

# 1. INTRODUCTION

## WHAT IS INTERNATIONAL ECONOMICS ABOUT

International economics uses the same fundamental methods of analysis as other branches of economics, because the motives and behavior of individuals and firms are the same in international trade as they are in domestic transactions. When a bottle of Spanish wine appears on a London table, the sequence of events that brought it there is not very different from the sequence that brings a California bottle to a table in New York-and the distance traveled is much less! Yet, international economies involve new and different concerns, because international trade and investment occur between independent nations. Spain and the United Kingdom are sovereign states; California and New York are not. Spain's wine shipments to the United Kingdom can be disrupted if the British government sets a quota that limits imports; Spanish wine can become suddenly cheaper to British wine drinkers if the foreign-exchange value of Spain's peseta falls against that of Britain's pound sterling. Neither of these events can happen within the United States, where the Constitution forbids restraints on interstate trade *and there is only one currency*.

The subject matter of international economics, then, consists of issues raised by the special problems of economic interaction between sovereign states. Seven themes recur throughout the subject: the gains from trade, the pattern of trade, protectionism, the balance of payments, exchange-rate determination, international policy coordination, and the international capital market.

### **The Gains from Trade**

Everyone knows that some international trade is beneficial-nobody would suggest that Norway should grow its own oranges. Many people, however, are skeptical about the benefits of trading for goods that a country could produce for itself. Shouldn't Americans buy American goods whenever possible to help save U.S. jobs? Probably the most important insight in all of international economics is the idea that there are *gains from trade*-that is, that when countries sell goods and services to one another, this is almost always to their mutual benefit. The range of circumstances *under which* international trade is beneficial is much wider than most people appreciate. For example, many U.S. businessmen fear that if Japanese productivity overtakes that of the United States, trade with Japan will damage the U.S. economy because none of our industries will be able to compete. U.S. labor leaders charge that the United States is hurt by trade with less advanced countries, whose industries are less efficient than ours but who can sometimes undersell U.S. producers because they pay much lower wages. Yet the first model of trade in this book (Chapter 2) demonstrates that two countries can trade to their mutual advantage even when one of them is more efficient than the other at producing everything and producers in the less efficient economy can compete only by paying lower wages. Trade provides benefits by allowing countries to export goods whose production makes relatively heavy use of resources that are locally abundant while importing goods whose production makes heavy use of resources that are locally scarce (Chapter 4). International trade also allows countries to specialize in producing narrower ranges of goods, allowing them to gain greater efficiencies of large-scale production (Chapter 6). Nor are the benefits limited to trade in tangible goods: international migration and international borrowing and lending are also forms of mutually beneficial trade, the first a trade of labor for goods and services, the second a trade of current goods for the promise of future goods (Chapter 7). Finally, international exchanges of risky assets such as stocks and bonds can benefit all countries by allowing each country to diversify its wealth and reduce the variability of its income (Chapter 20). These invisible forms of trade yield gains as real as the trade that puts fresh fruit from Latin America in Toronto markets in February.

## **The Pattern of Trade**

Economists cannot discuss the effects of international trade or recommend changes in government policies toward trade with any confidence unless they know that their theory is good enough to explain the international trade that is actually observed. Thus attempts to explain the pattern of international trade—who sells what to whom—have, been a major preoccupation of international economists.

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. Much of the pattern of trade is more subtle, however. Why does Japan export automobiles, while the United States exports aircraft? In the early nineteenth century English economist David Ricardo offered an explanation of trade in terms of international differences in labor productivity, an explanation that remains a powerful insight (Chapter 2). In the twentieth century, however, alternative explanations have also been proposed. One of the most influential, but still controversial, views links trade patterns to an interaction between the relative supplies of national resources such as capital, labor, and land on one side and the relative use of these factors in the production of different goods on the other. We present this theory in Chapter 4. Recent efforts to test the implications of this theory, however, appear to show that it is less valid than many had previously thought. More recently still, some international economists have proposed theories that suggest a substantial random component in the pattern of international trade, theories that are developed in Chapter 6.

## **Protectionism**

If the idea of gains from trade is the most important theoretical concept in international economics, the seemingly eternal battle between Free Trade and Protection is its most important policy theme. Since the emergence of modern nation-states in the sixteenth century, governments have worried about the effect of international competition on the prosperity of domestic industries and have tried either to shield industries from foreign competition by placing limits on imports or to help them in world competition by subsidizing exports. The single most consistent mission of international economics has been to analyze the effects of these so-called protectionist policies—and usually, though not always, to criticize protectionism and show the advantages of freer international trade.

The protectionist issue is especially intense in the United States because of the trends illustrated by Figure 1-1. Since World War II the United States has advocated free trade in the world economy, viewing international trade as a force not only for prosperity but also for world peace. With the growing role of trade in the U.S. economy from 1965 to 1980, however, many industries found that for the first time they were facing foreign competition in their home markets. Some of them found the foreign competition too much to handle and appealed for protection. During the 1970s these demands were opposed by other U.S. industries that were benefiting from increased export sales. In the 1980s, however, as exports plunged, the mood of Congress shifted toward protectionism. The Reagan administration resisted this political pressure but made a series of concessions, limiting imports of Japanese automobiles, European steel, Canadian lumber, and many other goods. Congress recently passed a major new piece of legislation, the Omnibus Trade and Competitiveness Act of 1988, which significantly toughens U.S. trade policy. Although the opposition of most international economists to protection remains as strong as ever, there seems to be a real possibility that over the next few years the United States will move sharply away from its fourdecade-long commitment to the principle of free trade.

As befits both the historical importance and the current relevance of the protectionist issue, roughly a quarter of this book is devoted to this subject. Over the years, international economists have developed a simple yet powerful analytical framework for determining the

effects of government policies that affect international trade. This framework not only predicts the effects of trade policies, it allows cost-benefit analysis and defines criteria for determining when government intervention is good for the economy. We present this framework in Chapters 8 and 9, and use it to discuss a number of policy issues in those chapters and in the following two.

In the real world, however, governments do not necessarily do what the cost-benefit analysis of economists tells them they should. This does not mean that analysis is useless. Economic analysis can help make sense of the politics of international trade policy, by showing who benefits and who loses from such government actions as quotas on imports and subsidies to exports. The key insight of this analysis is that conflicts of interest *within* nations are usually more important in determining trade policy than conflicts of interest *between* nations. Chapters 3 and 4 show that trade usually has very strong effects on income distribution within countries, while Chapters 9, 10, and 11 reveal that the relative power of different interest groups within countries, rather than some measure of overall national interest, is often the main determining factor in government policies toward international trade.

