International Trade and International Finance

Moinul Islam

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Preface

International Economics has come in two separate parts that reflect the microeconomics and macroeconomics. 'International Trade' is based on microeconomics reasoning in terms of comparative advantage, economies of scale and product differentiation. 'International Finance' is largely conceptualized in terms of 'open-economy macroeconomics' which set the focus on exchange-rate regimes, stabilization policies and financial capital flows. The history of economics is full of different attempts to bridge the gaps between international trade and international finance.

The aim of "International Trade and International Finance" course is to give students a comprehensive understanding of the relevant economic theory and empirical evidence. The lectures will introduce some key ideas on international trade and finance. I will provide a formal discussion of the Ricardian model of trade, which contains one of the great insights in Economics that what matters for the gains from trade to occur is comparative advantage and not absolute advantage. I will introduce the Heckscher–Ohlin model of trade where endowment differences among countries play a key role in determining the pattern of trade. An important result in this discussion is that international trade can produce winners and losers.

Increasing returns and trade are essential concept of this course. I will focus on the Krugman model or the model of trade based on internal economies of scale in production. It shows how countries can gain from trade even in a world where countries have identical endowments and technologies, provided that production functions exhibit increasing returns to scale and consumers have a love for variety. I will also develop a discussion of the various commercial policy instruments, such as tariffs, quotas and export subsidies, that countries use to intervene in trade. Next, we will study the economics of preferential trading agreements, and the concluding chapter provides a history of multilateral trading agreements under the aegis of GATT

(General Agreement on Tariffs and Trade) and its evolution into the World Trade Organization (WTO).

Syllabus of (International Trade and Intenational Finance)

0.0.0.0.1 * Section 1: Introduction to International Economics

- Lecture 1: Basics of International Economics
- Lecture 2: Introduction to International Trade
- Lecture 3: Reasons of International Trade
- Lecture 4: International Trade Models

0.0.0.0.2 * Section 2: International Trade Policy

- Lecture 5: The Instruments of Trade Policy
- Lecture 6: The Political Economy of Trade Policy
- Lecture 7: Trade Policy in Developing Countries
- Lecture 8: Controversies in Trade Policy

0.0.0.0.3 * Section 3: Open-Economy Macroeconomics

- Lecture 9: National Income Accounting
- Lecture 10: Exchange Rates and the Foreign Exchange Market
- Lecture 11: Money, Interest Rates, and Exchange Rates
- Lecture 12: Fixed Exchange Rates and Foreign Exchange Intervention

0.0.0.0.4 * Section 4: International Macroeconomic Policy

- Lecture 13: International Monetary Systems
- Lecture 14: Financial Globalization
- Lecture 15: Developing Countries Growth, Crisis, and Reform

Course logistic

Class schedule in third quarter:

- `Monday from 13:30 JST`
- `Thursday from 13:30 JST`

Class room: **A108**, Eikokuji Campus, Kochi University of Technology

Grading

Your grade evaluation will depend on following three factors:

Performance	Weight
a. Attendance and answering the quizzes	20%
b. Answering the assignments (Five problem sets)	30%
c. Final examination (TBA)	50%

Instructor

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Email address:

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Office hours: By appointment, please email

1 Basics of International Economics

1.1 What is International economics?

- International Economics is the study of economic interactions between countries.
- The world is rapidly globalizing and this is providing many opportunities and major challenges to the nations and people of the world.
- We will study international economics with a brief overview of the globalization revolution taking place in the world today.

1.2 What is international economics about?

- International economics consists of two main classifications:
  - International trade (Microeconomics)
  - International finance (Macroeconomics)

Comparision	International_Trade	International_Finance
Economics	Microeconomics	Macroeconomics
Employment	Full employment	Under employment
Savings	No savings	Savings
Trade	Balance	Imbalance
Money	Real transaction	Monetary transaction

1.3 Why study international trade?

- Production technologies do not flow easily across borders. There are massive differences in production technologies across countries.
- The use of some technologies is tied to human capital which can not be transferred across countries.
- Government institutions have a huge impact on the effectiveness of different technologies.

1.4 What are the subjects to focus in international trade?

- Seven themes recur throughout the study of international economics:

  a. The gains from trade
  b. The pattern of trade
  c. Protectionism
  d. The balance of payments
  e. Exchange rate determination
  f. International policy coordination
  g. The international capital market

1.5 What is globalization?

- Increase in international transactions in markets for goods, services, and factors
- Growth and expanded scope of international institutions and organizations, for instance, UN, World Bank, IMF, WTO
- How can globalization be measured?
  - Trade flows: exports and imports of goods
  - Trade in services: transportation, healthcare, telecommunications, business services
  - Foreign asset ownership
  - Immigration
  - Price convergence: Possibility of trade may have important effects

1.6 Globalization and international trade

- Globalization is the process of interaction and integration among people, companies, and governments worldwide.
- Globalization has accelerated since the 18th century due to advances in transportation and communications technology.
- This increase in global interactions has caused a growth in international trade.

