in the production of the goods of their comparative advantage.

As South Korea moves to the right of point *A* along its production possibilities schedule, the relative cost of steel continues to decrease until South Korea totally specializes in steel production at point *C*. Similarly, as the United States moves to the left of point *B* along its production possibilities schedule, the relative cost of computers continues to fall until the United States totally specializes in computer production at point *D*. With trade, U.S. computers are exchanged for South Korean steel at the equilibrium terms of trade (not illustrated); both countries can attain consumption points that are superior to those attained in the absence of trade.

Theory of Overlapping Demands

The relationship between demand conditions and international trade patterns has been analyzed by Staffan Linder.[5] According to Linder, the factor-endowment theory has considerable explanatory power for trade in primary products (natural resources) and agricultural goods, not for trade in manufactured goods, because the main force influencing manufactured-good trade is domestic demand conditions. Because much of international trade involves manufactured goods, demand conditions play an important role in explaining overall trade patterns.

Linder states that firms within a country are generally motivated to manufacture goods for which there is a large domestic market. This market determines the set of goods that these firms will have to sell when they begin to export. The foreign markets with greatest export potential will be found in nations with consumer tastes similar to those of domestic consumers. A nation's exports are thus an extension of production for the domestic market.

Going further, Linder contends that tastes of consumers are conditioned strongly by their income levels. Thus, a country's average or *per capita income* will yield a particular pattern of tastes. Nations with high per capita incomes will demand high-quality manufactured goods (luxuries), while nations with low per capita incomes will demand lower-quality goods (necessities). The Linder hypothesis explains which types of nations will most likely trade with each other. Nations with similar per capita incomes will have overlapping demand structures and will likely consume similar types of manufactured goods. Wealthy (industrial) nations will likely trade with other wealthy nations, and poor (developing) nations will likely trade with other poor nations. The Linder hypothesis is thus known as the **theory of overlapping demands.**

Linder does not rule out all trade in manufactured goods between wealthy and poor nations. Because of unequal income distribution within nations, there will always be some overlapping of demand structures; some people in poor nations are wealthy, and some people in wealthy nations are poor. However, the potential for trade in manufactured goods is small when the extent of demand overlap is small.

Linder's theory is in rough accord with the facts. A high proportion of international trade in manufactured goods takes place among the relatively high-income (industrial) nations: Japan, Canada, the United States, and the European nations. Moreover, much of this trade involves the exchange of similar products: Each nation exports products that are much like the products it imports. However, detailed empirical support for the theory has not been found.

Intraindustry Trade

The trade models considered so far have dealt with **interindustry trade**—the exchange between nations of products of different industries; examples include computers and aircraft traded for textiles and shoes, or finished manufactured items traded for primary materials. Interindustry trade involves the exchange of goods with *different* factor requirements. Nations having large supplies of skilled labor tend to export sophisticated manufactured products,

[5] Staffan B. Linder, *An Essay on Trade and Transformation* (New York: Wiley, 1961), Chapter 3.

while nations with large supplies of natural resources export resource-intensive goods. Much of interindustry trade is between nations having vastly different resource endowments (such as developing countries and industrial countries) and can be explained by the principle of comparative advantage (the Heckscher–Ohlin model).

Interindustry trade is based on **interindustry specialization**: Each nation specializes in a particular industry (say, steel) in which it enjoys a comparative advantage. As resources shift to the industry with a comparative advantage, certain other industries having comparative disadvantages (say, electronics) contract. Resources thus move geographically to the industry where comparative costs are lowest. As a result of specialization, a nation experiences a growing *dissimilarity* between the products that it exports and the products that it imports.

Although some interindustry specialization occurs, this generally has not been the type of specialization that industrialized nations have undertaken in the post–World War II era. Rather than emphasizing entire industries, industrial countries have adopted a narrower form of specialization. They have practiced **intraindustry specialization**, focusing on the production of particular products or groups of products within a given industry (for example, subcompact autos rather than autos). With intraindustry specialization, the opening up of trade does not generally result in the elimination or wholesale contraction of entire industries within a nation; however, the range of products produced and sold by each nation changes.

