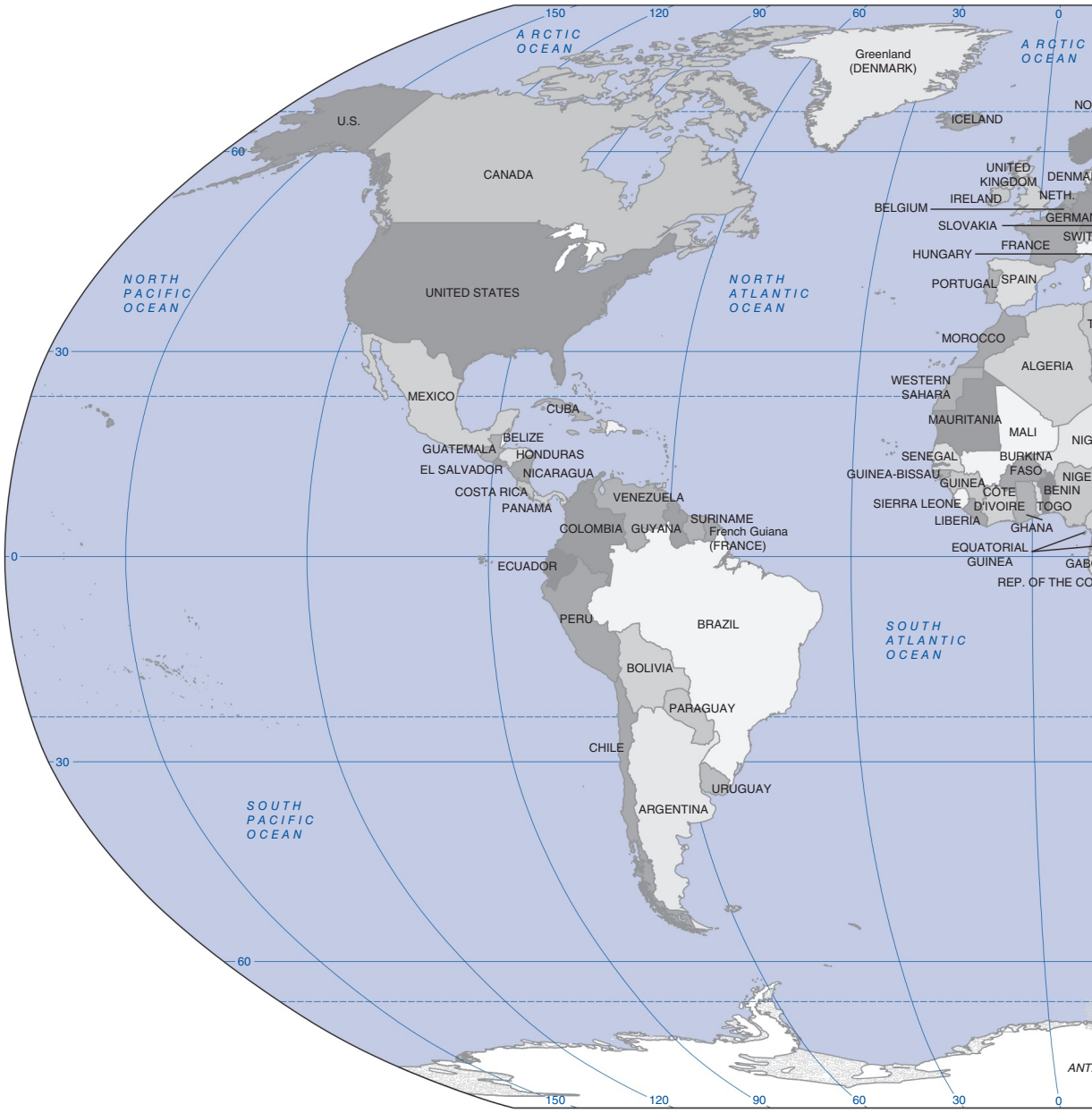
ROBERT J. CARBAUGH


# INTERNATIONAL ECONOMICS

15TH EDITION



# International Economics

# International Economics

**FIFTEENTH EDITION**

**ROBERT J. CARBAUGH**

Professor of Economics, *Central Washington University*

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# Preface

I believe the best way to motivate students to learn a subject is to demonstrate how it is used in practice. The first fourteen editions of *International Economics* reflected this belief and were written to provide a serious presentation of international economic theory with an emphasis on current applications. Adopters of these editions strongly supported the integration of economic theory with current events.

The fifteenth edition has been revised with an eye toward improving this presentation and updating the applications as well as including the latest theoretical developments. Like its predecessors, this edition is intended for use in a one-quarter or one-semester course for students having no more background than principles of economics. This book's strengths are its clarity, organization, and applications that demonstrate the usefulness of theory to students. The revised and updated material in this edition emphasizes current applications of economic theory and incorporates recent theoretical and policy developments in international trade and finance.