Text book: Paul Krugman, Maurice Obstfeld, and Marc Melitz, *International Economics*, 12th edition

2 Introduction to International Trade

2.1 The gains from trade

- Probably the most important single insight in all of international economics is that there are gains from trade that is, when countries sell goods and services to each other, this exchange is almost always to their mutual benefit.
- Although nations generally gain from international trade, it is quite possible that international trade may hurt particular groups within nations—in other words, that international trade will have strong effects on the distribution of income.

  Trade can alter the distribution of income between workers and the owners of capital.

2.2 The pattern of trade

- Some aspects of the pattern of trade are easy to understand. Climate and resources clearly explain why Brazil exports coffee and Saudi Arabia exports oil.
- Why does Japan export automobiles, while the United States exports aircraft?
- There are various different models that try to explain the reason behind the pattern of trade.

  "Who sells what to whom" have been a major question of international economics.

2.3 Determinents of trade

- After World War II the advanced democracies, led by the United States, pursued a broad policy of removing barriers to international trade; this policy reflected the view that free trade was a force not only for prosperity but also for promoting world peace.
- In 2016, Britain shocked the political establishment by voting to leave the European Union, which guarantees free movement of goods and people among its members.

Conflicts of interest within nations are usually more important in determining trade policy than conflicts of interest between nations.

2.4 Balance of payments

- The balance of payments (BOP) tracks international transactions. When funds go into a country, a credit is added to the balance of payments ("BOP"). When funds leave a country, a deduction is made.
- The balance of payments includes both the current account and capital/financial account.
  - The current account (CA) includes a nation's net trade in goods and services, its net earnings on cross-border investments, and its net transfer payments.
  - The capital/financial account (FA) consists of a nation's transactions in financial instruments and central bank reserves.
  - The sum of all transactions recorded in the balance of payments should be zero; however, exchange rate fluctuations and differences in accounting practices may hinder this in practice.

The BOP has become a central issue for the United States because the nation has run huge trade deficits every year since 1982.

2.5 What is trade?

- Buying and selling goods and services from other countries. Trade consist of imports (M) and exports (X). For instance, in the context of Japan:
  - The purchase of goods and services from abroad that leads to an outflow of currency from Japan – Imports (M)
  - The sale of goods and services to buyers from other countries leading to an inflow of currency to Japan – Exports (X)

2.6 Labor Intensive and capital intensive industries

2.6.1 What Is labor intensive industry?

- The term labor intensive refers to a process or industry that requires a large amount of labor to produce its goods or services.

- The degree of labor intensity is typically measured in proportion to the amount of capital required to produce the goods or services: the higher the proportion of labor costs required, the more labor-intensive the business.
- Labor-intensive industries include restaurants, hotels, agriculture, mining, as well as healthcare and caregiver.
- Less developed economies, as a whole, tend to be more labor-intensive. This situation is rather common because low income means that the economy or business cannot afford to invest in expensive capital.
- Before the industrial revolution, 90% of the workforce was employed in agriculture. Producing food was very labor-intensive.

2.6.2 What is capital intensive industry?

- Capital intensive refers to the production that requires higher capital investment such as financial resources, sophisticated machinery, more automated machines, the latest equipment, etc.
- Capital intensive industries pose higher barriers to entry as they require more investment in equipment and machinery to produce goods and services.
- Good examples of capital intensive industries include the oil refining industry, telecommunications industry, airline industry, and public transport authorities that maintain the roads, railways, trains, trams, etc.

2.6.3 Differences between capital intensive and labor intensive industries

- Capital intensive and labor intensive refer to types of production methods followed in the production of goods and services.
- Capital intensive production requires more equipment and machinery to produce goods; therefore, require a larger financial investment.
- Labor intensive refers to production that requires a higher labor input to carry out production activities in comparison to the amount of capital required.

Reference: Chapter 1- Introduction (Paul Krugman, Maurice Obstfeld, and Marc Melitz, *International Economics*, 12th edition)

3 Reasons of International Trade

3.1 Basic reasons behind trade?

- Countries engage in international trade for two basic reasons
  - They are different from each other in terms of climate, land, capital, labor, and technology.
  - They try to achieve scale economies in production.

3.2 Trade based on absolute advantage: Adam Smith

- The theory of absolute advantage, developed by Adam Smith. He started with the simple truth that for two nations to trade with each other voluntarily, both nations must gain. If one nation gained nothing or lost, it would simply refuse to trade. But how does this mutually beneficial trade take place, and from where do these gains from trade come?
- According to Adam Smith, trade between two nations is based on absolute advantage. When one nation is more efficient than (or has an absolute advantage over) another in the production of one commodity but is less efficient than (or has an absolute disadvantage with respect to) the other nation in producing a second commodity, then both nations can gain by each specializing in the production of the commodity of its absolute advantage and exchanging part of its output with the other nation for the commodity of its absolute disadvantage.
- By this process, resources are utilized in the most efficient way and the output of both commodities will rise. This increase in the output of both commodities measures the gains from specialization in production available to be divided between the two nations through trade.
- For example, because of climatic conditions, Canada is efficient in growing wheat but inefficient in growing bananas (hothouses would have to be used). On the other hand, Nicaragua is efficient in growing bananas but inefficient in growing wheat. Thus, Canada has an absolute advantage over Nicaragua in the cultivation of wheat but an absolute dis- advantage in the cultivation of bananas. The opposite is true for Nicaragua.