Advanced industrial nations have increasingly emphasized **intraindustry trade**—two-way trade in a similar commodity. For example, computers manufactured by IBM are sold abroad, while the United States imports computers produced by Hitachi of Japan. Table 4.5 provides examples of intraindustry trade for the United States. As the table indicates, the United States is involved in two-way trade in many manufactured goods such as chemicals and autos.

The existence of intraindustry trade appears to be *incompatible* with the models of comparative advantage previously discussed. In the Ricardian and Heckscher–Ohlin models, a country would not simultaneously export and import the same product. However, California is a major importer of French wines as well as a large exporter of its own wines; the Netherlands imports Lowenbrau beer while exporting Heineken. Intraindustry trade involves flows of goods with *similar* factor requirements. Nations that are net exporters of manufactured goods embodying sophisticated technology also purchase such goods from other nations. Much of intraindustry trade is conducted among industrial countries, especially those in

Table 4.5 Intraindustry Trade Examples: Selected U.S. Exports and Imports, 2000 (in Millions of Dollars)

Category	Exports	Imports
Autos	80,170	195,858
Steel	6,827	20,908
Chemicals	52,243	34,449
Computers	52,116	89,762
Paper	13,921	13,725
Machine tools	3,897	8,499
Meat	7,708	5,309
Fish	3,033	9,909
Telecommunications equipment	31,268	31,927
Household appliances	18,546	56,361

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Trade in Goods, 2000*, http://www.bea.doc.gov . See also U.S. Department of Commerce, *Survey of Current Business*.

Western Europe, whose resource endowments are similar. The firms that produce these goods tend to be oligopolies, with a few large firms constituting each industry.

Intraindustry trade includes trade in homogeneous goods as well as in differentiated products. For *homogeneous goods*, the reasons for intraindustry trade are easy to grasp. A nation may export and import the same product because of *transportation costs*. Canada and the United States, for example, share a border whose length is several thousand miles. To minimize transportation costs (and thus total costs), a buyer in Albany, New York, may import cement from a firm in Montreal, Quebec, while a manufacturer in Seattle, Washington, sells cement to a buyer in Vancouver, British Columbia. Such trade can be explained by the fact that it is less expensive to transport cement from Montreal to Albany than to ship cement from Seattle to Albany.

Another reason for intraindustry trade in homogeneous goods is *seasonal*. The seasons in the Southern Hemisphere are opposite those in the Northern Hemisphere. Brazil may export seasonal items (such as agricultural products) to the United States at one time of the year and import them from the United States at another time during the same year. Differentiation in time also affects electricity suppliers. Because of heavy fixed costs in electricity production, utilities attempt to keep plants operating close to full capacity, meaning that it may be less costly to export electricity at off-peak times, when domestic demand is inadequate to ensure full-capacity utilization, and import electricity at peak times.

Although some intraindustry trade occurs in homogeneous products, available evidence suggests that most intraindustry trade occurs in *differentiated products*. Within manufacturing, the levels of intraindustry trade appear to be especially high in machinery, chemicals, and transportation equipment. A significant share of the output of modern economies consists of differentiated products within the same broad product group. Within the automobile industry, a Ford is not identical to a Honda, a Toyota, or a Chevrolet. Two-way trade flows can occur in differentiated products within the same broad product group.

For industrial countries, intraindustry trade in differentiated manufactured goods often occurs when manufacturers in each country produce for the "majority" consumer tastes within their country while ignoring "minority" consumer tastes. This unmet need is fulfilled by imported products. For example, most Japanese consumers prefer Toyotas to General Motors vehicles; yet some Japanese consumers purchase vehicles from General Motors, while Toyotas are exported to the United States. Intraindustry trade increases the range of choices available to consumers in each country, as well as the degree of competition among manufacturers of the same class of product in each country.