### **The Balance of Payments**

In 1987 both Japan and Brazil ran large trade surpluses—that is, each sold more goods to the rest of the world than it bought in return. Japan's surplus of \$96 billion brought complaints from many other countries that Japan was gaining at their expense; Brazil's surplus of \$12 billion (which represented a much larger fraction of the country's national income) brought complaints from the Brazilians that *they* were being unfairly treated. What does it mean when a country runs a trade surplus or a trade deficit? To make sense of numbers like the trade deficit, it is essential to place them in the broader context of the whole of a nation's international transactions.

The record of a country's transactions with the rest of the world is called the balance of payments. Explaining the balance of payments, and diagnosing its significance, is a main theme of international economics. It emerges in a variety of specific contexts: in discussing international capital movements (Chapter 7), in relating international transactions to national income accounting (Chapter 12), and in discussing virtually every aspect of international monetary policy (Chapters 16 through 21). Like the problem of protectionism, the balance of payments has become a central issue for the United States because the nation has run huge trade deficits in every year since 1982.

### **Exchange-Rate Determination**

In February 1985, one U.S. dollar traded on international markets for 260 Japanese yen; in January 1988, a dollar was worth only 123 yen. This change had effects that reached far beyond financial markets. In February 1985, the average Japanese worker in manufacturing was paid a wage in yen that, converted into dollars at the prevailing rate of exchange, was only about half that of his U.S. counterpart. Three years later Japanese wages were about the same as U.S. wages. With their labor cost advantage vis-a-vis the United States gone, and in the face of competition from low-wage competitors like Korea and Taiwan, Japanese manufacturers were initially forced into layoffs that drove the Japanese unemployment rate to its highest level since the 1950s, after which they began investing heavily in acquiring production facilities in other countries especially in the U.S.

One of the key differences between international economics and other areas of economics is that countries have different currencies. It is usually possible to convert one currency into another (though even this is illegal in some countries), but as the example of the dollar-yen exchange rate indicates, relative prices of currencies may change over time, sometimes drastically.

The study of exchange-rate determination is a relatively new part of international economics, for historical reasons. For most of the past century, exchange rates have been fixed by government action rather than determined in the marketplace. Before World War I the values of the world's major currencies were fixed in terms of gold, while for a generation after World War II the values of most currencies were fixed in terms of the U. S. dollar. The analysis of international monetary systems that fix exchange rates remains an important subject, especially since a return to fixed rates in the future

Remains a real possibility. Chapters 17 and 18 are devoted to the working of fixed-rate systems, and Chapter 19 to the debate over which system is better. For the time being, however, some of the world's most important exchange rates fluctuate minute by minute and the role of changing exchange rates remains at the center of the international economics story. Chapters 13 through 16 focus on the modern theory of floating exchange rates.

### **International Policy Coordination**

The international economy comprises sovereign nations, each free to choose its own economic policies. Unfortunately, in an integrated world economy one country's economic policies usually affect other countries as well. When West Germany raised taxes and interest rates in 1981, all of Europe went into a recession; when the United States imposed a tariff on imports of lumber during 1986, the Canadian lumber industry experienced a crisis. Differences in goals between countries often lead to conflicts of interest. Even when countries have similar goals, they may suffer losses if they fail to coordinate their policies. A fundamental problem in international economics is how to produce an acceptable degree of harmony among the international trade and monetary policies of different countries without a world government that tells countries what to do.

For the last forty years international trade policies have been governed by an international treaty known as the General Agreement on Tariffs and Trade, and massive international negotiations involving dozens of countries at a time have been held. We discuss the rationale for this system in Chapter 9 and look at whether the current rules of the game for international trade in the world economy can or should survive.

While cooperation on international trade policies is a well-established tradition, coordination of international macroeconomic policies is a newer and more uncertain topic. Only in the last few years have economists formulated at all precisely the case for macroeconomic policy coordination. Nonetheless, attempts at international macroeconomic coordination are occurring with growing frequency in the real world. Both the theory of international macroeconomic coordination and the developing experience are reviewed in Chapters 18 and 19.

### **The International Capital Market**

During the 1970s banks in advanced countries lent tens of billions of dollars to firms and governments in poorer nations, especially in Latin America. In 1982, Mexico announced that it could no longer pay the money it owed without special arrangements that allowed it to postpone payments and borrow back part of its interest; soon afterward Brazil, Argentina, and a number of smaller countries found themselves in the same situation. While combined efforts of banks, governments, and countries avoided a world financial crisis in 1982, the debt difficulties of less-developed countries remained in a state of periodic crisis through 1990. The debt problem brought to the public's attention the growing importance of the international capital market.

In any sophisticated economy there is an extensive capital market: a set of arrangements by which individuals and firms exchange money now for promises to pay in the future. The growing importance of international trade since the 1960s has been accompanied by a growth in the *international* capital market, which links the capital markets of individual countries. Thus in the 1970s oil-rich Middle Eastern nations placed their oil revenues in banks in London or New

York, and these banks in turn lent money to governments and corporations in Asia and Latin America. During the 1980s Japan converted much of the money it earned from its booming exports into investments in the United States, including the establishment of a growing number of U.S. subsidiaries of Japanese corporations.

International capital markets differ in important ways from domestic capital markets. They must cope with special regulations that many countries impose on foreign investment; they also sometimes offer opportunities to evade regulations placed on domestic markets. Since the 1960s, huge international capital markets have arisen, most notably the remarkable London Eurodollar market, in which billions of dollars are exchanged each day without ever touching the United States.

Some special risks are also associated with international capital markets. One risk is that of currency fluctuations: if the dollar falls suddenly against the Japanese yen, Japanese investors who bought U.S. bonds suffer a capital loss—as many discovered in 1985–1988. Another risk is that of national default: a nation may simply refuse to pay its debts (perhaps because it cannot), and there may be no effective way for its creditor to bring it to court. This remains a real possibility for the nations of Latin America; if all of them were to refuse payment, major U.S. banks would lose heavily.

The growing importance of international capital markets, and their new problems, demand greater attention than ever before. This book devotes two chapters to issues arising from international capital markets: one on the functioning of global asset markets (Chapter 20) and one on the international debt problem (Chapter 21).