- Under these circumstances, both nations would benefit if each specialized in the production of the commodity of its absolute advantage and then traded with the other nation. Canada would specialize in the production of wheat (i.e., produce more than needed domestically) and exchange some of it for (surplus) bananas grown in Nicaragua. As a result, both more wheat and more bananas would be grown and consumed, and both Canada and Nicaragua would gain.
- Thus, while the mercantilists believed that one nation could gain only at the expense of another nation and advocated strict government control of all economic activity and trade, Adam Smith (and the other classical economists who followed him) believed that all nations would gain from free trade and strongly advocated a policy of `laissez-faire` (i.e., as little government interference with the economic system as possible).
- Free trade would cause world resources to be utilized most efficiently and would maximize world welfare. There were to be only a few exceptions to this policy of `laissez-faire` and free trade. One of these was the protection of industries important for national defense.

  In view of this belief, it seems paradoxical that today most nations impose many restrictions on the free flow of international trade.

3.2.1 Example of absolute advantage:

- one hour of labor time produces six kilograms of wheat in the United States but only one in the United Kingdom.
- On the other hand, one hour of labor time produces five units of cloths in the United Kingdom but only four in the United States.
- Thus, the United States is more efficient than, or has an absolute advantage over, the United Kingdom in the production of wheat, whereas the United Kingdom is more efficient than, or has an absolute advantage over, the United States in the production of cloth.
- With trade, the United States would specialize in the production of wheat and exchange part of it for British cloth. The opposite is true for the United Kingdom.

Table 3.1: Absolute advantage

	USA	UK
Wheat	6	1
Cloth	4	5

Absolute advantage, however, can explain only a very small part of world trade today, such as some of the trade between developed and developing countries. Most of world trade, especially trade among developed countries, could not be explained by absolute advantage.

3.3 Trade based on comparative advantage: David Ricardo

- David Ricardo, writing some 40 years after Smith, to truly explain the pattern of and the gains from trade with his law of comparative advantage.
- The law of comparative advantage is one of the most important laws of economics, with applicability to nations as well as to individuals and useful for exposing many serious fallacies in apparently logical reasoning.

3.3.1 The law of comparative advantage

- According to the law of comparative advantage, even if one nation is less efficient than the other nation in the production of both commodities, there is still a basis for mutually beneficial trade. The first nation should specialize in the production and export of the commodity in which its absolute disadvantage is smaller (this is the commodity of its comparative advantage) and import the commodity in which its absolute disadvantage is greater.
- The statement of the law can be clarified by looking at Table 3.2. The only difference between Tables 3.2 and 3.1 is that the United Kingdom now produces only two units of cloth per hour instead of five. Thus, the United Kingdom now has an absolute disadvantage in the production of both wheat and cloth with respect to the United States.
- However, since U.K. labor is half as productive in cloth but six times less productive in wheat with respect to the United States, the United Kingdom has a comparative advantage in cloth.
- On the other hand, the United States has an absolute advantage in both wheat and cloth with respect to the United Kingdom, but since its absolute advantage is greater in wheat (6:1) than in cloth (4:2), the United States has a comparative advantage in wheat.
- According to the law of comparative advantage, both nations can gain if the United States specializes in the production of wheat and exports some of it in exchange for British cloth. At the same time, the United Kingdom is specializing in the production and exporting of cloth.

Table 3.2: Comparative advantage

	USA	UK
Wheat	6	1
Cloth	4	2

3.4 Detail analysis of comparative advantage

- On Valentine's Day the U.S. demand for roses is about 10 million roses.
  - Growing roses in the U.S. in the winter is difficult. Heated greenhouses should be used. The costs for energy, capital, and labor are substantial.
  - Resources for the production of roses could be used to produce other goods, say computers.

  `Opportunity cost`: The opportunity cost of roses in terms of computers is the number of computers that could be produced with the same resources as a given number of roses.

3.4.1 Gains from trade due to comparative advantage

- Suppose that in the U.S., 10 million roses can be produced with the same resources as 100,000 computers.
- Suppose also that in Mexico, 10 million roses can be produced with the same resources as 30,000 computers.

Table 3.3: Example of comparative advantage

	Million roses	Thousand computers
U.S	-10	+100
Mexico	+10	-30
Total	0	+70

Reference: Chapter 2- Salvatore, D. (2016). *International Economics.* John Wiley & Sons.

»> Assignment 1

Hint:

- Suppose that the two countries are Home and Foreign and the two goods are Bread and Cloth. The lone factor of production is labor. The production of one unit of each good in each country requires a certain amount of labor which is called the unit labor requirement.
- Let's consider:
  - Home (H)
  - Foreign (F)
  - Bread (B)
  - Cloth (C)
  - Labor (L)
- We have the following information
  - In Home, H_LB = 1
  - In Home, H_LC = 2
  - In Foreign, F_LB = 4
  - In Foreign, F_LC = 3
- It is easily verified that Home is better at making both Bread and Cloth because Home requires less labor to produce a unit of Bread and a unit Cloth compared to Foreign.
- In other words, Home labor is more productive than Foreign in the production of both goods. Thus, Home has an absolute advantage in the production of both Bread and Cloth.