Intraindustry trade in differentiated products can also be explained by overlapping demand segments in trading nations. When U.S. manufacturers look overseas for markets in which to sell, they often find them in countries having market segments that are similar to the market segments in which they sell in the United States—for example, luxury automobiles sold to high-income buyers. Nations with similar income levels can be expected to have similar tastes, and thus sizable overlapping market segments, as envisioned by Linder's theory of overlapping demand; they would be expected to engage heavily in intraindustry trade.

Besides marketing factors, economies of scale associated with differentiated products also explain intraindustry trade. A nation may enjoy a cost advantage over its foreign competitor by specializing in a few varieties and styles of a product (for example, subcompact autos with a standard transmission and optional equipment), while its foreign competitor enjoys a cost advantage by specializing in other variants of the same product (subcompact autos with automatic transmission, air conditioning, cassette player, and other optional equipment). Such specialization permits longer production runs, economies of scale, and decreasing unit costs. Each nation exports its particular type of auto to the other nation, resulting in two-way auto trade. In contrast to interindustry trade, which is explained by the principle of comparative advantage, intraindustry trade can be explained by product differentiation and economies of scale.

With intraindustry specialization, fewer adjustment problems are likely to occur than with

interindustry specialization, because intraindustry specialization requires a shift of resources within an industry instead of between industries. Interindustry specialization results in a transfer of resources from import-competing to export-expanding sectors of the economy. Adjustment difficulties can occur when resources, notably labor, are occupationally and geographically immobile in the short run; massive structural unemployment may result. In contrast, intraindustry specialization often occurs without requiring workers to exit from a particular region or industry (as when workers are shifted from the production of large-size automobiles to subcompacts); the probability of structural unemployment is thus lessened.

Product Cycles

The underlying explanations of international trade presented so far are similar in that they presuppose a *given* and unchanging state of technology. The basis for trade was ultimately attributed to such factors as differing labor productivities, factor endowments, and national demand structures. In a dynamic world, however, technological changes occur in different nations at different rates of speed. Technological innovations commonly result in new methods of producing existing commodities, in the production of new commodities, or in commodity improvements. These factors can affect comparative advantage and the pattern of trade.

Recognition of the importance of *dynamic* changes has given rise to another explanation of international trade in manufactured goods: the **product life cycle theory**. This theory focuses on the role of technological innovation as a key determinant of trade patterns in manufactured products.[6] According to this theory, many manufactured goods such as electronic products and office machinery undergo a predictable *trade cycle*. During this cycle, the home country initially is an exporter, then loses its competitive advantage vis-à-vis its trading partners, and eventually may become an importer of the commodity. The stages that many manufactured goods go through include the following:

1. Manufactured good is introduced to home market.
2. Domestic industry shows export strength.
3. Foreign production begins.
4. Domestic industry loses competitive advantage.
5. Import competition begins.

The introduction stage of the trade cycle begins when an innovator establishes a technological breakthrough in the production of a manufactured good. At the start, the relatively small local market for the product and technological uncertainties imply that mass production is not feasible. The manufacturer will likely operate close to the local market to gain quick feedback on the quality and overall appeal of the product.

During the trade cycle's next stage, the domestic manufacturer begins to export its product to foreign markets having similar tastes and income levels. The local manufacturer finds that, during this stage of growth and expansion, its market becomes large enough to support mass-production operations and the sorting out of inefficient production techniques. The home-country manufacturer is therefore able to supply increasing amounts to the world markets.

As time passes, the manufacturer realizes that it must locate production operations closer to the foreign markets to protect its export profits. The domestic industry enters its mature stage as innovating businesses establish branches abroad. A reason for locating production operations abroad is that the cost advantage initially enjoyed by an innovator is not likely to last indefinitely. Over time, the innovating nation may find its technology becoming more commonplace and transportation costs and tariffs playing an increasingly important role in influencing selling costs. The innovator may also find that the foreign market is large enough to permit mass-production operations.