## INTERNATIONAL ECONOMICS THEMES

This edition highlights five current themes that are at the forefront of international economics:

### GLOBALIZATION OF ECONOMIC ACTIVITY

- Wooster, Ohio bears brunt of globalization—Ch. 2
- Japan fades in the global electronics industry—Ch. 3
- Comparative advantage and global supply chains—Ch. 2
- Caterpillar bulldozes Canadian locomotive workers—Ch. 9
- Apple uses tax loopholes to dodge taxes—Ch. 9
- Diesel engines and gas turbines as engines of growth—Ch. 1
- Waves of globalization—Ch. 1
- Has globalization gone too far?—Ch. 1
- Putting the H-P Pavilion together—Ch. 1
- Is the United States losing its innovation edge?—Ch. 1
- Rising transportation costs hinder globalization—Ch. 3
- iPhone's complex supply chain highlights limitations of trade statistics—Ch. 10
- Constraints imposed by capital flows on the choice of an exchange rate system—Ch. 15

### FREE TRADE AND PROTECTIONISM

- Whirlpool wins dumping case—Ch. 5
- Wage increases and China's trade—Ch. 3
- Should shoe tariffs be stomped out?—Ch. 4
- Natural gas boom fuels trade debate—Ch.2
- Element Electronics brings TV manufacturing back to the United States—Ch. 1
- Carbon tariffs—Ch. 6
- Averting trade barriers during the Great Recession—Ch. 6
- Bangladesh's sweatshop reputation—Ch. 7

- Does the principle of comparative advantage apply in the face of job outsourcing?—Ch. 2
- Boeing outsources work, but protects its secrets—Ch. 2
- Does trade make the poor even poorer?—Ch. 3
- WTO rules against subsidies to Boeing and Airbus—Ch. 3
- Does wage insurance make free trade more acceptable to workers?—Ch. 6
- China's hoarding of rare earth metals declared illegal by WTO—Ch. 6
- The environment and free trade—Ch. 6

## TRADE CONFLICTS BETWEEN DEVELOPING NATIONS AND INDUSTRIAL NATIONS

- U.S.-Mexico tomato dispute—Ch. 8
- Is state capitalism winning?—Ch. 7
- Canada's immigration policy—Ch. 9
- Is international trade a substitute for migration?—Ch. 3
- Economic growth strategies–import substitution versus export led growth—Ch. 7
- Does foreign aid promote the growth of developing countries?—Ch. 7
- The globalization of intellectual property rights—Ch. 7
- How to bring in developing countries from the cold—Ch. 7
- Microsoft scorns China's piracy of software—Ch. 6
- The Doha Round of multilateral trade negotiations—Ch. 6
- Wage increases work against China's competitiveness—Ch. 7
- China's export boom comes at a cost: How to make factories play fair—Ch. 7
- Will emerging economies soon outstrip the rich ones?—Ch. 7
- Do U.S. multinationals exploit foreign workers?—Ch. 9

## LIBERALIZING TRADE: THE WTO VERSUS REGIONAL TRADING ARRANGEMENTS

- Does the WTO reduce national sovereignty?—Ch. 6
- Regional integration versus multilateralism—Ch. 8
- Is Europe really a common market?—Ch. 8
- The U.S.-South Korea Free Trade Agreement—Ch. 8
- NAFTA and the U.S.-Mexico trucking dispute—Ch. 8
- Will the euro survive?—Ch. 8

## TURBULENCE IN THE GLOBAL FINANCIAL SYSTEM

- Yen's depreciation drives Toyota's profits upward—Ch. 11
- People's Bank of China punishes speculators—Ch. 11
- Can the euro survive?—Ch. 8
- Does currency depreciation give weak countries a way out of crisis?—Ch. 14
- Currency manipulation and currency wars—Ch. 15
- Paradox of foreign debt: how the United states borrows at low cost—Ch. 10
- Mistranslation of news story roils currency markets—Ch. 12
- Why a dollar depreciation may not close the U.S. trade deficit—Ch. 14
- Japanese firms send work abroad as yen makes its products less competitive—Ch.14
- Preventing currency crises: Currency boards versus dollarization—Ch. 15
- Should Special Drawing Rights replace the dollar as the world's reserve currency?—Ch. 17
- Should the United States return to the gold standard?—Ch. 17

Besides emphasizing current economic themes, the fifteenth edition of this text contains many new topics such as outsourcing and the U.S. auto industry, U.S. safeguards limiting imports of textiles from China, why Italian shoemakers strive to give the euro the boot, bike imports that forced Schwinn to downshift, and how currency markets draw day traders. Faculty and students will appreciate how this edition provides a contemporary approach to international economics.