  Recall that the opportunity cost of producing a good is the next best alternative foregone.

- Home produces one unit of Bread, it uses one unit of labor. The alternative use of labor in Home is to produce Cloth. How much Cloth can one unit of labor in Home produce? The answer is 1/2, because each unit of Cloth requires two units of labor; so, one unit of labor can produce only 1/2 Cloth.

Therefore,

- The opportunity cost of producing Bread in Home is 1/2 Cloth
- The flip side of this is that the opportunity cost of producing Cloth in Home is 2 Bread
- For Foreign, the opportunity cost of producing Bread in Foreign is 4/3 Cloth
- And the opportunity cost of producing Cloth in Foreign is 3/4 Bread

Assignment 1:

- Suppose the unit labor requirements in Home and Foreign for the two goods Cloth and Wheat are as follows.
- Let's consider:
  - Home (H)
  - Foreign (F)
  - Cloth (C)
  - Wheat (W)
  - Labor (L)
- We have the following data:
  - In Home, H_LC = 30
  - In Home, H_LW = 20
  - In Foreign, F_LC = 60
  - In Foreign, F_LW = 30

Answer the following multiple choice questions based on the above.

1) Given the information in the table above, Home has an absolute advantage in

A) Cloth
B) Wheat
C) Both Cloth and Wheat
D) Neither

2) Given the information in the table above, the opportunity cost of Cloth in Home is

A) 1 Wheat
B) 2 Wheat
C) 1.5 Wheat
D) 4 Wheat

3) Given the information in the table above, the opportunity cost of Wheat in Foreign is

A) 1 Cloth
B) 2 Cloths
C) 1/2Cloth
D) 4 Cloths

4) Which of the following statements is true about the table above?

A) Home has a lower labor productivity in both Cloth and Wheat.
B) Foreign has a lower labor productivity in both Cloth and Wheat.
C) Home has a higher labor productivity in cloth, but Foreign has a higher labor productivity in Wheat.
D) Home has a lower labor productivity in cloth, but Foreign has a higher labor productivity in Wheat.

5) Which of the following statements is true about the table above?

A) Home has a comparative advantage in both Cloth and Wheat.
B) Foreign has a comparative advantage in both Cloth and Wheat.
C) Home has a comparative advantage in Cloth and Foreign in Wheat
D) Foreign has a comparative advantage in Cloth and Home in Wheat.

4 International Trade Models

4.1 Differences between absolute advantage and comparative advantage

Table 4.1: Differences between absolute and comparative advantage

	Absolute advantage	Comparative advantage
Definition	Best at production of good or service	Production of good or service at lower cost
Benefits	Resources are focused on specific production	Resources are focused on efficient production, therefore, saving resources
Cost	Cost is noticed but not made priority over production	Cost is the primary factor to make production
Production	All resource allocation goes into production	Resource allocation varies and the main focus is not only production but also opportunity cost
Trade benefits	Trade is not mutually beneficial for two countries	Trade is mutually beneficial for two countries
Economic concept	Strategic management concept	Economic concept
Proponents	Adam Smith	David Ricardo

4.2 The opportunity cost theory

- According to the opportunity cost theory, the cost of a commodity is the amount of a second commodity that must be given up to release just enough resources to produce one additional unit of the first commodity.
- The nation with the lower opportunity cost in the production of a commodity has a comparative advantage in that commodity.

- For example, if in the absence of trade the United States must give up two-thirds of a unit of cloth to release just enough resources to produce one additional unit of wheat domestically, then the opportunity cost of wheat is two-thirds of a unit of cloth.

4.3 The Production Possibility Frontier (PPF) under constant costs

- Opportunity costs can be illustrated with the production possibility frontier, or transformation curve. The production possibility frontier is a curve that shows the alternative combinations of the two commodities that a nation can produce by fully utilizing all of its resources with the best technology available to it.

Table 3.4: Production possibility frontier of Wheat and Cloth production

USA		UK	
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

- Table 3.4 gives the (hypothetical) production possibility schedules of wheat (in million kg/year) and cloth (in million units/year) for the United States and the United Kingdom.
- The United States and United Kingdom production possibility schedules given in Table 3.4 are graphed as production possibility frontiers in Figure 3.1. Each point on a frontier represents one combination of wheat and cloth that the nation can produce.

4.4 The Basis for and the Gains from Trade under Constant Costs

- In the absence of trade, a nation can only consume the commodities that it produces. As a result, the nation's production possibility frontier also represents its consumption frontier.
- In the absence of trade, the United States might choose to produce and consume combination A (90W and 60C) on its production possibility frontier (see Figure 2.2), and the United Kingdom might choose combination A' (40W and 40C).

