Chapter 2

Services in the World Economy

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SUMMARY

The international competitiveness of any industry depends on the ability of firms in that industry to design, develop, produce, and market their output. This is just as true for Eurobonds or a database on organic chemicals as it is for soybeans or 747s. The ability of individual firms to compete effectively depends on a broad range of factors, some of which the firm can control (the people it hires), some of which it cannot (the labor pool from which it hires them). Government policies affect competitive ability at many points: tax rates here and abroad; tariffs and other trade barriers; export assistance. Policies in the United States and elsewhere, in turn, affect corporate decisions—whether, for instance, a firm will seek international business through exports or overseas investments.

Together, the competitive ability of the firms in an industry will determine the international competitiveness of that industry. But it makes little sense to talk about the international competitiveness of an economy. Rather, the competitive rankings of the industries in the U.S. economy—relative to one another and relative to their counterparts elsewhere in the world—determine what the Nation will export and import. In turn, the goods and services that the United States exports and imports affect U.S. living standards.

Simply put, the United States exports the products of the industries in which it is most competitive: if, over time, the U.S. banking industry becomes more competitive internationally, its exports may increase while U.S. exports in, say, the computer industry may decline (or rise more slowly than they otherwise would). In this sense, industries compete with one another for export sales as well as domestically; when some industries grow more competitive, others will probably become less competitive. But services and goods also depend on one another. The more efficient and more competitive the U.S. financial services industry, the more competitive their customers in other industries can be. The same is true for any service industry that sells to business customers. And the more competitive these customers, the better the opportunities for growth by their suppliers.

Companies buy some of the inputs they need to produce their end services and goods, do the rest themselves. U.S.-based service companies have followed their customers in other industries overseas, in many cases successfully exploiting advantages that come with multinational integration—ranging from lower costs to name recognition and reputation. Today, many American manufacturing firms purchase services they once produced internally. At the same time, they may sell services alongside their goods (or through another arm of the company). As many examples illustrate, structural and technological changes, in both services and goods, within the U.S. economy and internationally, have become extraordinarily rapid over the past two decades. Within this setting—one of constant flux, and a good deal of uncertainty—companies make the decisions that cumulatively determine their competitive ability.

Governments face the same uncertainties as they make decisions that reflect their policies towards trade and industry—or, where no clear policy exists, the decisions that constitute their de facto policy. The U.S. *Government makes choices every day that affect the international competitiveness of U.S. firms and industries,* in both the services and manufacturing. Because the competitive ability of an industry depends fundamentally on what the companies in that industry do at home—and on the relative rankings of domestic industries—Federal

policies with domestic aims and objectives often have even greater impacts on the international competitive ability of American firms and industries than do trade and foreign economic policies.

In the services, the United States runs a positive balance of trade in almost all sectors with almost all regions of the world. OTA's estimates of services trade indicate that the official Federal Government statistics underestimate both exports and imports of services, as well as the net U.S. position on services trade. More complete and accurate data would probably show the U.S. competitive position to be even stronger,

Together with the evidence in other chapters of this report, the services data give a reasonably clear picture of the structure of U.S. comparative advantage. Diminishing competitiveness in manufacturing has meant a relative shift in U.S. strength toward knowledge-based services. Export markets for these services, however, remain modest in size. Foreign markets must often be served through foreign affiliates—with exports of capital rather than exports of products—sometimes because of foreign government trade barriers, but more commonly because service products must be produced at the point of consumption. Because of this dependence on a foreign presence, and for other reasons (including, as later chapters show, strong challenges from some foreign service industries), exports of services have not increased to compensate for the huge U.S. deficit on trade in goods. Nor is there any reason to expect that world trade in services will expand much more rapidly than trade in goods, whether or not governments agree to reduce trade barriers: taken as a whole, the available data on services trade suggest that the *direct* benefits of liberalization for U.S. interests, though real, may not be as great as sometimes assumed. At the same time, some of the countries that have opposed discussions on services in the General Agreement on Tariffs and Trade (GATT) may have more to gain than they recognize. The data themselves reveal little about indirect and strategic benefits, but much other evidence suggests that this is where the real advantages for the United States will lie, with liberalization, for example, helping U.S.-based multinationals hold on to advantages accruing through worldwide integration of business operations.