## ORGANIZATIONAL FRAMEWORK: EXPLORING FURTHER SECTIONS

Although instructors generally agree on the basic content of the international economics course, opinions vary widely about what arrangement of material is appropriate. This book is structured to provide considerable organizational flexibility. The topic of international trade relations is presented before international monetary relations, but the order can be reversed by instructors choosing to start with monetary theory. Instructors can begin with Chapters 10–17 and conclude with Chapters 2–9. Those who do not wish to cover all the material in the book can easily omit all or parts of Chapters 6–9, and Chapters 15–17 without loss of continuity.

The fifteenth edition streamlines its presentation of theory to provide greater flexibility for instructors. This edition uses online *Exploring Further* sections to discuss more advanced topics. By locating the *Exploring Further* sections online rather than in the textbook, as occurred in previous editions, more textbook coverage can be devoted to contemporary applications of theory. The *Exploring Further* sections consist of the following:

- Comparative advantage in money terms—Ch. 2
- Indifference curves and trade—Ch. 2
- Offer curves and the equilibrium terms of trade—Ch. 2
- The specific-factors theory—Ch. 3
- Offer curves and tariffs—Ch. 4
- Tariff-rate quota welfare effects—Ch. 5
- Export quota welfare effects—Ch. 5
- Welfare effects of strategic trade policy—Ch. 6
- Government procurement policy and the European Union—Ch. 8
- Economies of scale and NAFTA—Ch. 8
- Techniques of foreign-exchange market speculation—Ch. 11
- A primer on foreign-exchange trading—Ch. 11
- Fundamental forecasting–regression analysis—Ch. 12
- Income adjustment mechanism—Ch. 13
- Exchange-rate pass-through—Ch. 14

To access the *Exploring Further* sections, go to www.cengagebrain.com.

## SUPPLEMENTARY MATERIALS

### For Students

#### International Economics CourseMate (www.cengagebrain.com)

In this age of technology, no text package would be complete without Web-based resources. An international economics CourseMate product is offered with the fifteenth edition.

Within the online study tool CourseMate, students will find a vast amount of resources for self-study including access to the eBook, glossary, online quizzes, videos, graphing workshop games, EconApps, and flashcards. Students can purchase CourseMate at www.cengagebrain.com.

## Study Guide

To accompany the fifteenth edition of the *International Economics* text, Jim Hanson (Professor Emeritus at Willlamette University) has prepared an online Study Guide for students. This guide reinforces key concepts by providing a review of the text's main topics and offering practice problems, true–false, multiple choice, and short–answer questions. The Study Guide is available online only and students can purchase it at www.cengagebrain.com.

## For Instructors

### International Economics CourseMate (www.cengagebrain.com)

Through CourseMate, instructors have access to Engagement Tracker that is designed to assess that students have read the material or viewed the resources that you've assigned. Engagement Tracker assesses student preparation and engagement. Using the tracking tools enables you to see progress for the class as a whole or for individual students, identify students at risk early in the course, and uncover which concepts are most difficult for your class.

## Aplia

Aplia is another feature of the fifteenth edition. With Aplia, international economics students use interactive chapter assignments and tutorials to make economics relevant and engaging. Students complete online assignments to improve their proficiency in understanding economic theory and they receive immediate, detailed explanations for every answer. Math and graphing tutorials help students overcome deficiencies in these crucial areas.

## PowerPoint Slides

The fifteenth edition also includes PowerPoint slides created by Syed H. Jafri of Tarleton State University. These slides can be easily downloaded from the Carbaugh Website available for instructors-only at http://login.cengage.com. Slides may be edited to meet individual needs. They also serve as a study tool for students.

## Instructor's Manual

To assist instructors in the teaching of international economics, there is an *Instructor's Manual with Test Bank* that accompanies the fifteenth edition. The manual contains: (1) brief answers to end-of-chapter study questions; (2) multiple choice; and (3) true–false questions for each chapter. The *Instructor's Manual with Test Bank* is available for download for qualified instructors from the Carbaugh Website for instructors-only at www.cengagebrain.com.

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# The International Economy and Globalization

CHAPTER 1

In today's world, no nation exists in economic isolation. All aspects of a nation's economy—its industries, service sectors, levels of income and employment, and living standard—are linked to the economies of its trading partners. This linkage takes the form of international movements of goods and services, labor, business enterprise, investment funds, and technology. Indeed, national economic policies cannot be formulated without evaluating their probable impacts on the economies of other countries.