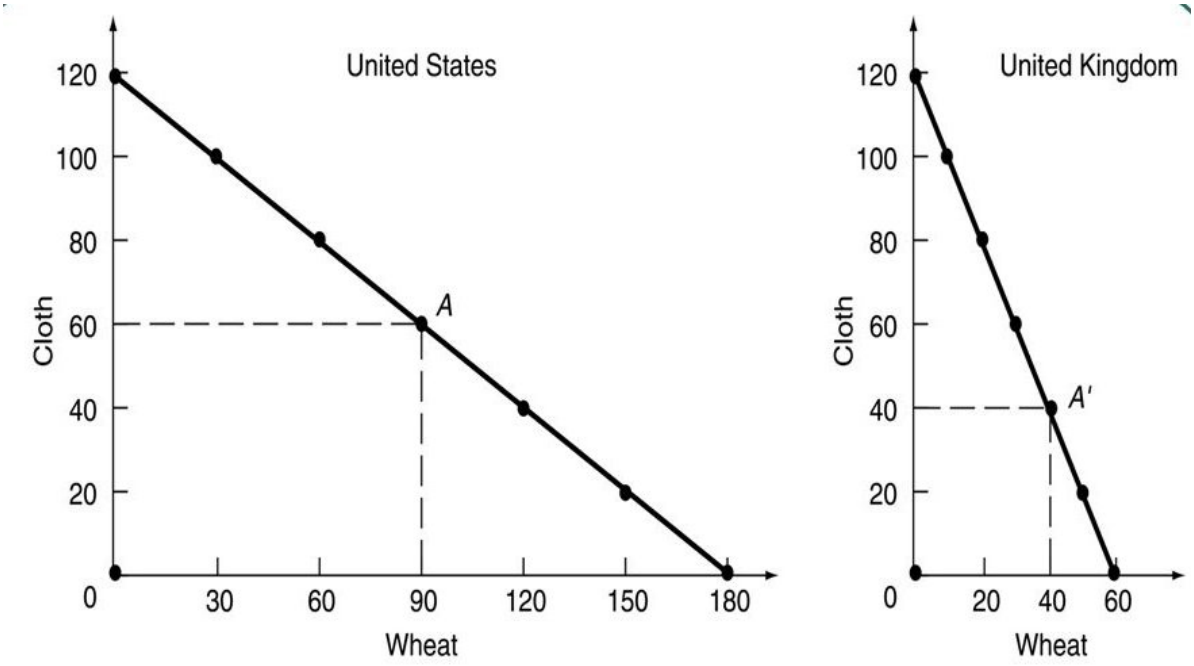

Figure 4.1: Figure 3.1: The Production Possibility Frontiers of the United States and the United Kingdom.

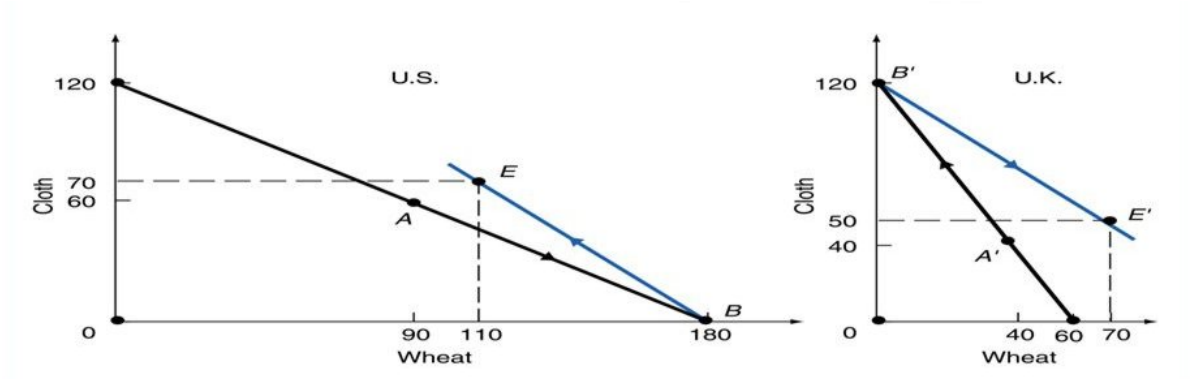

Figure 4.2: Figure 3.2: The gains from trade

- In the absence of trade, the United States produces and consumes at A , and the United Kingdom at A' . With trade, the United States specializes in the production of wheat and produces at B , while the United Kingdom specializes in the production of cloth and produces at B' . By exchanging 70W for 70C with the United Kingdom, the United States ends up consuming at E (and gains 20W and 10C), while the United Kingdom ends up consuming at E' (and gains 30W and 10C).
- The increased consumption of both wheat and cloth in both nations was made possible by the increased output that resulted as each nation specialized in the production of the commodity of its comparative advantage.

4.5 The Ricardian model of international trade

- The Ricardian model of international trade states that the main reason why countries trade is that different countries have different productivity (or technologies) for producing different goods and services.
- It shows how countries can gain from exporting goods that they are relatively better at making and importing goods that they are relatively worse at making.

4.5.1 The Ricardian theory

- The Ricardian theory of comparative advantage is based on the idea that if there are technological differences in the production of goods across countries,
- Countries can gain from trade by exporting goods for which the country has a lower opportunity cost of production and importing goods for which the country's opportunity costs of production are higher.
- The model can be understood using a two-country, two-good and one factor of production example.
- Suppose that the two countries are Home(h) and Foreign(f) and the two goods are Bread (b) and Cloth (c).
- The lone factor of production is labor (L).
- The production of one unit of each good in each country requires a certain amount of labor which is called the unit labor requirement.