For the world economy as a whole, reductions in barriers to trade and investment in the services should lead to greater economic efficiency and more rapid growth, for two primary reasons: 1) when each country specializes in the services it is best at, all can, in principle, gain through trade; and, 2) competition can serve as a spur to domestic service industries, forcing them to become more efficient. Of course, as for trade in goods, liberalization may help the world economy as whole without aiding each and every country; some will gain more than others, and some may lose.

From its beginnings in 1947, negotiations and agreements within GATT have centered on trade in tangible goods, with limited attention to foreign investment. A 1982 Ministerial Statement initiated a process of discussion and negotiation culminating 4 years later in agreement to begin the Uruguay Round, where GATT members will discuss services for the first time. Finding an effective path to liberalization in the services poses difficult problems for negotiators. In the service industries, most of the barriers are non-tariff—often part of long-established domestic regulatory structures. Resistance to change will be high; some governments will prefer the certainty of what they have to the risks of new rules. Some nations view the Uruguay Round negotiations in North-South terms, with the United States attempting to exploit one of its few remaining advantages. To these countries, going along with U.S. demands that they open their markets may seem tantamount to giving up hope of developing a competitive service sector. At the same time, as pointed out in chapter 9, much of this resistance arose before countries thought these matters through: the fact that so many services must be produced where they are consumed means that local economies will get many of the benefits.

Beyond this, when it comes to the knowledge-based services, countries that attempt to limit imports or prevent foreign investment may end up harming their own economies by cutting off access to superior technology and expertise.

Sheltered banking and insurance industries in the developing world have been notoriously inefficient; a sound telecommunications infrastructure helps an entire economy, The Uruguay Round negotiations on services promise to be lengthy and contentious, But if successful, they could mark the beginning of a new stage in world economic integration.

COMPETING IN SERVICE INDUSTRIES

The United States grows little coffee; some Brazilians travel to the United States for a university education (which counts as the export of U.S. services to Brazil). Through trade, whether of services or goods, all nations can benefit–if the conditions are right–by specializing in the things they do best. American companies export computers and wheat, motion pictures and technology. The United States imports small cars, clothing, and reinsurance services.

What Determines Competitiveness Internationally?

But if the United States is more competitive in technical licensing than in reinsurance, why? Chapter 6 explores the advantages of U.S. firms in licensing—advantages that stem quite directly from past spending on R&D. Here, as in goods-producing industries, competitiveness depends on the value for money that U.S. companies can offer compared to foreign firms. Likewise, Japanese automakers have been able to build small cars of a given design at lower cost than American manufacturers—put another way, design and develop superior cars to sell at the same price, a competitive advantage with multiple sources. Reinsurance works quite differently. Here, the United States typically runs a deficit because American insurance firms seek to spread risk internationally.

Appendix B summarizes the analytical framework for this assessment—as in previous OTA studies of competitiveness, an approach rooted in notions of comparative advantage. Just as for goods, relative costs of production will be primary determinants of competitiveness in service industries. If a South Korean steelmaker can purchase the coal, ore, labor, and other inputs for making a ton of steel for less than an American firm, and if this production cost advantage exceeds the cost of transporting a ton of steel from Korea to the United States, Korean producers will be able to sell here at lower prices than American steelmaker. If a U.S. insurance company can write an $80 million policy covering the loss of a communications satellite at a lower premium than a British company, the U.S. company is more competitive. As the second example suggests, transportation costs can be ignored for many service products. Reliable, high-speed data transmission has often reduced or eliminated transportation as a significant expense—a major force in the spread, particularly, of financial services across national boundaries. In other cases, a service firm must send people overseas in order to supply its products. Alternatively, the customer may come to the site—as when a foreign national flies to the United States for treatment at the Cleveland Clinic. Here, as for goods, reductions in travel or transportation costs spur growth in trade—with cheaper international air fares in recent years a particular stimulus to tourism. Still, there may be relatively little trade even in services where the United States has a marked competitive advantage. American physicians may be among the world's best (and most costly), but other characteristics of the industry mean they cannot provide care to large numbers of foreign patients.