The high degree of **economic interdependence** among today's economies reflects the historical evolution of the world's economic and political order. At the end of World War II, the United States was economically and politically the most powerful nation in the world, a situation expressed in the saying, "When the United States sneezes, the economies of other nations catch a cold." But with the passage of time, the U.S. economy has become increasingly integrated into the economic activities of foreign countries. The formation in the 1950s of the European Community (now known as the European Union), the rising importance in the 1960s of multinational corporations, the market power in the 1970s enjoyed by the Organization of Petroleum Exporting Countries (OPEC), the creation of the euro at the turn of the twenty-first century, and the rise of China as an economic power in the early 2000s have all resulted in the evolution of the world community into a complicated system based on a growing interdependence among nations.

The global recession of 2007–2009 provides an example of economic interdependence. The immediate cause of the recession was a collapse of the U.S. housing market and the resulting surge in mortgage loan defaults. Hundreds of billions of dollars in losses on these mortgages undermined the financial institutions that originated and invested in them. Credit markets froze, banks would not lend to each other, and businesses and households could not get loans needed to finance day-to-day operations. This shoved the economy into recession. Soon the crisis spread to Europe. European banks were drawn into the financial crisis in part because of their exposure to defaulted mortgages in the United States. As these banks had to write off losses, fear and uncertainty spread regarding whether banks had enough capital to pay off their debt obligations. The financial crisis also spread to emerging economies such as Iceland and Russia that generally lacked the

resources to restore confidence in their economic systems. It is no wonder that "when the United States sneezed, other economies caught a cold."

Recognizing that world economic interdependence is complex and its effects uneven, the economic community has taken steps toward international cooperation. Conferences devoted to global economic issues have explored the avenues that cooperation could be fostered between industrial and developing nations. The efforts of developing nations to reap larger gains from international trade and to participate more fully in international institutions have been hastened by the impact of the global recession, industrial inflation, and the burdens of high priced energy.

Over the past 50 years, the world's market economies have become increasingly interdependent. Exports and imports as a share of national output have risen for most industrial nations, while foreign investment and international lending have expanded. This closer linkage of economies can be mutually advantageous for trading nations. This link permits producers in each nation to take advantage of the specialization and efficiencies of large scale production. A nation can consume a wider variety of products at a cost less than what could be achieved in the absence of trade. Despite these advantages, demands have grown for protection against imports. Protectionist pressures have been strongest during periods of rising unemployment caused by economic recession. Moreover, developing nations often maintain that the so called liberalized trading system called for by industrial nations serves to keep the developing nations in poverty.

Economic interdependence also has direct consequences for a student taking an introductory course in international economics. As consumers, we can be affected by changes in the international values of currencies. Should the Japanese yen or British pound appreciate against the U.S. dollar, it would cost us more to purchase Japanese television sets or British automobiles. As investors, we might prefer to purchase Swiss securities if Swiss interest rates rise above U.S. levels. As members of the labor force, we might want to know whether the president plans to protect U.S. steelworkers and autoworkers from foreign competition.

In short, economic interdependence has become a complex issue in recent times, often resulting in strong and uneven impacts among nations and among sectors within a given nation. Business, labor, investors, and consumers all feel the repercussions of changing economic conditions and trade policies in other nations. Today's global economy requires cooperation on an international level to cope with the myriad issues and problems.

## GLOBALIZATION OF ECONOMIC ACTIVITY

When listening to the news, we often hear about globalization. What does this term mean? **Globalization** is the process of greater interdependence among countries and their citizens. It consists of the increased interaction of product and resource markets across nations via trade, immigration, and foreign investment—that is, via international flows of goods and services, people, and investments in equipment, factories, stocks, and bonds. It also includes noneconomic elements such as culture and the environment. Simply put, globalization is political, technological, and cultural, as well as economic.

In terms of people's daily lives, globalization means that the residents of one country are more likely now than they were 50 years ago to consume the products of another country, invest in another country, earn income from other countries, talk by telephone to people in other countries, visit other countries, know that they are being affected by economic developments in other countries, and know about developments in other countries.

What forces are driving globalization?[1] The first and perhaps most profound influence is technological change. Since the industrial revolution of the late 1700s, technical innovations have led to an explosion in productivity and slashed transportation costs. The steam engine preceded the arrival of railways and the mechanization of a growing number of activities hitherto reliant on muscle power. Later discoveries and inventions such as electricity, telephone, automobile, container ships, and pipelines altered production, communication, and transportation in ways unimagined by earlier generations. More recently, rapid developments in computer information and communications technology have further shrunk the influence of time and geography on the capacity of individuals and enterprises to interact and transact around the world. For services, the rise of the Internet has been a major factor in falling communication costs and increased trade. As technical progress has extended the scope of what can be produced and where it can be produced, and advances in transport technology have continued to bring people and enterprises closer together, the boundary of tradable goods and services has been greatly extended.

