Overview of Section I
International Trade Theory

The first part of the text, Section I, is comprised of six chapters:

Chapter 2   World Trade: An Overview

Chapter 3   Labor Productivity and Comparative Advantage: The Ricardian Model

Chapter 4   Resources, Comparative Advantage, and Income Distribution

Chapter 5   The Standard Trade Model

Chapter 6   Economies of Scale, Imperfect Competition, and International Trade

Chapter 7   International Factor Movements

■ Section I Overview

Section I of the textbook introduces you to the theory of international trade. The intent of this section is to explore the motives for and implications of patterns of trade between countries. The presentation in the textbook proceeds by introducing different models of international trade. Each one of these models of trade is a more general model than the model presented in the preceding chapter. Each model is used to illustrate a different concept. Usually, the models evolve by either increasing the number of factors used in production, by increasing the mobility of factors of production across sectors of the economy, by introducing more general technologies applied to production, or by examining different types of market structures. Throughout Section I of the textbook, policy concerns and current issues are used to help illustrate the relevance of the theory of international trade for your understanding of the world around you.

Chapter 2 gives a brief overview of world trade. In particular, it discusses what we know about the quantities and pattern of world trade today. The chapter uses the empirical relationship known as the gravity model as a framework to describe trade. This framework describes trade as a function of the size of the economies involved and their distance. It can then be used to see where countries are trading more or less than expected. The chapter also notes the growth in world trade over the previous decades and uses the previous era of globalization (pre-World War I [WWI]) as context for today's experience.

Chapter 3 introduces you to international trade theory through a framework known as the Ricardian model of trade. This model addresses the issue of why two countries would want to trade with each other. This model shows how mutually-beneficial trade arises when there are two countries, each with one factor of production which can be applied toward producing each of two goods. Key concepts are introduced, such as the production possibilities frontier, comparative advantage versus absolute advantage, gains from trade, relative prices, and relative wages across countries.

Chapter 4 introduces what is known as the classic Heckscher-Ohlin model of international trade. Using this framework, you can work through the effects of trade on wages, prices, and output. Many important and intuitive results are derived in this chapter including: the Rybczynski Theorem, the Stolper-Samuelson Theorem, and the Factor Price Equalization Theorem. Implications of the Heckscher-Ohlin model for the pattern of trade among countries are discussed, as are the failures of empirical evidence to confirm the predictions of the theory. The chapter also introduces questions of political economy in trade. One important reason for this addition to the model is to consider the effects of trade on income distribution. This approach shows that while nations generally gain from international trade, it is quite possible that specific groups within these nations could be harmed by this trade. This discussion, and related questions about protectionism versus globalization, becomes broader and even more interesting as you work through the models and different assumptions of subsequent chapters.

Chapter 5 presents a general model of international trade which subsumes the models of the previous chapters as special cases. This "standard trade model" uses relative demand and relative supply curves of countries to analyze a variety of policy issues, such as the effects of economic growth, the transfer problem, and the effects of trade tariffs and production subsidies.

While an extremely useful tool, the standard model of trade fails to account for some important aspects of international trade. Specifically, while the factor proportions/Heckscher-Ohlin theories explain some of the motives for trade flows between countries, its bottom line idea is that the differences between countries provide incentives for countries to gain from increased specialization. However, a large portion of trade occurs between countries that are quite similar. To explain this latter type of trade, in Chapter 6 models are introduced that place much more emphasis on economies of scale in production and imperfect competition among firms than they do on different initial endowments of factors of production such as labor and capital.

Chapter 6 begins by reviewing the concept of monopolistic competition among firms, and then proceeds by showing the gains from trade which arise when such imperfectly competitive markets exist across countries. Next, economies of scale in production and comparative advantage are discussed. Production can take place in the context of internal and/or external economies of scale. These economies of scale can give rise to specialized production activity across countries. The chapter deals with the important issue of intra-industry trade. Trade policy issues such as Trade Pacts, Anti-dumping legislation as a form of protection, and the treatment of specialized production are discussed. The subject matter of this chapter is particularly important; it shows how gains from trade arise in ways that are not suggested by the standard, more traditional models of international trade.