Although an innovating nation's monopoly position may be prolonged by legal patents, it will likely break down over time, because in the long run knowledge tends to be a free good. The benefits an innovating nation achieves from its techno-

[6] See Raymond Vernon, "International Investment and International Trade in the Product Life Cycle," *Quarterly Journal of Economics* 80, May 1966, pp. 190–207.

logical gap are short-lived, as import competition from foreign producers begins. Once the innovative technology becomes fairly commonplace, foreign producers begin to imitate the production process. The innovating nation gradually loses its comparative advantage, and its export cycle enters a declining phase.

The trade cycle is complete when the production process becomes so standardized that it can be easily used by other nations. The technological breakthrough therefore no longer benefits only the innovating nation. In fact, the innovating nation may itself become a net importer of the product as its monopoly position is eliminated by foreign competition. Textiles and paper products are generally considered to have run the full course of the trade cycle. The spread of automobile production into many parts of the world implies that its production process is close to becoming standardized.

The experience of U.S. and Japanese radio manufacturers illustrates the product life cycle model. Following World War II, the radio was a well-established product. U.S. manufacturers dominated the international market for radios because vacuum tubes were initially developed in the United States. But as production technologies spread, Japan used cheaper labor and captured a large share of the world radio market. The transistor was then developed by U.S. companies. For a number of years, U.S. radio manufacturers were able to compete with the Japanese, who continued to use outdated technologies. Again, the Japanese imitated the U.S. technologies and were able to sell radios at more competitive prices.

Pocket Calculators and the International Product Cycle

Pocket calculators provide an illustration of a product that has moved through the stages of the international product cycle. This product was invented in 1961 by engineers at Sunlock Comptometer, Inc., and was marketed soon after at a price of approximately $1,000. Sunlock's pocket calculator was more accurate than slide rules (widely used by high school and college students at that time) and more portable than large mechanical calculators and computers that performed many of the same functions.

By 1970, several U.S. and Japanese companies had entered the market with competing pocket calculators; these firms included Texas Instruments, Hewlett-Packard, and Casio (of Japan). The increased competition forced the price down to about $400. As the 1970s continued, additional companies entered the market. Several began to assemble their pocket calculators in foreign countries, such as Singapore and Taiwan, to take advantage of lower labor costs. These calculators were then shipped to the United States. Steadily improving technologies resulted in product improvements and falling prices; by the mid-1970s, pocket calculators sold routinely for $10 to $20, sometimes even less. It appears that pocket calculators had reached the standardized-product stage of the product cycle by the late 1970s, with product technology available throughout the industry, price competition (and thus costs) of major significance, and product differentiation widely adopted. In a period of less than two decades, the international product cycle for pocket calculators was complete.

Dynamic Comparative Advantage: Industrial Policy

David Ricardo's theory of comparative advantage has influenced international trade theory and policy for almost 200 years. It implies that nations are better off by promoting free trade and allowing competitive markets to determine what should be produced and how.

Ricardian theory emphasizes specialization and reallocation of existing resources found domestically. It is essentially a *static* theory that does not allow for a dynamic change in industries' comparative advantage or disadvantage over the course of several decades. The theory overlooks the fact that additional resources can be made available to the trading nation because they can be created or imported.

Ricardian theory also suffers from its assumption of increasing costs, in which additional use of

limited resources results in rising unit costs as resources become fully used. Although this principle holds in the short run, empirical evidence suggests that unit costs may *decrease* over time—partly because firms learn to be more efficient and partly because of economies of large-scale production.

The remarkable postwar economic growth of the East Asian countries appears to be based on a modification of the static concept of comparative advantage. The Japanese were among the first to recognize that comparative advantage in a particular industry can be created through the mobilization of skilled labor, technology, and capital. They also realized that, in addition to the business sector, government can establish policies to promote opportunities for change through time. Such a process is known as **dynamic comparative advantage.** When government is actively involved in creating comparative advantage, the term **industrial policy** applies.