Also, continuing liberalization of trade and investment has resulted from multilateral trade negotiations. For example, tariffs in industrial countries have come down from high double digits in the 1940s to about 4 percent by 2014. At the same time, most quotas on trade, except for those imposed for health, safety, or other public policy reasons, have been removed. Globalization has also been promoted through the widespread liberalization of investment transactions and the development of international financial markets. These factors have facilitated international trade through the greater availability and affordability of financing.

Lower trade barriers and financial liberalization have allowed more companies to globalize production structures through investment abroad that in turn has provided a further stimulus to trade. On the technology side, increased information flows and the greater tradability of goods and services have profoundly influenced production location decisions. Businesses are increasingly able to locate different components of their production processes in various countries and regions and still maintain a single corporate identity. As firms subcontract part of their production processes to their affiliates or other enterprises abroad, they transfer jobs, technologies, capital, and skills around the globe.

How significant is production sharing in world trade? Researchers have estimated production sharing levels by calculating the share of components and parts in world trade. They have concluded that global production sharing accounts for about 30 percent of the world trade in manufactured goods. Moreover, the trade in components and parts is growing significantly faster than the trade in finished products, highlighting the increasing interdependence of countries through production and trade.[2]

## WAVES OF GLOBALIZATION

In the past two decades, there has been pronounced global economic interdependence. Economic interdependence occurs through trade, labor migration, and capital (investment) flows such as corporation stocks and government securities. Let us consider the major waves of globalization that have occurred in recent history.[3]

[1]World Trade Organization, *Annual Report*, 1998, pp. 33–36.

[2]A. Yeats, *Just How Big Is Global Production Sharing?* World Bank, Policy Research Working Paper No. 1871, 1998, Washington, DC.

[3]This section draws from World Bank, *Globalization, Growth and Poverty: Building an Inclusive World Economy*, 2001.

### TRADE CONFLICTS FEDERAL RESERVE POLICY INCITES GLOBAL BACKLASH

Economic interdependence is part of our daily lives. When domestic economic policies have spillover effects on the economies of other countries, policymakers must take these into account. This why major countries frequently meet to discuss the impacts of their policies on the world economy. Consider the effects of the Federal Reserve's policies on other economies as discussed below.

For decades, the Federal Reserve (Fed) has attempted to fulfill its mandate to promote full employment, price stability, and economic growth for the U.S. economy. Pursuing these objectives can impose adverse spillover effects on economies of other nations, as seen in the following example.

Facing a sluggish economy in 2010, the Fed enacted a controversial decision to pursue economic growth by purchasing $600 billion of U.S. Treasury bonds. The idea was to pump additional money into the economy that would cause long-term interest rates to fall. This would encourage Americans to spend more on investment and big ticket consumption items, thus stimulating the economy. However, critics doubted that the program would work and maintained that it might cause an increase in inflationary expectations that could destabilize the economy.

Also, the Fed's program was criticized by U.S. trading partners such as Germany and Brazil, as an attempt to improve American competitiveness at their expense. They noted that printing more dollars, or cutting U.S. interest tends to cause depreciation in the dollar's exchange value, that will be explained in Chapter 11 of this text. If the value of the dollar decreases, other countries' exports become more expensive for American consumers, thus reducing the amount of goods the United States imports from the rest of the world. The accompanying rise in the exchange value of other countries' currencies makes American goods cheaper for foreign consumers to purchase that should increase the amount of exports leaving the United States. This would benefit U.S. producers who would likely increase hiring to meet the increased production requirements of the increased global demand for their exports. What's more, the rest of the world's producers would see their exports fall, resulting in job losses for their workers. Producers in the United States would gain at the expense of producers abroad.

However, Federal Reserve officials challenged this argument by stating that the purpose of their program was not to push down the dollar in order to disadvantage America's trading partners. Instead, it was an attempt to grow the economy that is not just good for the United States, but for the world as a whole. A depreciation of the dollar was only a side effect of a growth oriented policy, not the purpose of the policy. This argument did not dampen the fears of foreigners regarding the Fed's monetary policy, and their criticism continued.

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## First Wave of Globalization: 1870–1914

The first wave of global interdependence occurred from 1870 to 1914. The interdependence was sparked by decreases in tariff barriers and new technologies that resulted in declining transportation costs, such as the shift from sail to steamships and the advent of railways. The main agent that drove the process of globalization was how much muscle, horsepower, wind power, or later on, steam power a country had and how creatively it could deploy that power. This wave of globalization was largely driven by European and American businesses and individuals. Therefore, exports as a share of world income nearly doubled to about 8 percent while per capita incomes, which had risen by 0.5 percent per year in the previous 50 years, rose by an annual average of 1.3 percent. The countries that actively participated in globalization, such as the United States, became the richest countries in the world.