5 The Instruments of Trade Policy

5.1 Key concepts

Term	**Definition**
Opportunity cost	The value of the next best alternative to any decision you make. For instance, the opportunity cost of watching movey is the hour of studying she gives up to do that
Growth	An increase in an economy's ability to produce goods and services over time; economic growth in the PPF model is illustrated by a shift out of the PPF
Contraction	A decrease in output that occurs due to the under-utilization of resources. In a graphical model of the PPF, a contraction is represented by moving to a point that is further away from, and on the interior of the PPF
Constant opportunity costs	when the opportunity cost of a good remains constant as output of the good increases, which is represented as a PPF curve that is a straight line
Increasing opportunity costs	when the opportunity cost of a good increases as output of the good increases, which is represented in a graph as a PPF that is bowed out from the origin
Productivity	(also called technology) the ability to combine economic resources; an increase in productivity causes economic growth even if economic resources have not changed, which would be represented by a shift out of the PPF

5.2 Production Possibility Frontier

- Production possibilities frontier (PPF) shows the maximum attainable combinations of two products that may be produced if we use our resources efficiently. Sometimes economists call this Production Possibilities Curve (PPC).
- PPFs can be used to demonstrate:

  a) opportunity costs (trade-offs).
  b) efficient production.
  c) economic growth

- Understanding opportunity costs - The Shape of PPFs
  - Constant opportunity cost PPFs are
    - Linear lines. Opportunity cost is constant (the same) no matter where you produce.
  - Increasing opportunity cost PPFs are
    - Concave. As you keep increasing production, opportunity cost is increasing.
- The PPF with increasing costs

It is more realistic for a nation to face increasing rather than constant opportunity costs. Increasing opportunity costs mean that the nation must give up more and more of one commodity to release just enough resources to produce each additional unit of another commodity. Increasing opportunity costs result in a production frontier that is concave from the origin (rather than a straight line).

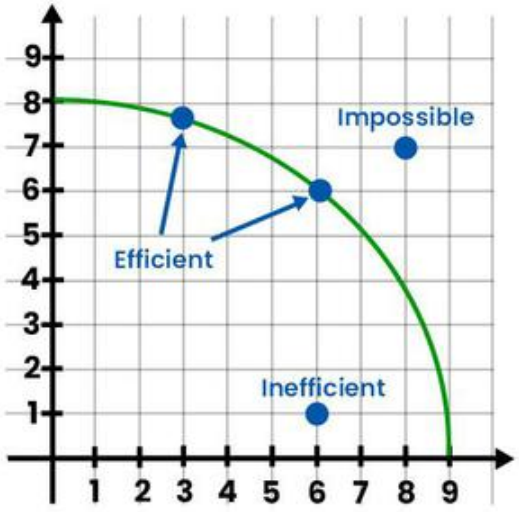

Figure 5.1: The PPF with increasing costs

5.3 The Production Possibilities Frontier and Social Choices

- Because society has limited resources (e.g., labor, land, capital, raw materials) at any point in time, there is a limit to the quantities of goods and services it can produce.

- Suppose a society desires two products, healthcare and education. This situation is illustrated by the production possibilities frontier in this graph.
- A Healthcare vs. Education Production Possibilities Frontier

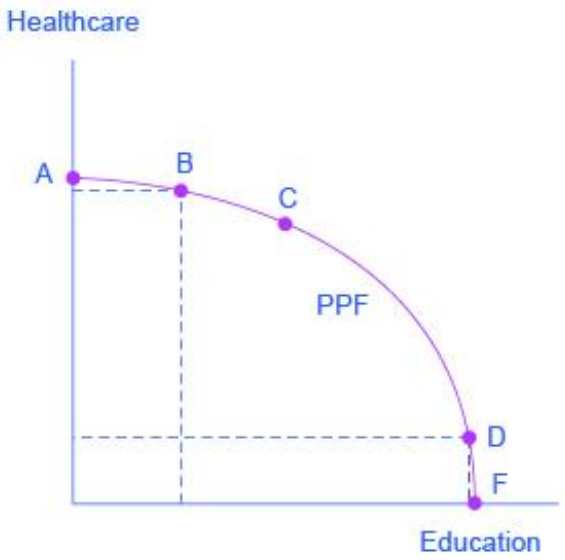

Figure 5.2: Healthcare vs. Education PPF

- In the graph, healthcare is shown on the vertical axis and education is shown on the horizontal axis. If the society were to allocate all of its resources to healthcare, it could produce at point A. But it would not have any resources to produce education.
- If it were to allocate all of its resources to education, it could produce at point F.
- Alternatively, the society could choose to produce any combination of healthcare and education shown on the production possibilities frontier.
- Society can choose any combination of the two goods on or inside the PPF. But it does not have enough resources to produce outside the PPF.
- Suppose society has chosen to operate at point B, and it is considering producing more education.the only way society can obtain more education is by giving up some healthcare. That is the tradeoff society faces.