In its simplest form, industrial policy is a strategy to revitalize, improve, and develop an industry. Proponents maintain that government should enact policies that encourage the development of emerging, "sunrise" industries (such as high-technology). This strategy requires that resources be directed to industries in which productivity is highest, linkages to the rest of the economy are strong (as with semiconductors), and future competitiveness is important. Presumably, the domestic economy will enjoy a higher average level of productivity and will be more competitive in world markets as a result of such policies.

A variety of government policies can be used to foster the development and revitalization of industries; examples are antitrust immunity, tax incentives, R&D subsidies, loan guarantees, low-interest-rate loans, and trade protection. Creating comparative advantage requires government to identify (or target) the "winners" and encourage resources to move into industries with the highest growth prospects.

To better understand the significance of dynamic comparative advantage, we might think of it in terms of the classic example of Ricardo's theory of comparative advantage. His example showed that, in the eighteenth century, Portugal and England would each have gained by specializing respectively in the production of wine and cloth, even though Portugal might produce both cloth and wine more cheaply than England. According to static comparative-advantage theory, both nations would be better off by specializing in the product in which they had an existing comparative advantage.

By adhering to this prescription, however, Portugal would sacrifice long-run growth for short-run gains. Instead, if Portugal adopted a dynamic theory of comparative advantage, it would specialize in the growth industry of that time (cloth). The Portuguese government (or Portuguese textile manufacturers) would thus initiate policies to foster the development of its cloth industry. This strategy would require Portugal to think in terms of acquiring or creating strength in a "sunrise" sector instead of simply accepting the existing supply of resources and using that endowment as productively as possible.

Today, every industrialized country and many less-developed countries use industrial policies that encourage the development or revitalization of basic industries, including steel, autos, chemicals, transportation, and other important manufactures. Each of these industrial policies differs in character and approach; common to all is an active role for government in the economy. Usually, industrial policy is a strategy developed collectively by government, business, and labor through some sort of tripartite consultation process.

Advocates of industrial policy typically cite Japan as a nation that has been highly successful in penetrating foreign markets and achieving rapid economic growth. Following World War II, the Japanese were the high-cost producers in many basic industries (such as steel). In this situation, a static notion of comparative advantage would require the Japanese to look to areas of lesser disadvantage that were more labor-intensive (such as textiles). Such a strategy would have forced Japan into low-productivity industries that would eventually compete with other East Asian nations having abundant labor and modest living standards.

Instead, the Japanese invested in basic industries (steel, autos, and later electronics, including computers) that required intensive employment of cap-

ital and labor. From a short-run, static perspective, Japan appeared to pick the wrong industries. But from a long-run perspective, those were the industries in which technological progress was rapid, labor productivity rose fast, and unit costs decreased with the expansion of output. They were also industries in which one would expect rapid growth in demand as national income increased.

These industries combined the potential to expand rapidly, thus adding new capacity, with the opportunity to use the latest technology and thus promote a strategy of cost reduction founded on increasing productivity. Japan, placed in a position similar to that of Portugal in Ricardo's famous example, refused to specialize in "wine" and chose "cloth" instead. Within three decades, Japan became the world's premier low-cost producer of many of the products for which it initially started in a high-cost position.

Critics of industrial policy, however, contend that the causal factor in Japanese industrial success is unclear. They admit that some of the Japanese government's targeted industries—such as semiconductors, steel, shipbuilding, and machine tools—are probably more competitive than they would have been in the absence of government assistance. But they assert that Japan also targeted some losers, such as petrochemicals and aluminum, for which the returns on investment were disappointing and capacity had to be reduced. Moreover, there are examples of successful Japanese industries that did not receive government assistance—motorcycles, bicycles, paper, glass, and cement.

Industrial-policy critics contend that if all trading nations took the route of using a combination of trade restrictions on imports and subsidies on exports, a "beggar-thy-neighbor" process of trade-inhibiting protectionism would result. They also point out that the implementation of industrial policies can result in pork-barrel politics, in which politically powerful industries receive government assistance. Finally, it is argued that in a free market, profit-maximizing businesses have the incentive to develop new resources and technologies that change a country's comparative advantage. This raises the question of whether the government does a better job than the private sector in creating comparative advantage.