Chapter 7 focuses on international factor mobility. This emphasis departs from that of the previous chapters in which it was assumed that the factors of production available for production within a country could not exit a country's borders. Reasons for and the effects of this kind of international factor mobility are discussed in the context of a one-factor (labor) production and trade model. After the discussion of the effects of internationally mobile labor, similar arguments are applied to the international mobility of capital. International mobility of capital takes the form of international borrowing and lending. This leads you into a discussion of decisions to produce in the future rather than the present. There are strong implications of such intertemporal decisions for observed international lending and foreign direct investment behavior.

Chapter 2
World Trade: An Overview

■ **Chapter Organization**

■ **Key Themes**

Before entering into a series of theoretical models that explain why countries trade across borders and the benefits of this trade (Chapters 3–11), Chapter 2 considers the pattern of world trade which we observe today. The core idea of the chapter is the empirical model known as the gravity model. The gravity model is based on the observations that: (1) countries tend to trade with other nearby economies and (2) countries' trade is proportional to their size. The model is called the gravity model as it is similar in form to the physics equation that describes the pull of one body on another as proportional to their size and distance.

The basic form of the gravity equation is $T_{ij} = A \times Y_i \times Y_j / D_{ij}$. The logic supporting this equation is that large countries have large incomes to spend on imports and produce a large quantity of goods to sell as exports. This means that the larger either trade partner, the larger the volume of trade between them. At the same time, the distance between two trade partners can substitute for the transport costs that they face as well as proxy for more intangible aspects of a trading relationship such as the ease of contact for firms. This model can be used to estimate the predicted trade between two countries and look for anomalies in trade patterns. The text shows an example where the gravity model can be used to demonstrate the importance of national borders in determining trade flows. According to many estimates, the border between the United States and Canada has the impact on trade equivalent to roughly 2000 miles of distance. Other factors, such as tariffs, trade agreements, and common language can all affect trade and can be incorporated into the gravity model.

The chapter also considers the way trade has evolved over time. While people often feel that the modern era has seen unprecedented globalization, in fact, there is precedent. From the end of the 19th century to World War I, the economies of different countries were quite connected. Trade as a share of gross domestic product (GDP) was higher in 1910 than 1960, and only recently have trade levels surpassed the pre-World War trade. The nature of trade has changed though. The majority of trade is in manufactured goods with agriculture and mineral products (and oil) making up less than 20 percent of world trade. Even developing countries now export primarily manufactures. In contrast, a century ago, more trade was in primary products as nations tended to trade for things that literally could not be grown or found at home. Today, the reasons for trade are more varied, and the products we trade are ever changing. The chapter concludes by focusing on one particular expansion of what is "tradable"—the increase in services trade. Modern information technology has greatly expanded what can be traded as the person staffing a call center, doing your accounting, or reading your X-ray can literally be half-way around the world. While still relatively rare, the potential for a large increase in service outsourcing is an important part of how trade will evolve in the coming decades. The next few chapters will explain the theory of why nations trade.

■ Key Terms

Define the following key terms:

1. Gravity Model _____

    _____

    _____

    _____.

2. Service Outsourcing _____

    _____

    _____

    _____.

3. GDP _____

    _____

    _____

    _____.

4. Developing Countries _____

    _____

    _____

    _____.

5. Trade Agreement _____

    _____

    _____

    _____.

■ **Review Questions**

1. If we put the following countries on Figure 2-2, would we expect them to be on the 45-degree line, above it, or below it? Why?

   a. Canada _____

   _____

   _____ .

   b. Mongolia _____

   _____

   _____ .

   c. Norway _____

   _____

   _____ .

2. Let us assume that the gravity model holds in its most simple form (that is, Equation 2-1) where $T_{ij} = A \times Y_i \times Y_j/D_{ij}$. Let us return to the example in the book concerning four countries, A, B, C, and D, where their size varies, but let us add distance to the consideration of trade volumes. A and B have a GDP of $4 trillion each, and C and D have a GDP of $1 trillion each. The table below gives the distances from one country to another. Below that there is a table to fill in the trade values. One value is filled in for you. This should let you figure out the value of the constant "A" above. Fill in the rest of the table.