For meaningful cost comparisons, goods (a bushel of soybeans) or services (an advertising campaign) must be similar in a qualitative sense, Such comparisons will be far more difficult for some products than others. It is easier to compare the characteristics of steel produced in South Korea and the United States than computers made by Unisys and Fujitsu or aircraft made by Boeing and Airbus.

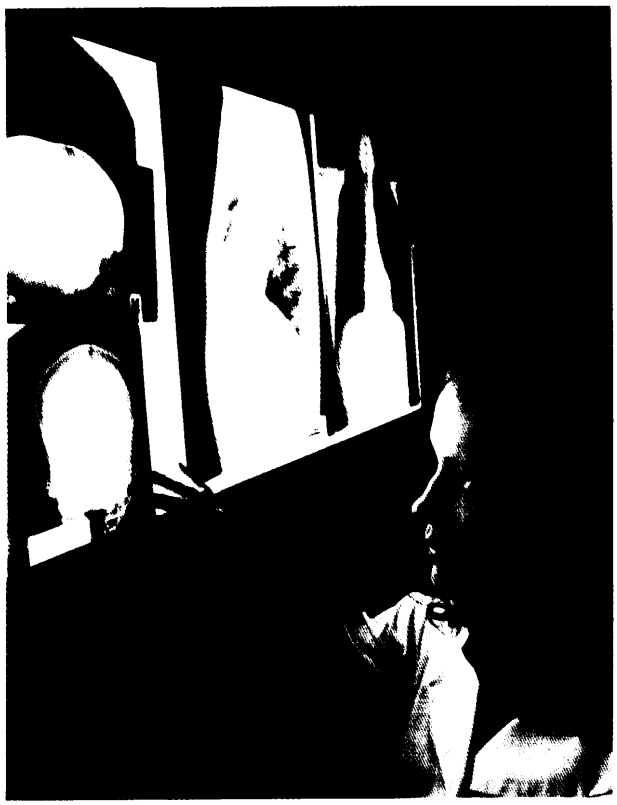


Photo credit: Humana, Inc

Interpreting X-rays

Qualitative comparisons become still more difficult for services, given their intangible and time-dependent nature; purchasers rely heavily on reputation as a guide to the future. A company planning to buy a $5 million computer can run trial programs to benchmark competing machines, and ask past customers if they've been satisfied. In the end, judgment will be involved (if only in deciding what kind of benchmark tests to run, and how to interpret the results), but judgments of a different kind than for comparisons of the health care provided by two clinics or the services of two law firms. Statistics may help (mortality rates for medical operations, won-lost records for cases tried), but the next product is always in the future, Who can compare advertising services, and reduce this to cost terms? Only time reveals how good a campaign will be. Much the same is true for engineering and construction services, although the many stages of feasibility study and design specification in construction projects offer intermediate checkpoints (ch. 4). Even so, large-scale international construction shares this characteristic with open heart surgery: by the time unambiguous evidence of problems arises, it may be too late.

For almost all services, then, it is impossible to tell at the time of purchase how good the product will be. Anheuser-Busch can return a shipment of hops that does not meet standards, but the firm's managers will never know if they made a good decision in rejecting a proposed series of television commercials. Consumers have much better sources of comparative information for buying toasters or automobiles than for buying dental care (a major reason for the historical spread of licensing in the professions). For the seller of differentiated service products, this means a variety of factors besides costs come into play, Selling services, like selling some kinds of goods, may depend heavily on reputation or on established linkages between the supplier and the purchaser. Most corporations will stick with their investment banker as long as they remain satisfied (but may shop for commercial banking services based on price). Successful firms in intermediate service industries can often expand by building on their reputations, as when advertising agencies move into market research, accounting firms sell management consulting services, and banks seek to become financial supermarkets.