## **INTERNATIONAL ECONOMICS: TRADE AND MONEY**

The economics of the international economy can be divided into two broad subfields: the study of *international trade* and the study of *international money*. International trade analysis focuses primarily on the *real* transactions in the international economy, that is, on those transactions that involve a physical movement of goods or a tangible commitment of economic resources. International monetary analysis focuses on the *monetary* side of the international economy, that is, on financial transactions such as foreign purchases of U. S. dollars. An example of an international trade issue is the conflict between the United States and Europe over Europe's subsidized exports of agricultural products; an example of an international monetary issue is the dispute over whether the foreign-exchange value of the dollar should be allowed to float freely or be stabilized by government action.

In the real world there is no simple dividing line between trade and monetary issues. Most international trade involves monetary transactions, while, as the examples in this chapter already suggest, many monetary events have important consequences for trade. Nonetheless, the distinction between international trade and international money is useful. The first half of this book covers international trade issues. Part One (Chapters 2 through 7) develops the analytical theory of international trade, and Part Two (Chapters 8 through 11) applies trade theory to the analysis of government policies toward trade. The second half of the book is devoted to international monetary issues. Part Three (Chapters 12 through 17) develops international monetary theory, and Part Four (Chapters 18 through 21) applies this analysis to international monetary policy.

## 2. THE RICARDIAN MODEL

1. In this chapter we examined the *Ricardian model*, the simplest model that shows how differences between countries give rise to trade and *gains from trade*. In this model labor is the only factor of production and countries differ only in the productivity of labor in different industries.

2. In the Ricardian model, countries will export goods that their labor produces relatively efficiently, and import goods that their labor produces relatively inefficiently. In other words, a country's production pattern is determined by *comparative advantage*.

3. That trade benefits a country can be shown in either of two ways. First, we can think of trade as an indirect method of production. Instead of producing a good for itself, a country can produce another good and trade it for the desired good. The simple model shows that whenever a good is imported it must be true that this indirect "production" requires less labor than direct production. Second, we can show that trade enlarges a country's consumption possibilities, implying gains from trade.

4. The distribution of the gains from trade depends on the relative prices of the goods countries produce. To determine these relative prices it is necessary to look at the *relative world supply and demand* for goods. The relative price implies a relative wage rate as well.

5. The proposition that trade is beneficial is unqualified. That is, there is no requirement that a country be "competitive" or that the trade be "fair." In particular, we can show that three commonly held beliefs about trade are wrong. First, a country gains from trade even if it has lower productivity than its trading partner in all industries. Second, trade is beneficial even if foreign industries are competitive only because of low wages. Third, trade is beneficial even if a country's exports embody more labor than its imports.

6. Extending the one-factor, two-good model to a world of many commodities does not alter these conclusions. The only difference is that it becomes necessary to focus directly on the relative demand for labor to determine relative wages rather than to work via relative demand for goods. Also, a many-commodity model can be used to illustrate the important point that transportation costs can give rise to a situation in which some *nontraded goods* exist.

7. While some of the predictions of the Ricardian model are clearly unrealistic, its basic prediction-that countries will tend to export goods in which they have relatively high productivity-has been confirmed by a number of studies.

### 3. SPECIFIC FACTORS AND INCOME DISTRIBUTION

1. International trade often has strong effects on the distribution of income within countries, so that it often produces losers as well as winners. Income distribution effects arise for two reasons: factors of production cannot move instantaneously and costlessly from one industry to another, and changes in an economy's output mix have differential effects on the demand for different factors of production.

2. A useful model of income-distribution effects is the *specific factors model*, which allows for a distinction between general-purpose factors that can move between sectors, and factors that are specific to particular uses. In this model, differences in resources can cause countries to have different relative supply curves, and thus cause international trade.

3. In the specific factors model, factors specific to export sectors in each country gain from trade, while factors specific to import-competing sectors lose. Mobile factors that can work in either sector may either gain or lose.

4. Trade nonetheless produces overall gains in the limited sense that those who gain could in principle compensate those who lose while still remaining better off than before.

5. Most economists do not regard the effects of international trade on income distribution as a good reason to limit this trade. In its distributional effects, trade is no different from many other forms of economic change, which are not normally regulated. Furthermore, economists would prefer to address the problem of income distribution directly, rather than by interfering with trade flows.

6. Nonetheless, in the actual politics of trade policy income distribution is of crucial importance. This is true in particular because those who lose from trade are usually a much more-informed, cohesive, and organized group than those who gain.

#### 4. RESOURCES AND TRADE (HECKSHER-OHLIN)

1. To understand the role of resources in trade we begin by examining the effect of resources on a country's production possibilities. Increases in an economy's supply of a factor of production such as land shift the production possibility frontier out in a *biased* way: an increase in the land supply shifts the frontier out more in the direction of land-intensive goods than in the direction of labor-intensive goods. As a result, countries are relatively effective at producing goods whose production is *intensive* in resources of which they have a relatively abundant supply.

2. Changes in relative prices of goods have very strong effects on the relative incomes earned by different resources. An increase in the price of the land-intensive good will raise the rent earned on land more than in proportion, while actually reducing the wage rate.

3. A country that has a large supply of one resource relative to its supply of other resources is *abundant* in that resource. A country will tend to produce relatively more of goods that use its abundant resources intensively. The result is the basic *Heckscher - Ohlin theory* of trade: *Countries tend to export goods that are intensive in the factors with which they are abundantly supplied.*

4. Because changes in relative prices of goods have very strong effects on the relative earnings of resources, and because trade changes relative prices, international trade has strong income-distribution effects. The owners of a country's abundant factors gain from trade, but the owners of scarce factors lose.

5. In an idealized model international trade would actually lead to equalization of the prices of factors such as labor and capital between countries. In reality, complete *factor price equalization* is not observed because of wide differences in resources, barriers to trade, and international differences in technology.

6. Empirical evidence is generally negative on the idea that differences in resources are the main determinant of trade patterns. Instead, differences in technology probably play the key role, as we suggested in the Ricardian model. Nonetheless, the Heckscher - Ohlin model remains useful as a way to predict the income-distribution effects of trade.

## 5. STANDARD MODEL

1. The *standard trade model* derives a world relative supply curve from production possibilities and a world relative demand curve from preferences. The price of exports relative to imports, a country's *terms of trade*, is determined by the intersection of the world relative supply and demand curves. Other things equal, a rise in a country's terms of trade increases its welfare. Conversely, a decline in a country's terms of trade will leave the country worse off.

2. Economic growth means an outward shift in a country's production possibility frontier. Such growth is usually *biased-that* is, the production possibility frontier shifts out more in the direction of some goods than in the direction of others. The immediate effect of biased growth is to lead, other things equal, to an increase in the world relative supply of the goods toward which the growth is based. This shift in the world relative supply curve in turn leads to a change in the growing country's terms of trade, which can go in either direction. If the growing country's terms of trade improve, this improvement reinforces the initial growth at home but hurts the rest of the world. If the growing country's terms of trade worsen, this decline offsets some of the favorable effects of growth at home but benefits the rest of the world.