Relative Distances across "Countries"			
	A	**B**	**C**	**D**
A	×	100	1000	100
B	100	×	1000	200
C	1000	1000	×	1000
D	100	200	1000	×

Value of Exports ($ trillion)			
	A	**B**	**C**	**D**
A	×	1.6	—	—
B	—	×	—	—
C	—	—	×	—
D	—	—	—	×

3. The chapter notes that we can use the gravity model to find anomalies in world trade. We saw that the basic relationships in the gravity model were that the size of economies increased trade and distance between them decreased trade. We could also add other variables to the model. What sign would you expect them to yield if you estimated a gravity equation:

Variable	Expected Sign
Distance	–
GDP	+
Share common language	
One country landlocked	
Share common currency	
The two countries are at war	
Both members of a Free Trade Area	

4. Communication and transportation technology can change what we trade. Consider the following items that at one point were—nontradable. What has made them tradable internationally?

   a. Perishable Food _____

   _____

   _____.

   b. Call Centers _____

   _____

   _____.

   c. Legal Services _____

   _____

   _____.

   d. Agriculture Grown in an Interior State _____

   _____

   _____.

   e. Iron or Heavy Manufactures _____

   _____

   _____.

5. Can you envision a circumstance under which trade to GDP ratios fall back towards the levels seen in the 1950s. What could cause this? Do you think it is likely? Do you think people in 1905 envisioned such a decrease in trade?

_____

_____

_____

_____

_____

_____

_____ .

■   Answers to Odd-Numbered Textbook Problems

1. We saw that not only is GDP important in explaining how much two countries trade, but also, distance is crucial. Given its remoteness, Australia faces relatively high costs of transporting imports and exports, thereby reducing the attractiveness of trade. Since Canada has a border with a large economy (the United States) and Australia is not near any other major economy, it makes sense that Canada would be more open and Australia more self-reliant.

3. No, if every country's GDP were to double, world trade would not quadruple. One way to see this using the example from Table 2-2 would simply be to quadruple all the trade flows in 2-2 and also double the GDP in 2-1. We would see that the first line of Table 2-2 would be—6.4, 1.6, 1.6. If that were true, country A would have exported $8 trillion which is equal to its entire GDP. Likewise, it would have imported $8 trillion, meaning it had zero spending on its own goods (highly unlikely). If instead we filled in Table 2-2 as before, by multiplying the appropriate shares of the world economy times a country's GDP, we would see that the first line of Table 2-2 reads—3.2, 0.8, 0.8. In this case, 60% of country A's GDP is exported, the same as before. The logic is that while the world GDP has doubled, increasing the likelihood of international trade, the local economy has doubled, increasing the likelihood of domestic trade. The gravity equation still holds. If you fill in the entire table, you will see that whereas before the equation was $0.1 \times \text{GDP}_i \times \text{GDP}_j$, it now is $0.05 \times \text{GDP}_i \times \text{GDP}_j$. The coefficients on each GDP is still one, but the overall constant has changed.

5. As the chapter discusses, a century ago, much of world trade was in commodities that in many ways were climate or geography determined. Thus, the United Kingdom imported goods that it could not make itself. This meant importing things like cotton or rubber from countries in the Western Hemisphere or Asia. As the United Kingdom's climate and natural resource endowments were fairly similar to those in the rest of Europe, it had less of a need to import from other European countries. In the aftermath of the Industrial Revolution, where manufacturing trade accelerated and has continued to expand with improvements in transportation and communications it is not surprising that the United Kingdom would turn more to the nearby and large economies in Europe for much of its trade.