Boeing, Airbus, and Industrial Policy

The world's manufacturers of large commercial jetliners operate in an imperfectly competitive market that has been dominated by Boeing of Seattle. The largest non–U.S. manufacturer is the Airbus Company, which was created in 1966 by four European nations (Germany, Spain, France, and the United Kingdom) that pooled their resources to form an aircraft company to compete with the United States. During the 1970s, Airbus sold less than 5 percent of the world's jetliners; at the millennium, it had captured almost half of the world market.

Subsidies to an "Infant" Enterprise

Throughout the 1980s, the United States complained that Airbus received unfair subsidies from the governments of the four partners, placing the United States at a disadvantage. The Airbus consortium allegedly received loans from European governments for the development of new aircraft; these loans were made at below-market interest rates and amounted to 70 to 90 percent of an aircraft's development cost. Rather than repaying the loans according to a prescribed timetable, as typically would occur in a free market, Airbus was allowed to repay them as it delivered an aircraft. Airbus was also alleged to benefit from debt forgiveness when it suffered losses.

According to the U.S. Department of Commerce, Airbus received more than $13.5 billion in government subsidies between 1970 and 1990. In short, the United States maintained that Europe's treatment of Airbus was tantamount to an industrial policy in which a government targets a producer for subsidization to ensure its competitiveness. These subsidies allowed Airbus to set unrealistically low prices, to offer concessions and attractive financing terms to airlines, to write off development costs, and to use state-owned airlines to obtain orders.

Critics of these subsidies contended that conventional economic theory could not be used to analyze

Nike and Reebok Respond to Sweatshop Critics, But Wages Remain at Poverty Level

Sweatshop Conditions in Chinese Factories Producing for U.S. Companies

U.S. Company/Product	Labor Problems in Chinese Factory
Huffy/bicycles	15-hour shifts, 7 days a week; no overtime pay.
Wal-Mart/handbags	Guards beat workers for being late.
Kathie Lee/handbags	Excessive charges for food and lodging mean some workers earn less than 1 cent an hour.
Stride Rite/footwear	16-year-old girls apply toxic glues with bare hands and toothbrushes.
Keds/sneakers	Workers locked in factories behind 15-foot walls.
New Balance/shoes	Lax safety standards; no overtime pay as required by Chinese law.

Source: National Labor Committee, *Made in China*, May 2000.

Prodded by controversy over exploitation in foreign factories that make much of America's clothes and shoes, Nike, Reebok, and other U.S. corporations have pushed for sweatshop reforms. A sweatshop is characterized by the systematic violation of workers' rights that have been certified in law. These rights include the right to organize and bargain collectively, and the prohibition of child labor. Also, employers must pay wages that allow workers to feed, clothe, and shelter themselves and their families. The table provides examples of sweatshop conditions in Chinese factories producing for U.S. companies.

For example, a 1997 audit by the firm of Ernst & Young, commissioned by Nike, was leaked to reporters. The audit found that employees in a large Vietnam factory were exposed to cancer-causing toluene and had a high incidence of respiratory problems. The audit also found that employees were required to work as long as 65-hour weeks, sometimes in unsafe conditions. Also, in 1999 Reebok released a study of two large Indonesian factories. The study uncovered substandard working conditions, sex bias, and health problems among workers.

Pressured by sweatshop critics, in 1999 Nike and Reebok initiated improvements in the wages and working conditions of its foreign workers. Nike and Reebok increased wages and benefits in their Indonesian footwear factories, which employed more than 100,000 workers, making base compensation 43 percent higher than the minimum wage. Also, Nike agreed to end health and safety problems at its 37 factories in

Airbus, because it was motivated by factors other than just profits. For example, Airbus had a stated objective of keeping its production lines in operation, irrespective of profits, to provide jobs for European workers. Because government subsidies lessened or eliminated financial risks for Airbus, the firm did not have to base its decisions to launch new aircraft types solely on profits/losses. Airbus's financial statements showed that it did not generate a profit from the 1970s to the 1990s; without subsidies, the firm would have gone bankrupt.