However, the first wave of globalization was brought to an end by World War I. Also, during the Great Depression of the 1930s, governments responded by practicing protectionism: a futile attempt to enact tariffs on imports to shift demand into their domestic markets, thus promoting sales for domestic companies and jobs for domestic workers.

For the world economy, increasing protectionism caused exports as a share of national income to fall to about 5 percent, thereby undoing 80 years of technological progress in transportation.

## Second Wave of Globalization: 1945–1980

The horrors of the retreat into nationalism provided renewed incentive for internationalism following World War II. The result was a second wave of globalization that took place from 1945 to 1980. Falling transportation costs continued to foster increased trade. Nations persuaded governments to cooperate to decrease previously established trade barriers.

However, trade liberalization discriminated both in terms of which countries participated and which products were included. By 1980, trade between developed countries in manufactured goods had been largely freed of barriers. Barriers facing developing countries had been eliminated for only those agricultural products that did not compete with agriculture in developed countries. For manufactured goods, developing countries faced sizable barriers. For developed countries, the slashing of trade barriers between them greatly increased the exchange of manufactured goods, thus helping to raise the incomes of developed countries relative to the rest.

The second wave of globalization introduced a new kind of trade: rich country specialization in manufacturing niches that gained productivity through **agglomeration economies**. Increasingly, firms clustered together, some clusters produced the same product and others were connected by vertical linkages. Japanese auto companies, for example, became famous for insisting that their parts manufacturers locate within a short distance of the main assembly plant. For companies such as Toyota and Honda, this decision decreased the costs of transport, coordination, monitoring, and contracting. Although agglomeration economies benefit those in the clusters, they are bad news for those who are left out. A region can be uncompetitive simply because not enough firms have chosen to locate there. Thus, a divided world can emerge, in which a network of manufacturing firms is clustered in some high wage region, while wages in the remaining regions stay low. Firms will not shift to a new location until the discrepancy in production costs becomes sufficiently large to compensate for the loss of agglomeration economies.

During the second wave of globalization, most developing countries did not participate in the growth of global trade in manufacturing and services. The combination of continuing trade barriers in developed countries and unfavorable investment climates and antitrade policies in developing countries confined them to dependence on agricultural and natural resource products.

Although the second globalization wave succeeded in increasing per capita incomes within the developed countries, developing countries as a group were being left behind. World inequality fueled the developing countries' distrust of the existing international trading system that seemed to favor developed countries. Therefore, developing countries became increasingly vocal in their desire to be granted better access to developed country markets for manufactured goods and services, thus fostering additional jobs and rising incomes for their people.

## Latest Wave of Globalization

The latest wave of globalization that began in about 1980 is distinctive. First, a large number of developing countries, such as China, India, and Brazil, broke into the world markets for manufacturers. Second, other developing countries became increasingly marginalized in the world economy and realized decreasing incomes and increasing

poverty. Third, international capital movements, which were modest during the second wave of globalization, again became significant.

Of major significance for this wave of globalization is that some developing countries succeeded for the first time in harnessing their labor abundance to provide them with a competitive advantage in labor intensive manufacturing. Examples of developing countries that have shifted into manufacturing trade include Bangladesh, Malaysia, Turkey, Mexico, Hungary, Indonesia, Sri Lanka, Thailand, and the Philippines. This shift is partly because of tariff cuts that developed countries have made on imports of manufactured goods. Also, many developing countries liberalized barriers to foreign investment that encouraged firms such as Ford Motor Company to locate assembly plants within their borders. Moreover, technological progress in transportation and communications permitted developing countries to participate in international production networks. However, the dramatic increase in manufactured exports from developing countries has contributed to protectionist policies in developed countries. With so many developing countries emerging as important trading countries, reaching further agreements on multilateral trade liberalization has become more complicated.

Although the world has become more globalized in terms of international trade and capital flows compared to 100 years ago, there is less globalization in the world when it comes to labor flows. The United States had a very liberal immigration policy in the late 1800s and early 1900s and large numbers of people flowed into the country, primarily from Europe. As a large country with abundant room to absorb newcomers, the United States also attracted foreign investment throughout much of this period, which meant that high levels of migration went hand in hand with high and rising wages. However, since World War I, immigration has been a disputed topic in the United States, and restrictions on immigration have tightened. In contrast to the largely European immigration in the 1870–1914 globalization waves, contemporary immigration into the United States comes largely from Asia and Latin America.