3. The direction of the terms of trade effects depends on the nature of the growth.

Growth that is *export-biased* (growth that expands the ability of an economy to produce the goods it was initially exporting more than it expands the ability to produce goods that compete with imports) worsens the terms of trade. Conversely, growth that is *import-biased* (disproportionately increasing the ability to produce import-competing goods, improves a country's terms of trade. It is possible for import-biased growth abroad to hurt a country, a situation that may actually have happened to a mild degree to the United States in the postwar period.

4. International *transfers of income* such as war reparations and foreign aid may affect a country's terms of trade by shifting the world relative demand curve. If the country receiving a transfer spends a higher proportion of an increase in income on its export good than the giver, a transfer raises world relative demand for the recipient's export good and thus improves its terms of trade. This improvement reinforces the initial transfer and provides an indirect benefit in addition to the direct income transfer. On the other hand, if the recipient has a lower *propensity to spend* on its export at the margin than the donor, a transfer worsens the recipient's terms of trade, offsetting at least part of the transfer's effect.

5. In practice, most countries spend a much higher share of their income on domestically produced goods than foreigners do. This is not necessarily due to differences in taste but rather to barriers to trade, natural and artificial, which cause many goods to be nontraded. If nontraded goods compete with exports for resources, transfers will usually raise the recipient's terms of trade. The evidence suggests that this is, in fact, the case.

6. *Import tariffs* and *export subsidies* affect both relative supply and demand. A tariff raises relative supply of a country's import good while lowering relative demand. A tariff unambiguously improves the country's terms of trade at the rest of the world's expense. An export subsidy has the reverse effect, increasing the relative supply and reducing the relative demand for the country's *export* good, and thus worsening the terms of trade.

7. The terms of trade effects of an export subsidy hurt the subsidizing country and benefit the rest of the world, while those of a tariff do the reverse. This suggests that export subsidies do not make sense from a national point of view and that foreign export subsidies

should be welcomed rather than countered. Both tariffs and subsidies, however, have strong effects on the distribution of income *within* countries, and these effects often weigh more heavily on policy than the terms of trade concerns.

## 6. INTERNATIONAL FACTOR MOVEMENT

1. International *factor movements* can sometimes substitute for trade. So it is not surprising that international migration of labor is similar in its causes and effects to international trade based on differences in resources. Labor moves from countries where it is abundant to countries where it is scarce. This movement raises total world output, but it also generates strong income-distribution effects, so that some groups are hurt.

2. International borrowing and lending can be viewed as a kind of international trade, but one that involves trade of present consumption for future consumption rather than trade of one good for another. The relative price at which this *intertemporal trade* takes place is one plus the *real rate of interest*.

3. Multinational firms, while they often serve as vehicles for international borrowing and lending, primarily exist as ways of extending control over activities taking place in two or more different countries. The theory of multinational firms is not as well developed as other parts of international economics. A basic framework can be presented that stresses two crucial elements that explain the existence of a multinational: a location motive that leads the activities of the firm to be in different countries, and an internalization motive that leads these activities to be integrated in a single firm.

4. The location motives of multinationals are the same as those behind all international trade. The internalization motives are less well understood; current theory points to two main motives, the need for a way to transfer technology and the advantages in some cases of vertical integration.

## 7. TRADE POLICY

1. In contrast to our earlier analysis, which stressed the general equilibrium interaction of markets, for analysis of trade policy it is usually sufficient to use a *partial equilibrium* approach.

2. A tariff drives a wedge between foreign and domestic prices, raising the domestic price, but by less than the tariff rate. An important and relevant special case, however, is that of a "small" country that cannot have any substantial influence on foreign prices. In the small country case a tariff is fully reflected in domestic prices.

3. The costs and benefits of a tariff or other trade policy may be measured using the concepts of *consumer surplus* and *producer surplus*. Using these concepts, we can show that the domestic producers of a good gain, because a tariff raises the price they receive; the domestic consumers lose, for the same reason. There is also a gain in government revenue.

4. If we add together the gains and losses from a tariff, we find that the net effect *and* national welfare can be separated into two parts. There is an *efficiency loss* which results from the distortion in the incentives facing domestic producers and consumers. On the other hand, there is a *terms of trade gain*, reflecting the tendency of a tariff to drive down foreign export prices. In the case of a small country that cannot affect foreign prices, the second effect is zero, so that there is an unambiguous loss.

5. The analysis of a tariff can be readily adapted to other trade policy measures, such as *export subsidies*, *import quotas*, and *voluntary export restraints*. An export subsidy causes efficiency losses similar to a tariff but compounds these losses by causing a deterioration of the terms of trade. Import quotas and voluntary export restraints differ from tariffs in that the government gets no revenue. Instead, what would have been government revenue accrues as *rents* to the recipients of import licenses in the case of a quota, to foreigners in the case of a voluntary export restraint.

## 8. THE POLITICAL ECONOMY OF TRADE POLICY – FREE TRADE VERSUS PROTECTIONISM. INTERNATIONAL NEGOTIATIONS

1. Although few countries practice free trade, most economists continue to hold up free trade as a desirable policy. This advocacy rests on three lines of argument. First, there is a formal case for the efficiency gains from free trade that is simply the cost-benefit analysis of trade policy read in reverse. Second, many economists believe that free trade produces additional gains that go beyond this formal analysis. Finally, given the difficulty of translating complex economic analysis into real policies, even those who do not see free trade as the best imaginable policy see it as a useful rule of thumb.

2. There is an intellectually respectable case for deviating from free trade. One argument that is clearly valid in principle is that countries can improve their *terms of trade* through optimal tariffs and export taxes. This argument is not too important in practice, however. Small countries cannot have much influence on their import or export prices; so they cannot use tariffs or other policies to raise their terms of trade. Large countries, on the other hand, *can* influence their terms of trade, but in imposing tariffs they run the risk of disrupting trade agreements and provoking retaliation.

3. The other argument for deviating from free trade rests on *domestic market failures*. If some domestic market, such as the labor market, fails to function properly, deviating from free trade can sometimes help reduce the consequences of this malfunctioning. The *theory of the second best* states that if one market fails to work properly it is no longer optimal for the government to abstain from intervention in other markets. A tariff may raise welfare if there is a *marginal social benefit* to production of a good that is not captured by producer surplus measures.