5.4 The shape of the PPF and the law of diminishing returns

- The law of diminishing returns, which holds that as additional increments of resources are added to a certain purpose, the marginal benefit from those additional increments

will decline.

- For instance, when government spends a certain amount more on reducing crime, for example, the original gains in reducing crime could be relatively large. But additional increases typically cause relatively smaller reductions in crime, and paying for enough police and security to reduce crime to nothing at all would be tremendously expensive.
- The curvature of the production possibilities frontier shows that as additional resources are added to education, moving from left to right along the horizontal axis, the original gains are fairly large, but gradually diminish. Similarly, as additional resources are added to healthcare, moving from bottom to top on the vertical axis, the original gains are fairly large, but again gradually diminish. In this way, the law of diminishing returns produces the outward-bending shape of the production possibilities frontier.

5.5 Productive Efficiency and Allocative Efficiency

The production possibilities frontier can illustrate two kinds of efficiency: productive efficiency and allocative efficiency. The following graph illustrates these ideas using a production possibilities frontier between healthcare and education.

- Productive efficiency means that, given the available inputs and technology, it is impossible to produce more of one good without decreasing the quantity that is produced of another good. All choices on the PPF in this graph, including A, B, C, D, and F, display productive efficiency. As a firm moves from any one of these choices to any other, either healthcare increases and education decreases or vice versa. However, any choice inside the production possibilities frontier is productively inefficient and wasteful because it is possible to produce more of one good, the other good, or some combination of both goods.
- Allocative efficiency means that the particular mix of goods a society produces represents the combination that society most desires. How to determine what a society desires can be a controversial question, and is usually discussed in political science, sociology, and philosophy classes as well as in economics. At its most basic, allocative efficiency means producers supply the quantity of each product that consumers demand. Only one of the productively efficient choices will be the allocatively efficient choice for society as a whole.

5.6 Heckscher–Ohlin model of trade

- We now go one step further and explain the reason, or cause, for the difference in relative commodity prices and comparative advantage between the two nations.

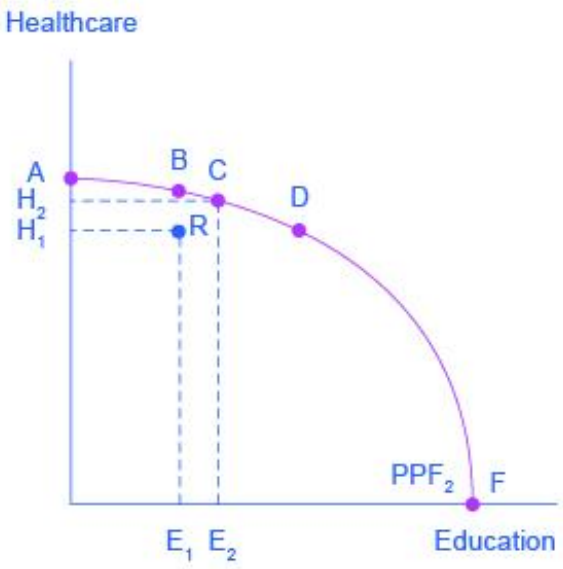

Figure 5.3: Productive and Allocative Efficiency

- Questions were left largely unanswered by Ricardo. According to Ricardo, comparative advantage was based on the difference in the productivity of labor among nations, but he provided no explanation for such a difference in productivity, except for possible differences in climate.
- Named after two Swedish economists, Eli Heckscher and Bertil Ohlin, the Heckscher–Ohlin model studies the pattern of production and trade that arises when countries have different endowments of factors of production, such as labor, capital and land.
- The Heckscher–Ohlin model of trade states that endowment differences among countries play a key role in determining the pattern of trade.

  Heckscher–Ohlin Theorem. A country has a comparative advantage in the good that is relatively intensive in the country's relatively abundant factor.

5.7 The Krugman model of trade

- The Krugman model or the model of trade based on internal economies of scale in production.

- It shows how countries can gain from trade even in a world where countries have identical endowments and technologies, provided that production functions exhibit increasing returns to scale and consumers have a love for variety.

5.8 The gravity model

- Let's begin by describing who trades with whom. An empirical relationship known as the gravity model helps to make sense of the value of trade between any pair of countries and sheds light on the impediments that continue to limit international trade even in today's global economy.
- Three of the top 15 U.S. trading partners are European nations: Germany, the United Kingdom, and France. Why does the United States trade more heavily with these three European countries than with others? The answer is that these are the three largest European economies. That is, they have the highest values of gross domestic product (GDP), which measures the total value of all goods and services produced in an economy.

  There is a strong empirical relationship between the size of a country's economy and the volume of both its imports and its exports.

- The basic form of the gravity equation is as follows:

$$T_{ij} = \frac{GDP_i^{\alpha} GDP_j^{\beta}}{D_{ij}^{\theta}}$$

Here,

T_{ij} indicates bilateral trade between country i, and j

GDP_i indicates the economic size of i, measured by gross domestic product

D_{ij} indicates the bilateral distance between the two countries

The parameters are α, β, and θ

6 The Political Economy of Trade Policy

Previous lectures have answered the question, "Why do nations trade?" by describing the causes and effects of international trade and the functioning of a trading world economy. This lecture examines the policies that governments adopt toward international trade, policies that involve a number of different actions. These actions include:

- Taxes
- Subsidies
- Legal limits on the value or volume of particular imports
- Other measures

The chapter thus provides a framework for understanding the effects of the most important instruments of trade policy.

