Overview of Section I:
International Trade Theory

Section I of the text consists of seven chapters:

■ Section I Overview

Section I of the text presents 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 proceeds by introducing successively more general models of trade, where the generality is provided by 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, and by examining different types of market structure. Throughout Section I, policy concerns and current issues are used to emphasize the relevance of the theory of international trade for interpreting and understanding our economy.

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-WWI) as a context for today's experience.

Chapter 3 introduces 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 that 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.

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Chapter 4 presents the Specific Factors model in which goods are produced using one factor that is mobile between industries and one factor that is specific to that industry. The advantage of this model over the simple Ricardian model is that it highlights the distributional effects of trade, with some sectors of society gaining and other sectors losing even though the net welfare effect of trade is a gain. These distributional effects of trade highlight the commonly voiced oppositions to free trade, and this chapter examines three reasons why protectionism is an inefficient method for dealing with the losses from trade. The chapter concludes with an application of the Specific Factors model to international labor migration, focusing again on the distributional effects of free trade in labor.

Chapter 5 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 6 presents a general model of international trade, which admits the models of the previous chapters as special cases. This "standard trade model" is depicted graphically by a general equilibrium trade model as applied to a small open economy. Relative demand and relative supply curves are used 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. The Appendix to the chapter develops curve analysis.

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 trade flows between countries, recent research in international economics has placed an increasing emphasis on economies of scale in production and imperfect competition among firms.

Chapter 7 is the first of two chapters to reflect these developments in international trade theory. With external economies of scale, average costs in an industry fall as industrial production rises (though not necessarily the production of any one firm in that industry). As a result, when two countries trade, it makes sense to concentrate production in one country as this will lead to lower costs than splitting production across two countries. As with the trade models presented in previous chapters, countries with the lowest production costs will be exporters, but in this case, the source of low costs is not driven by differences in technology or factor endowments. Rather, a country with an established industry will be more competitive than one in which the industry has to start from scratch. This is true even if the established country would not be the lowest-cost producer if both countries started off at the same level of production. This suggests that a country could be made better off by closing off from trade, though such cases are difficult to identify and this form of protectionism may lead to unintended consequences such as retaliatory tariffs.

Chapter 8 examines how trade can be driven by internal economies of scale and monopolistic competition. An internal economy of scale exists when a firm's average costs decline as that firm increases its production. Such a situation leads to a model of imperfect competition (there are a few large firms rather than many small firms), and it can be used to explain the high degree of intra-industry trade in the world. The chapter concludes with a discussion of foreign direct investment. The decision by a multinational to serve a foreign market through a foreign affiliate or to break up its production chain is driven by a proximity-concentration trade-off in which it must balance economies of scale (producing everything in one place) with trade costs and differences in factor prices. This subject matter is important because it shows how

gains from trade may arise in ways that are not suggested by the standard models of international trade.

Chapter 2
World Trade: An Overview

■ Chapter Organization

■ Chapter Overview

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 nearby economies and (2) trade is proportional to country 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 that either trade partner is, 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 2,000 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 globalization in the modern era is unprecedented, in fact, we are in the midst of the second great wave of globalization. From the end of the 19th century to World War I, the economies of different countries were quite connected, with trade as a share of GDP higher in 1910 than in 1960. Only recently have trade levels surpassed pre–World War I trade. The nature of trade has changed, though. The majority of trade is in manufactured goods with agriculture and mineral products making up less than 20 percent of world trade. Even developing countries now primarily export manufactures. 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 motivations for trade are varied and the products we trade are increasing in diversity. Despite increased complexity in modern international trade, the fundamental principles explaining trade at the dawn of the global era still apply today. 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 halfway around the world. While service outsourcing is 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.

■ Answers to 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.

2.   Mexico is quite close to the United States, but it is far from the European Union (EU), so it makes sense that it trades largely with the United States Brazil is far from both, so its trade is split between the two. Mexico trades more than Brazil in part because it is so close to a major economy (the United States), and in part because it is a member of a free trade agreement with a large economy (NAFTA). Brazil is farther away from any large economy and is in a free trade agreement with relatively small countries.

3.   No, if every country's GDP were to double, world trade would not quadruple. Consider a simple example with only two countries: A and B. Let country A have a GDP of $6 trillion and B have a GDP of $4 trillion. Furthermore, the share of world spending on each country's production is proportional to each country's share of world GDP (stated differently, the exponents on GDP in Equation 2-2, *a* and *b,* are both equal to 1). Thus, our example is characterized by the table below:

Country	GDP	Share of World Spending
A	$6 trillion	60%
B	$4 trillion	40%

Now let's compute world trade flows in this example. Country A has an income of $6 trillion and spends 40 percent of that income on country B's production. Thus, exports from country B to country A are equal to $6 trillion × 40% = $2.4 trillion. Country B has an income of $4 trillion and spends 60 percent of this on country A's production. Thus, exports from country A to country B are equal to $4 trillion × 60% = $2.4 trillion. Total world trade in this simple model is $2.4 + $2.4 = $4.8 trillion.

What happens if we double GDP in both countries? Now GDP in country A is $12 trillion and GDP in country B is $8 trillion. However, the share of world income (and spending) in each country has not changed. Thus, country A will still spend 40 percent of its income on country B products and country B will still spend 60 percent of its income on country A products. Exports from country B to country A are equal to $12 trillion × 40% = $4.8 trillion. Exports from country A to country B are $8 trillion × 60% = $4.8 trillion. Total trade is now equal to $4.8 + $4.8 = $9.6 trillion. Looking at trade before and after the doubling of GDP, we see that total trade actually doubled, not quadrupled.

4. As the share of world GDP which belongs to East Asian economies grows, then in every trade relationship which involves an East Asian economy, the size of the East Asian economy has grown. This makes the trade relationships with East Asian countries larger over time. The logic is similar for why the countries trade more with one another. Previously, they were quite small economies, meaning that their markets were too small to import a substantial amount. As they became more wealthy and the consumption demands of their populace rose, they were each able to import more. Thus, while they previously had focused their exports to other rich nations, over time they became part of the rich nation club and thus were targets for one another's exports. Again, using the gravity model, when South Korea and Taiwan were both small, the product of their GDPs was quite small, meaning that despite their proximity, there was little trade between them. Now that they have both grown considerably, their GDPs predict a considerable amount of trade.

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 of 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. This result is a direct prediction of the gravity model.