4. Although market failures are probably common, the domestic market failure argument should not be applied too freely. First, it is an argument for domestic policies rather than trade policies; tariffs are always an inferior, "second-best" way to offset domestic market failure, which is always best treated at its source. Furthermore, market failure is difficult to analyze well enough to be sure of the appropriate policy recommendation.

5. In practice, trade policy is dominated by considerations of income distribution. No single way of modeling the politics of trade policy exists, but several useful ideas have been proposed. First is the concept of *weighted social welfare*. In this view, governments weight an additional dollar of gain or loss differently depending on who is affected, so that trade policy attempts to benefit favored groups. Second is the idea of *conservative social welfare*. In this view, governments are reluctant to allow any group to suffer large losses. Third is the problem of *collective action*. In this view, trade policy is determined by the differential ability of groups to organize to act politically in their collective interest, even though it may be in the interest of individuals to abstain.

6. If trade policy were made on a purely domestic basis, progress toward freer trade would be very difficult to achieve. In fact, however, industrial countries have achieved substantial reductions in tariffs through a process of *international negotiation*. ' International negotiation helps the cause of tariff reduction in two ways: it helps broaden the constituency for freer trade by giving exporters a direct stake, and it helps governments avoid the mutually disadvantageous *trade wars* that internationally uncoordinated policies could bring.

7. Although some progress was made in the 1930s toward trade liberalization via bilateral agreements, since World War II international coordination has taken place primarily via multilateral agreements under the auspices of the *General Agreement on Tariffs and Trade*. The GATT, which comprises both a bureaucracy and a set of rules of conduct, is the central institution of the international trading system. Although it was a huge success for three decades, the GATT now faces serious problems.

8. Finally, in addition to the overall reductions in tariffs that have taken place through multilateral negotiation, some groups of countries have negotiated *preferential trading agreements* under which they lower tariffs with respect to each other but not with respect to the rest of the world. The simplest examples are those of *customs unions*. The economic value of joining a customs union is ambiguous. If joining leads to replacement of high-cost domestic production by imports from within the customs union-the case of *trade creation*-the country gains. If, on the other hand, joining leads to replacement of cheap imports from outside the union by more expensive imports from inside-the case of *trade diversion* - the country loses.

## 9. BALANCE OF PAYMENTS

1. International *macroeconomics* is concerned with the full employment of scarce economic resources and price-level stability throughout the world economy. Because they reflect national expenditure patterns and their international repercussions, the *national income accounts* and the *balance of payments accounts* are essential tools for studying the macroeconomics of open, interdependent economies.

2. A country's *gross national product (GNP)* is equal to the income received by its factors of production. The national income accounts divide national income up according to the types of spending that generate it: *consumption, investment, government purchases*, and the *current account balance*.

3. In an economy closed to international trade, GNP must be consumed, invested, or purchased by the government. By using current output to build plant, equipment, and inventories, investment transforms present output into future output. For a closed economy, investment is the only way to save in the aggregate; so the sum of the saving carried out by the private and public sectors, *national saving*, must equal investment.

4. In an open economy, GNP equals the sum of consumption, investment, government purchases, and net exports of goods and services. Trade does not have to be balanced if the economy can borrow from and lend to the rest of the world. The difference between the economy's exports and its imports, the current account balance, equals the difference between the economy's output and its total use of goods and services.

5. The current account also equals the country's net lending to foreigners. Unlike a closed economy, an open economy can save by investing domestically *and* by foreign investment. National saving therefore equals domestic investment plus the current account balance.

6. Balance of payments accounts provide a detailed picture of the composition and financing of the current account. All transactions between a country and the rest of the world are recorded in its balance of payments accounts. The accounts are based on the convention that any transaction resulting in a payment to foreigners is entered with a minus sign while any transaction resulting in a receipt from foreigners is entered with a plus sign.

7. Transactions involving goods and services appear in the current account of the balance of payments while international sales or purchases of *assets* appear in the *capital account*. Any current account deficit must be matched by an equal capital account surplus, and any current account surplus by a capital account deficit. This feature of the accounts reflects the fact that discrepancies between export earnings and import expenditures must be matched by a promise to repay the difference, usually with interest in the future.

8. International asset transactions carried out by *central banks* are included in the capital account. Any central bank transaction in private markets for foreign-currency assets is called *official foreign exchange intervention*. One reason intervention is important is that central banks use it as a way of altering the amount of money in circulation. A country has a deficit in its *balance of payments* when it is running down its *official international reserves* or borrowing from foreign central banks; it has a surplus in the opposite case.

## 10. EXCHANGE RATE AND FOREIGN EXCHANGE MARKET

1. An *exchange rate* is the price of one country's currency in terms of another country's currency. Exchange rates play a role in spending decisions because they enable us to translate different countries' prices into comparable terms. All else equal, a *depreciation* of a country's currency against foreign currencies (a rise in the home-currency prices of foreign currencies) makes its exports cheaper and its imports more expensive. An *appreciation* of its currency (a fall in the home-currency prices of foreign currencies) makes its exports more expensive and its imports cheaper.

2. Exchange rates are determined in the *foreign-exchange market*. The major participants in that market are commercial banks, international corporations, nonbank financial institutions, and national central banks. Commercial banks play a pivotal role in the market because they facilitate the exchanges of interest-bearing bank deposits that make up the bulk of foreign-exchange trading. Even though foreign-exchange trading takes place in many financial centers around the world, modern telecommunication technology links those centers together into a single market that is open 24 hours a day. An important category of foreign-exchange trading is *is-jorward* trading, in which parties agree to exchange currencies on some future date at a prenegotiated exchange rate. In contrast, *spot* trades are (for practical purposes) settled immediately.

3. Because the exchange rate is the relative price of two assets, it is most appropriately thought of as being an asset price itself. The basic principle of asset pricing is that an asset's current value depends on its expected future purchasing power. In evaluating an asset, savers look at the expected *rate of return* it offers, that is, the rate at which the value of an investment in the asset is expected to rise over time. It is possible to measure an asset's expected rate of return in different ways, each depending on the units in which the asset's value is measured. Savers care about an asset's expected *real rate of return*, the rate at which its value is expected to rise when expressed in terms of a representative output basket.

4. When relative asset returns are relevant, as in the foreign-exchange market, it is appropriate to compare expected changes in assets' currency values provided those values are expressed in the same currency. If *risk* and *liquidity* factors do not strongly influence the demands for foreign-currency assets, participants in the foreign-exchange market always prefer to hold those assets yielding the highest expected rate of return.