6.1 Basic Tariff Analysis

A tariff is a tax levied when a good is imported. There are various types of tariff.

- *Specific tariff* are levied as a fixed charge for each unit of goods imported (for example, $3 per barrel of oil).
- *Ad valorem* tariffs are taxes that are levied as a fraction of the value of the imported goods (for example, a 25 percent U.S. tariff on imported trucks).

Tariffs are the oldest form of trade policy and have traditionally been used as a source of government income. Their true purpose is to provide revenue and to protect particular domestic sectors.

The importance of tariffs has declined in modern times because modern governments usually prefer to protect domestic industries through a variety of non-tariff barriers, such as:

- Import quotas (limitations on the quantity of imports)
- Export restraints (limitations on the quantity of exports—usually imposed by the exporting country at the importing country's request).

Nonetheless, an understanding of the effects of a tariff remains vital for understanding other trade policies.

6.2 Political economy and trade policy

In 2008, several developing countries were forced to reduce crop prices domestically. To increase domestic supply for food products, countries like Thailand, Russia, and Ukraine chose to restrict food exports. Such a trade policy was not only politically improper, as it serves only one country's interest, but also economically counter-productive. For example, farmers in Ukraine dumped around €90 million worth of grain as they harvested more than they could supply domestically, due to the export restrictions, while the world supply was insufficient.

Banning exports may have reduced domestic prices, but importers had to look elsewhere for sources of supply, creating a rise in global crop prices. Thus, such policies produce more costs than benefits as higher the price, the greater the incentive to hoard, which create shifts in prices. Clearly, government policies reflect intentions that go beyond simple measures of cost and benefit.

6.2.1 Free Trade and Efficiency

The efficiency case for free trade is simply the reverse of the cost-benefit analysis of a tariff. Figure 6a shows the basic point once again for the case of a small country that cannot influence foreign export prices. A tariff causes a net loss to the economy mea- sured by the area of the two triangles; it does so by distorting the economic incentives of both producers and consumers. Conversely, a move to free trade eliminates these distortions and increases national welfare.

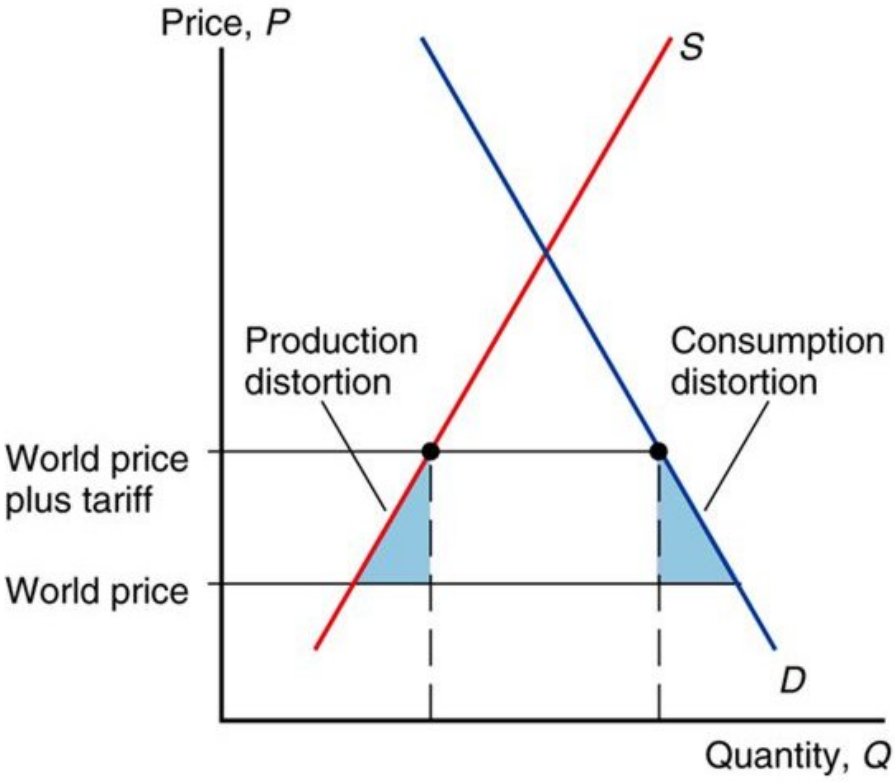

Figure 6.1: Figure 6a: Efficiency of free trade

»> Assignment 2

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7 Trade Policy in Developing Countries

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8 Controversies in Trade Policy

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9 National Income Accounting

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»> Assignment 3

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10 Exchange Rates and the Foreign Exchange Market

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11 Money, Interest Rates, and Exchange Rates

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12 Fixed Exchange Rates and Foreign Exchange Intervention

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»> Assignment 4

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13 International Monetary Systems

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14 Financial Globalization

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15 Developing Countries Growth, Crisis, and Reform

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»> Assignment 5

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