Airbus defended its subsidies on the grounds that they prevented the United States from holding a worldwide monopoly in commercial jet aircraft. In the absence of Airbus, European airlines would have to rely exclusively on U.S. companies as suppliers. Fears of dependence and the loss of autonomy in an area on the cutting edge of technology motivated European governments to sub-

Vietnam and other nations. Moreover, Reebok and Nike took unprecedented steps to defend labor rights activists who have long been their adversaries. However, critics argued that these reforms left much to be desired. For example, the Indonesia wage increases by Reebok and Nike put total minimum compensation at only 20 U.S. cents an hour, less than what is needed to support a family and well below the 27 cents per hour that Nike paid until Indonesia's economic crisis began in 1997.

Indeed, there simply is no excuse on humanitarian grounds for sweatshop conditions to prevail anywhere. But what is the best way of preventing sweatshops? Unions and human rights activists in the United States advocate imposing boycotts on imports from countries where sweatshops exist, to encourage those countries to improve working conditions. Critics, however, contend that it makes no sense to impose sanctions on a whole country for labor standards violations by a relative few employers: that would be to punish the innocent along with the guilty. An alternative approach would be to boycott only the products of those companies that do not implement good labor practices. Yet implementing such selective sanctions would be difficult because it would require governments to devote sufficient resources to enable impartial inspectors to visit each company for purposes of certification.

At the millennium, dozens of U.S. universities jumped on the antisweatshop bandwagon, reacting to a growing student protest movement, and took steps to bar labor abuses in the manufacture of clothes that bear college logos. This led to a new White House–sponsored alliance, the Fair Labor Association (FLA), which consisted of 56 universities and corporations such as Nike, Reebok, Liz Claiborne, and Phillips-Van Hausen. The alliance is intended to set up an elaborate, worldwide factory-monitoring system to attempt to eliminate sweatshop abuses. Under its provisions, participating companies can use the FLA logo on their labels and in their advertising, helping portray the firms as ethical corporate citizens. Ethics-minded consumers, in turn, can look for the FLA logo while shopping to guarantee that what they purchase is free of moral stigma. Simply put, company executives hope that the FLA logo will improve their products' image and boost sales; critics of sweatshops hope that the logo will pressure nonparticipating companies into eliminating sweatshop abuses and join the FLA. The charter of the Fair Labor Association is available on the Internet at http://www.dol.gov/dol/esa/nosweat/partnership/aip.htm.

Source: Robert Collier, "U.S. Firms Reducing Sweatshop Abuses: But Wages Still at Poverty Level," *San Francisco Chronicle*, April 17, 1999, and "Reebok Finds Ills at Indonesian Factories," *The Wall Street Journal*, October 18, 1999. See also Edward Graham, *Fighting the Wrong Enemy*, Institute for International Economics, Washington, DC, 2000, Chapter 4.

sidize Airbus. Simply put, Airbus argued that, as an infant enterprise, it was entitled to subsidies to help it compete against Boeing.

Airbus also argued that U.S. commercial aircraft producers benefited from government assistance. Rather than receiving direct governmental subsidies like Airbus, U.S. firms received indirect subsidies. For example, governmental research organizations (such as the National Aeronautics and Space Administration) supported aeronautics and propulsion research that was shared with U.S. aircraft manufacturers. Support for commercial aircraft innovation also came from military-sponsored research and military procurement. Research financed by the armed services yielded indirect but important technological spillovers to the commercial aircraft industry, most notably in aircraft engines and aircraft design. A 1991 study by the European Commission estimated that from 1976 to 1990 Boeing received $18 billion to $22 billion of indirect subsidies from the U.S. government.