5. The returns on deposits traded in the foreign-exchange market depend on *interest rates* and expected exchange-rate changes. To compare the expected rates of return offered by dollar and DM deposits, for example, the return on DM deposits must be expressed in dollar terms by adding to the DM interest rate the expected *rate of exchange*.

## 11. MONEY, INTEREST RATES AND EXCHANGE RATES

1. Money is held because of its liquidity. When considered in real terms, *aggregate money demand* is not a demand for a certain number of currency units but is instead a demand for a certain amount of purchasing power. Aggregate real money demand

depends negatively on the opportunity cost of holding money (measured by the domestic interest rate) and positively on the volume of transactions in the economy (measured by real GNP).

2. The money market is in equilibrium when the real *money supply* equals aggregate real money demand. With the *price level* and real output given, a rise in the money supply lowers the interest rate and a fall in the money supply raises the interest rate. A rise in real output raises the interest rate, given the price level, while a fall in real output has the opposite effect.

3. By lowering the domestic interest rate, an increase in the money supply causes the domestic currency to depreciate in the foreign-exchange market (even when expectations of future exchange rates do not change). Similarly, a fall in the domestic money supply causes the domestic currency to appreciate against foreign currencies.

4. The assumption that the price level is given in the *short run* is a good approximation to reality in countries with moderate inflation, but it is a misleading assumption over the *long run*. Permanent changes in the money supply push the *longrun equilibrium* price level proportionally in the same direction but do not influence the long-run values of output, the interest rate, or any relative prices. One important money price whose long-run equilibrium value rises in proportion to a permanent money-supply increase is the exchange rate, the domestic-currency price of foreign currency.

5. An increase in the money supply can cause the exchange rate to overshoot its long-run level in the short run. If output is given, a permanent money-supply increase, for example, causes a more-than-proportional short-run depreciation of the currency, followed by an appreciation of the currency to its long-run exchange rate. *Exchangerate overshooting*, which heightens the volatility of exchange rates, is a direct result of sluggish short-run price-level adjustment and the interest parity condition.

## 12. PRICE LEVEL AND EXCHANGE RATE

1. The *purchasing power parity* theory, in its absolute form, asserts that the exchange rate between countries' currencies equals the ratio of their price levels, as measured by the money prices of a reference commodity basket. An equivalent statement of PPP is that the purchasing power of any currency is the same in any country. Absolute PPP implies a second version of the PPP theory, *relative PPP*, which predicts that percentage changes in exchange rates equal differences in national inflation rates.

2. A building block of the PPP theory is the *law of one price*, which states that under free competition and in the absence of trade impediments, a good must sell for a single price regardless of where in the world it is sold. Proponents of the PPP theory often argue, however, that its validity does not require the law of one price to hold for every commodity.

3. The *monetary approach to the exchange rate* uses PPP to explain long-term exchange-rate behavior exclusively in terms of money supply and demand. In that theory long-run international interest differentials result from different national rates of ongoing inflation, as the *Fisher effect* predicts. Sustained international differences in monetary growth rates are, in turn, behind different long-term rates of continuing inflation. The monetary approach thus finds that a rise in a country's interest rate will be associated with a depreciation of its currency. Relative PPP implies that international interest differences, which equal the expected percentage change in the exchange rate, also equal the international expected inflation gap.

4. The empirical support for PPP and the law of one price is weak in recent data. The failure of these propositions in the real world is related to trade barriers and departures from free competition. In addition, different definitions of price levels in different countries bedevil attempts to test PPP using the price indexes governments publish. For some products, including many services, international transport costs are so steep that these products become nontradable.

5. Deviations from relative PPP can be viewed as changes in a country's *real exchange rate*, the price of a typical foreign expenditure basket in terms of the typical domestic expenditure basket. All else equal, a country's currency undergoes a long-run *real appreciation* against foreign currencies when its residents decide to spend more on all commodities. The home currency undergoes a long-run *real depreciation* against foreign currencies when home output expands in a balanced fashion. Unbalanced demand and supply shifts can have more complicated effects on real exchange rates.

6. The long-run determination of *nominal exchange rates* can be analyzed by combining two theories: the theory of the long-run *real exchange rate* and the theory of how domestic monetary factors determine long-run price levels. An increase in a country's money stock ultimately leads to a proportional increase in its price level and a proportional fall in its currency's foreign-exchange value, just as relative PPP predicts. Changes in monetary growth rates also have long-run effects consistent with PPP. Supply or demand changes in output markets, however, cause exchange-rate movements that do not conform to PPP.

7. The interest parity condition equates international differences in *nominal interest rates* to the expected percentage change in the nominal exchange rate. If interest parity holds in this sense, a real interest parity condition equates international differences in expected *real interest rates* to the expected change in the real exchange rate. Real interest parity also implies that international differences in nominal interest rates equal the difference in expected inflation plus the expected percentage change in the real exchange rate.

## 13. OUTPUT AND THE EXCHANGE RATE

1. The *aggregate demand* for an open economy's output consists of four components, corresponding to the four components of GNP: consumption demand, investment demand, government demand, and the current account (net export demand). An important determinant of the current account is the real exchange rate, the ratio of the foreign price level (measured in domestic currency) to the domestic price level.

2. Output is determined in the short run by the equality of aggregate demand and aggregate supply. When aggregate demand is greater than output, firms increase production to avoid unintended inventory depletion. When aggregate demand is less than output, firms cut back production to avoid unintended accumulation of inventories.

3. The economy's short-run equilibrium occurs at the exchange rate and output level where—given the price level, the expected future exchange rate, and foreign economic conditions—aggregate demand equals aggregate supply and the asset markets are in equilibrium. In a diagram with the exchange rate and real output on its axes, the short-run equilibrium can be visualized as the intersection of an upward-sloping *DD* schedule, along which the output market clears, and a downward-sloping *AA* schedule, along which the asset markets clear.

4. A temporary increase in the money supply, which does not alter the long-run expected exchange rate, causes a depreciation of the currency and a rise in output. Temporary fiscal expansion also results in a rise in output, but it causes the currency to appreciate. *Monetary policy* and *fiscal policy* can be used by the government to offset the effects of disturbances to output and employment.

5. Permanent shifts in the money supply, which do alter the long-run expected exchange rate, cause sharper exchange-rate movements and therefore have stronger short-run effects on output than transitory shifts. If the economy is at full employment, a permanent increase in the money supply leads to a rising price level that ultimately reverses the effect on the real exchange rate of the nominal exchange rate's initial depreciation. In the long run, output returns to its initial level and all money prices rise in proportion to the increase in the money supply.