Another aspect of the most recent wave of globalization is foreign outsourcing, when certain aspects of a product's manufacture are performed in more than one country. As travel and communication became easier in the 1970s and 1980s, manufacturing increasingly moved to wherever costs were the lowest. U.S. companies shifted the assembly of autos and the production of shoes, electronics, and toys to low wage developing countries. This shift resulted in job losses for blue collar workers producing these goods and cries for the passage of laws to restrict outsourcing.

When an American customer places an order online for a Hewlett-Packard (HP) laptop, the order is transmitted to Quanta Computer Inc. in Taiwan. To reduce labor costs, the company farms out production to workers in Shanghai, China. They combine parts from all over the world to assemble the laptop that is flown as freight to the United States, and then sent to the customer. About 95 percent of the HP laptop is outsourced to other countries. The outsourcing ratio is close to 100 percent for other U.S. computer producers including Dell, Apple, and Gateway. Table 1.1 shows how the HP laptop is put together by workers in many different countries.

By the 2000s, the Information Age resulted in the foreign outsourcing of white collar work. Today, many companies' locations hardly matter. Work is connected through digitization, the Internet, and high speed data networks around the world. Companies can now send office work anywhere, and that means places like India, Ireland, and the Philippines where workers are paid much less than American workers. A new round of globalization is sending upscale jobs offshore, including accounting, chip design, engineering, basic research, and financial analysis as shown in Table 1.2. Analysts estimate that foreign outsourcing can allow companies to reduce costs of a given service from 30 to 50 percent.

**TABLE 1.1**

### Manufacturing an HP Pavilion, ZD8000 Laptop Computer

| Component | Major Manufacturing Country |
|---|---|
| Hard disk drives | Singapore, China, Japan, United States |
| Power supplies | China |
| Magnesium casings | China |
| Memory chips | Germany, Taiwan, South Korea, Taiwan, United States |
| Liquid-crystal display | Japan, Taiwan, South Korea, China |
| Microprocessors | United States |
| Graphics processors | Designed in United States and Canada; produced in Taiwan |

Source: From "The Laptop Trail," *The Wall Street Journal*, June 9, 2005, pp.B1 and B8.

**TABLE 1.2**

### Globalization Goes White Collar

| U.S. Company | Country | Type of Work Moving |
|---|---|---|
| Accenture | Philippines | Accounting, software, office work |
| Conseco | India | Insurance claim processing |
| Delta Air Lines | India, Philippines | Airline reservations, customer service |
| Fluor | Philippines | Architectural blueprints |
| General Electric | India | Finance, information technology |
| Intel | India | Chip design, tech support |
| Microsoft | China, India | Software design |
| Philips | China | Consumer electronics, R&D |
| Procter & Gamble | Philippines, China | Accounting, tech support |

Source: From "Is Your Job Next?" *Business Week*, February 3, 2003, pp. 50–60.

Boeing uses aeronautics specialists in Russia to design luggage bins and wing parts for its jetliners. Having a master's degree or doctorate in math or aeronautics, these specialists are paid $700 per month in contrast to a monthly salary of $7,000 for an American counterpart. Similarly, engineers in China and India, earning $1,100 a month, develop chips for Texas Instruments and Intel; their American counterparts are paid $8,000 a month. However, companies are likely to keep crucial research and development and the bulk of office operations close to home. Many jobs cannot go anywhere because they require face-to-face contact with customers. Economists note that the vast majority of jobs in the United States consist of services such as retail, restaurants and hotels, personal care services, and the like. These services are necessarily produced and consumed locally, and cannot be sent offshore.

Besides saving money, foreign outsourcing can enable companies to do things they simply couldn't do before. A consumer products company in the United States found it impractical to chase down tardy customers buying less than $1,000 worth of goods. When this service was run in India, however, the cost dropped so much the company could profitably follow up on bills as low as $100.

Although the Internet makes it easier for U.S. companies to remain competitive in an increasingly brutal global marketplace, is foreign outsourcing good for white collar workers? A case can be made that Americans benefit from this process. In the last two decades, U.S. companies have imported hundreds of thousands of immigrants to ease engineering shortages. Now, by sending routine service and engineering tasks to nations with a surplus of educated workers, U.S. labor and capital can be shifted to higher value industries and cutting-edge research and development.

However, a question remains: What happens if displaced white collar workers cannot find greener pastures? The truth is that the rise of the global knowledge industry is so recent that most economists have not begun to figure out the implications. People in developing nations like India see foreign outsourcing as a bonus because it helps spread wealth from rich nations to poor nations. Among its many other virtues, the Internet might turn out to be a great equalizer. Outsourcing will be discussed at the end of Chapter 2.

