticipate, and take advantage of changes in comparative costs, consumers' tastes, and market conditions generally.
2. **Expected profits on additional investments in its industry are higher abroad**. Differences in expected rates of profits domestically and abroad. All of this information implies that MNCs are oligopolists selling for the most part differentiated products, often developed as described by the technological gap and product cycle models, and produced under strong economies of scale.
3. **MNC's much better position to control or change to the environment their advantage**. The sheer size of most MNCs in means they are in a better position to influence the policies of local governments and extract benefits. MNCs can buy up promising local firms to avoid future competition. They can engage in other practices that restrict local trade and increase their profits. MNCs, through diversification, face lower risks and generally earn higher profits.
4. By artificially overpricing components shipped to an affiliate in a higher-tax nation and underpricing products shipped from the affiliate in the high-tax nation, an MNC can minimize its tax bill. This is called transfer pricing and can arise in intrafirm trade as opposed to trade among independent firms or conducted at "arm's length."

It is a combination of all or most of these factors that gives MNCs their competitive advantage vis-a-vis purely national firms and explains the proliferation and great importance of MNCs today.

7.4.2 Problems created by Multinational Corporations in the Home and host Countries

Problems Created by Multinational Corporations in the Home Country

1. **The loss of domestic jobs resulting from foreign direct investments** - These are likely to be unskilled and semiskilled production jobs which the home nation has a comparative disadvantage. Some clerical, managerial, and technical jobs are also likely to be created in the MNC in the home nation.
2. **The export of advanced technology** - This may undermine the technological superiority and future of the home nation. Against this possible harmful effect is the tendency of MNCs to concentrate their R&D in the home nation, thus allowing it to maintain its technological lead.
3. **Transfer pricing and similar practices, and from shifting their operations to lower-tax nations** - This reduces tax revenues and erodes the tax base of the home country. The host country taxes the subsidiary's profits first. To avoid double taxation of foreign subsidiaries, the home country then usually taxes only repatriated profits and only by the difference in the tax rates.
4. **Making government control over the economy in the home nation more difficult** - MNCs can circumvent domestic monetary policies because of their access to international capital markets.

Problems Created by Multinational Corporations in the Host Country

Host countries have even more serious complaints against MNCs.

1. **MNCs can dominate the host economies** - Foreign domination is felt in many different ways in host countries, including
    a. The unwillingness of an MNC to **export to a nation deemed unfriendly** to the home nation or the requirement to comply with a home-nation law prohibiting such exports;
    b. The **borrowing of funds abroad** to circumvent tight domestic credit conditions and the lending of funds abroad when interest rates are low at home; and
    c. The effect on **national tastes of large-scale advertising** for such products as Coca-Cola, jeans, and so on.

2. **The siphoning off of R&D funds to the home nation -** While this may be more efficient for the MNC and the world as a whole, it also keeps the host country technologically dependent. This is especially true and serious for developing nations.
3. **MNCs may absorb local savings and entrepreneurial talent -** Preventing them from being used to establish domestic enterprises that might be more important for national growth and development. The extent to which this occurs, however, is not clear.
4. **MNCs may also extract most of the benefits resulting from their investments** - through tax and tariff benefits or through tax avoidance. In developing nations, foreign direct investments by MNCs have often given rise to complaints of foreign exploitation in the form of low prices paid to host nations, the use of highly capital-intensive production techniques inappropriate for labor-abundant developing nations, lack of training of local labor, overexploitation of natural resources, and creating highly dualistic "enclave" economies.