6. Because permanent fiscal expansion changes the long-run expected exchange rate, it causes a sharper currency appreciation than an equal temporary expansion. If the economy starts out in long-run equilibrium, the additional appreciation makes domestic goods and services so expensive that the resulting "crowding out" of net export demand nullifies the policy's effect on output and employment. In this case, a permanent fiscal expansion has no expansionary effect at all.

7. If exports and imports adjust gradually to real exchange-rate changes, the current account may follow a *J-curve* pattern after a real currency depreciation, first worsening and then improving. If such a J-curve exists, currency depreciation may have a contractionary initial effect on output, and exchange-rate overshooting will be amplified. *Beachhead effects* accentuate the J-curve by slowing firms' responses to exchange-rate changes. Limited exchange-rate *pass-through*, along with domestic price increases, may reduce the effect of a nominal exchange-rate change on the real exchange rate.

## 14. FIXED EXCHANGE RATES AND FOREIGN-EXCHANGE INTERVENTION

1. There is a direct link between central-bank intervention in the foreign-exchange market and the domestic money supply. When a country's central bank purchases foreign assets, the country's money supply automatically increases. Similarly, a central bank sale of foreign assets automatically lowers the money supply. The *central balance sheet* shows how foreign-exchange intervention affects the money supply because the central bank's liabilities, which rise or fall when its assets rise or fall, are the base of the domestic money-supply process. The central bank can negate the money supply effect of intervention through *sterilization*. Absent sterilization, there is a link between the balance of payments and national money supplies that depends on how central banks share the burden of financing payments gaps.

2. A central bank can fix the exchange rate of its currency against foreign currency if it is willing to trade unlimited amounts of domestic money against foreign assets of that rate. To fix the exchange rate, the central bank must intervene in the foreign exchange market whenever this is necessary to prevent the emergence of an excess demand or supply of domestic-currency assets. In effect, the central bank adjusts its foreign assets—and so, the domestic money supply—in order to ensure that asset markets are always in equilibrium under the fixed exchange rate.

3. A commitment to fix the exchange rate forces the central bank to sacrifice its ability to use monetary policy for stabilization purposes. A purchase of domestic assets by the central bank causes an equal fall in its official international reserves, leaving the money supply and output unchanged. Similarly, a sale of domestic assets by the bank causes foreign reserves to rise by the same amount but has no other effects.

4. Fiscal policy, unlike monetary policy, has a more powerful effect on output under fixed exchange rates than under floating rates. Under a fixed exchange rate, fiscal expansion does not, in the short run, cause a real appreciation that "crowds out" aggregate demand. Instead, it forces central-bank purchases of foreign assets and an expansion of the money supply. *Devaluation* also raises aggregate demand and the money supply in the short run. (*Revaluation* has opposite effects.) In the long run, fiscal expansion causes a real appreciation, an increase in the money supply, and a rise in the home price level, while devaluation causes the long-run levels of the money supply and prices to rise in proportion to the exchange-rate change.

5. *Balance of payments crises* occur when market participants expect the central bank to change the exchange rate from its current level. If the market decides a devaluation is coming, for example, the domestic interest rate rises above the world interest rate and foreign reserves drop sharply as private capital flows abroad.

6. A system of *managed floating* allows the central bank to retain some ability to control the domestic money supply, but at the cost of greater exchange-rate instability. If domestic and foreign bonds are *imperfect substitutes*, however, the central bank may be able to control both the money supply and the exchange rate through sterilized foreign-exchange intervention. Empirical evidence provides little support for the idea that sterilized intervention has a significant direct effect on exchange rates. Even when domestic and foreign bonds are *perfect substitutes*, so that there is no *risk premium*, sterilized intervention may operate indirectly through a *signaling effect* that changes market views of future policies.

7. A world system of fixed exchange rates in which countries peg the prices of their currencies in terms of a *reserve currency* involves a striking asymmetry. The reserve-currency

country, which does not have to fix any exchange rate, can influence economic activity both at home and abroad through its monetary policy. In contrast, all other countries are unable to influence their output or foreign output through monetary policy. This policy asymmetry reflects the fact that the reserve center bears none of the burden of financing its balance of payments.

8. A *gold standard*, in which all countries fix their currencies' prices in terms of gold, avoids the asymmetry inherent in a reserve-currency standard and also places constraints on the growth of countries' money supplies. But the gold standard has serious drawbacks that make it impractical as a way of organizing today's international monetary system. Even the dollar-based *gold-exchange standard* set up after World War II ultimately proved unworkable.

## 15. THE INTERNATIONAL MONETARY SYSTEM

1. In an open economy, policy makers try to maintain *internal balance* (full employment and a stable price level) and *external balance* (a current account level that is neither so negative that the country may be unable to repay its foreign debts nor so positive that foreigners are put in that position). The definition of external balance depends on a number of factors, including the exchange-rate regime and world economic conditions. Because each country's macroeconomic policies have repercussions abroad, a country's ability to reach internal and external balance depends on the policies other countries adopt.

2. The gold-standard system contains a powerful automatic mechanism for assuring external balance, the *price-specie-flow mechanism*. The flows of gold accompanying deficits and surpluses cause price changes that reduce current-account imbalances and therefore tend to return all countries to external balance. The system's performance in maintaining internal balance was mixed, however. With the eruption of World War I in 1914, the gold standard was suspended.

3. Attempts to return to the prewar gold standard after 1918 were unsuccessful. As the world economy moved into general depression after 1929, the restored gold standard fell apart and international economic integration weakened. In the turbulent economic conditions of the period, governments made internal balance their main concern and tried to avoid the external-balance problem by partially shutting their economies off from the rest of the world. The result was a world economy in which all countries' situations could have been bettered through international cooperation.

4. The architects of the *International Monetary Fund* (IMF) hoped to design a fixed-exchange-rate system that would encourage growth in international trade while making the requirements of external balance sufficiently flexible that they could be met without sacrificing internal balance. To this end, the IMF charter provided financing facilities for deficit countries and allowed exchange-rate adjustments in conditions of "fundamental disequilibrium." All countries pegged their currencies to the dollar. The United States pegged to gold and agreed to exchange gold for dollars with foreign central banks at a price of \$35 an ounce.