## TRADE CONFLICTS DIESEL ENGINES AND GAS TURBINES AS MOVERS OF GLOBALIZATION

When you consider internal combustion engines, you probably think about the one under the hood of your car or truck—the gasoline powered engine. Although this engine is good for moving you around, it is not adequate for moving large quantities of goods and people long distances; global transportation requires more massive engines.

What makes it possible for us to transport billions of tons of raw materials and manufactured goods from country to country? Why are we able to fly almost anywhere in the world in a Boeing or Airbus jetliner within twenty-four hours? Two notable technical innovations that have driven globalization are diesel engines, which power cargo ships, locomotives, and large trucks, and natural gas-fired turbines that power planes and other means of transportation.

The diesel engine was first developed to the point of commercial success by Rudolf Diesel in the 1890s. After graduating from Munich Polytechnic in Germany, Diesel became a refrigerator engineer, but his true love lay in engine design. He developed an engine that converted the chemical energy available in diesel fuel into mechanical energy that could power trucks, cargo ships, and so on. Today, more than 90 percent of global trade in manufactured goods and raw materials is transported with the use of diesel engines.

The natural gas-fired turbine is another driver of globalization. A gas turbine is a rotary engine that extracts energy from a flow of combustion gas. This energy produces a power thrust that sends an airplane into the sky. It also turns a shaft or a propeller that moves locomotives and ships. The gas turbine was invented by Frank Whittle, a British engineer, in the early 1900s. Although Wilbur and Orville Wright are the first fathers of flight, Whittle's influence on global air travel should not be underestimated.

These two engines, diesels and turbines, have become important movers of goods and people throughout the world. They have reduced transportation costs to such an extent that distance to the market is a much smaller factor affecting the location of manufacturers or the selection of the origin of imported raw materials. Indeed, neither international trade nor intercontinental flights would have realized such levels of speed, reliability, and affordability as have been achieved because of diesel engines and gas turbines. Although diesels and turbines have caused environmental problems, such as air and water pollution, these machines will likely not disappear soon.

Source: Vaclav Smil, *Prime Movers of Globalization*, MIT Press, Cambridge, Massachusetts, 2010 and Nick Schulz, "Engines of Commerce," *The Wall Street Journal*, December 1, 2010.

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## THE UNITED STATES AS AN OPEN ECONOMY

It is generally agreed that the U.S. economy has become increasingly integrated into the world economy (become an open economy) in recent decades. Such integration involves a number of dimensions that include the trade of goods and services, financial markets, the labor force, ownership of production facilities, and the dependence on imported materials.

### Trade Patterns

To appreciate the globalization of the U.S. economy, go to a local supermarket. Almost any supermarket doubles as an international food bazaar. Alongside potatoes from Idaho and beef from Texas, stores display melons from Mexico, olive oil from Italy, coffee from Colombia, cinnamon from Sri Lanka, wine and cheese from France, and bananas from Costa Rica. Table 1.3 shows a global fruit basket that is available for American consumers.

The grocery store isn't the only place Americans indulge their taste for foreign made products. We buy cameras and cars from Japan, shirts from Bangladesh, DVD players from South Korea, paper products from Canada, and fresh flowers from Ecuador. We get oil from Kuwait, steel from China, computer programs from India, and semiconductors from Taiwan. Most Americans are well aware of our desire to import, but they may not realize that the United States ranks as the world's greatest exporter by selling personal computers, bulldozers, jetliners, financial services, movies, and thousands of other products to just about all parts of the globe. International trade and investment are facts of everyday life.

As a rough measure of the importance of international trade in a nation's economy, we can look at that nation's exports and imports as a percentage of its gross domestic product (GDP). This ratio is known as **openness**.

$$Openness = \frac{(Exports + Imports)}{GDP}$$

Table 1.4 shows measures of openness for selected nations as of 2013. In that year, the United States exported 14 percent of its GDP while imports were 18 percent of GDP; the

**TABLE 1.3**

**The Fruits of Free Trade: A Global Fruit Basket**

On a trip to the grocery store, consumers can find goods from all over the globe.

| Fruit | Country | Fruit | Country |
|---|---|---|---|
| Apples | New Zealand | Limes | El Salvador |
| Apricots | China | Oranges | Australia |
| Bananas | Ecuador | Pears | South Korea |
| Blackberries | Canada | Pineapples | Costa Rica |
| Blueberries | Chile | Plums | Guatemala |
| Coconuts | Philippines | Raspberries | Mexico |
| Grapefruit | Bahamas | Strawberries | Poland |
| Grapes | Peru | Tangerines | South Africa |
| Kiwifruit | Italy | Watermelons | Honduras |
| Lemons | Argentina | | |

Source: From "The Fruits of Free Trade," *Annual Report*, Federal Reserve Bank of Dallas, 2002, p. 3.