5. After *currency convertibility* was restored in Europe in 1958, countries' financial markets became more closely integrated, monetary policy became less effective (except for the United States), and movements in international reserves became more volatile. These changes revealed a key weakness in the system. To reach internal and external balance at the same time, *expenditure-switching* as well as *expenditure-changing* policies were needed. But the possibility of expenditure-switching policies (exchange-rate changes) could give rise to speculative capital flows that undermined fixed exchange rates. As the main reserve-currency country, the United States faced a unique external-balance problem: the *confidence problem* that would arise as foreign official dollar holdings inevitably grew to exceed U.S. gold holdings.

6. U. S. macroeconomic policies in the late 1960s helped cause the breakdown of the Bretton Woods system by early 1973. Overexpansionary U.S. fiscal policy contributed to the need for a devaluation of the dollar in the early 1970s, and fears that this would occur touched off speculative capital flows out of dollars that caused foreign money supplies to balloon. Higher U.S. money growth fueled inflation at home and abroad, making foreign government increasingly reluctant to continue importing U.S. inflation through fixed exchange rates. A series of international crises beginning in the spring of 1971 led in stages to the abandonment of both the dollar's link to gold and of fixed dollar exchange rates for the industrialized countries.

## 16. MACROECONOMIC POLICY AND FLOATING EXCHANGE RATES

1. The weaknesses of the Bretton Woods system led many economists to advocate floating exchange rates before 1973. They made three main arguments in favor of floating. First, they argued that floating rates would give national macroeconomic policymakers greater autonomy in managing their economies. Second, they predicted that floating rates would remove the asymmetries of the Bretton Woods arrangements. Third, they pointed out that floating exchange rates would quickly eliminate the "fundamental disequilibria" that had led to parity changes and speculative attacks under fixed rates.

2. Critics of floating rates advanced several counter arguments. Some feared that floating would encourage monetary and fiscal excesses and beggar-thy-neighbor policies. Other lines of criticism asserted that floating rates would be subject to *destabilizing speculation* and that uncertainty over exchange rates would retard international trade and investment. Finally, a number of economists questioned whether countries would be willing in practice to disregard the exchange rate in formulating their monetary and fiscal policies. The exchange rate, they felt, was an important enough price that it would become a target of macroeconomic policy in its own right.

3. The period between 1973 and 1980 was one in which floating rates seemed on the whole to function well. In particular, it is unlikely that the industrial countries could have maintained fixed exchange rates in the face of the *stagflation* caused by two oil shocks. The dollar suffered a sharp depreciation after 1976, however, as the United States adopted macro economic policies more expansionary than those of other industrial countries.

4. A sharp turn toward slower monetary growth in the United States, coupled with a rising U.S. government budget deficit, contributed to massive dollar appreciation between 1980 and early 1985. Other industrial economies pursued disinflation along with the United States, and the resulting worldwide monetary slowdown, coming soon after the second oil shock, led to the deepest recession since the 1930s. As the recovery from the recession slowed in late 1984 and the U. S. current account began to register record deficits, political pressure for wide-ranging trade restrictions gathered momentum in Washington. The drive for protection was slowed (but not defeated) by the September 1985 decision of the Group of Five countries to take concerted action to bring down the dollar. An experiment with vaguely defined exchange-rate target zones, initiated by the Louvre accord of February 1987, has had mixed success in promoting more stable currency values.

5. The experience of floating does not fully support either the early advocates of that exchange-rate system or its critics. One unambiguous lesson of experience, however, is that no exchange-rate system functions well when international economic cooperation breaks down. Severe limits on exchange-rate flexibility are unlikely to be reinstated in the near future. But increased consultation among policymakers in the industrial countries should improve the performance of floating rates.

6. The EMS is not a good prototype model for a broader area of fixed exchange rates that might include the United States or Japan. EMS members have a big stake in economic cooperation as a result of their concurrent membership in the Ee. In addition, Europe is closer to being an *optimum currency area* than a larger exchangerate union would be. Progress toward free factor mobility within Europe is likely to support the credibility of fixed intra-European exchange rates.

## 17. THE GLOBAL CAPITAL MARKET

1. When people are *risk-averse*, countries can gain through the exchange of risky assets. The gains from trade take the form of a reduction in the riskiness of each country's consumption. International *portfolio diversification* can be carried out through the exchange of *debt instruments* or *equity instruments*.

2. The *international capital market* is the market in which residents of different countries trade assets. One of its important components is the foreign-exchange market. Banks are at the center of the international capital market, and many operate offshore, that is, outside the countries where their head offices are based.

3. Regulatory and political factors have encouraged *offshore banking*. The same factors have encouraged *offshore currency trading*, that is, trade in bank deposits denominated in currencies of countries other than the one in which the bank is located. Such *Eurocurrency* trading has received a major stimulus from the absence of reserve requirements on deposits in *Eurobanks*.

4. Creation of a Eurocurrency deposit does not occur because that currency leaves its country of origin; all that is required is that a Eurobank accept a deposit liability denominated in the currency. Eurocurrencies therefore pose no threat for central banks' control over their domestic monetary bases. Fears that *Eurodollars*, for example, will some day come "flooding in" to the United States are misplaced. Eurocurrency creation can add significantly to the broader monetary aggregates, however, and may complicate central-bank monetary management by shifting money multipliers unpredictably.

5. Offshore banking is largely unprotected by the safeguards national governments have imposed to prevent domestic bank failures. In addition, the opportunity banks

have to shift operations offshore has undermined the effectiveness of national bank supervision. Since 1974, the *Basle Committee* of industrial-country bank supervisors has worked to enhance regulatory cooperation in the international area. That group's 1975 Concordat allocated national responsibility for monitoring banking institutions and provided for informational exchange. There is still uncertainty, however, about a central bank's obligations as an international *lender of last resort*. The trend toward *securitization* has increased the need for international cooperation in monitoring and regulating nonbank financial institutions.

6. The international capital market has contributed to an increase in international portfolio diversification since 1970, but the extent of diversification still appears small compared with what economic theory would predict. Similarly, some observers have claimed that the extent of intertemporal trade, as measured by countries' current-account balances, has been too small. Such claims are hard to evaluate without more detailed information about the functioning of the world economy than is yet available. Less ambiguous evidence comes from international interest-rate comparisons, and this evidence points to a well-functioning market. Rates of return on similar deposits issued in the major financial centers are quite close.

7. The foreign-exchange market's record in communicating appropriate price signals to international traders and investors is mixed. Tests based on the interest parity condition seem to suggest that the market ignores readily available information in setting exchange rates; but since the interest parity theory ignores risk aversion and the resulting risk premiums, it may be an oversimplification of reality. Attempts to model risk factors empirically have not, however, been very successful. Tests of excessive exchange-rate volatility also yield a mixed verdict on the foreign-exchange market's performance.