Many other examples illustrate some of the factors that ultimately affect trade figures and competitiveness. For Bostonians, a winter vacation may involve a choice between Florida and Mexico. A week in Miami would remain an entirely domestic transaction, a week in Cancun creates U.S. travel imports and perhaps imports of passenger fares, But the ultimate choice might be the attractions of a week in the sun versus some entirely different good or service. Purchasing a video-cassette camera and recorder instead would mean a balance of payments entry reflecting a goods import from Japan. As such examples illustrate, *services compete with one another and also with goods for both domestic and export sales*. Everything else the same, relative costs of developing, producing,

and distributing service products will determine international competitiveness. But everything else is seldom the same; it is easy to compare air fares between New York and London on U.S. and British carriers, but far from easy to compare the range of services New York and London banks offer to multinational corporations.

To some extent, a company—whether an advertising agency, an airline, or a construction firm—controls its own destiny. It can hire people, invest in a computer system or in a new product line, change its management style. In other respects, the firm operates in an environment that it can influence little if at all, An American company may lobby Congress and the Administration for changes in the tax code that would help it with respect to other American firms, but it will be only one voice among many. And any one company has even less influence over interest rates or antitrust enforcement.

Table 7 lists some of the factors that affect competitiveness—in the knowledge-based services particularly—under two primary categories: those that individual firms can control, at least in part; and those that governments control or influence, Of course, some competitive factors—natural resources, labor market size—remain beyond the reach of either firms or governments.

Table 7.— Major Influences on International Competitiveness in the Service Industries

Factors subject to considerable control by individual firms:
- Strategic decisions: to develop, market, and export new service products; to invest in some overseas locations but not others; to develop a corporate data processing and communications network.
- Staffing patterns, including corporate training programs, labor-management relations, mechanisms for employee participation, management priorities, attitudes, and value structures.

Factors subject to considerable control by governments:
- Market structure—e. g., as influenced by antitrust or competition policy, price controls, public investment.
- Human resources and labor force characteristics, as affected by education and training policies, attitude toward labor unions.
- Infrastructural support—e. g., the public communications system, government funding for research and development.
- Business and economic conditions as affected by macroeconomic policies, regulations, political stability.
- Foreign economic policies, including trade policies (and trade barriers), foreign aid and assistance, support for organizations such as the General Agreement on Tariffs and Trade.

SOURCE Off Ice of Technology Assessment 1987

Appendix B includes an expanded treatment of factors affecting competitiveness, while box D discusses innovation and product development in financial services. As the box illustrates, and later chapters show in more detail and for other sectors, technology—interpreted broadly to include knowledge and expertise—is a major competitive weapon in the services,

Much of the task of analyzing competition in the services becomes a matter of determining which among the factors affecting competitiveness have the most weight in a given industry. Major questions for the U.S. Government center on the impacts of policies, positive and negative, on international competitiveness and on U.S. employment, and the leverage offered by alternative policies. As chapter 10 points out, because trade and competition in the services have been secondary concerns in the past, Federal agencies seldom consider the impacts of their actions on international competitiveness. Today, however, even routine rulemaking and policy implementation can have significant ramifications internationally. Another question follows: Given the way the U.S. policymaking system works, is it possible to do more than make a series of individual decisions constituting a de facto policy? OTA's findings for the services replicate those in earlier reports dealing with manufacturing: in order to pursue a more coherent policy, the Federal Government must develop a better understanding of the forces that affect international competition.[1] Lacking this—a grasp of what government can do and what it cannot do–attempts t o develop such a policy will, more likely than not, be based on wishful thinking.

OTA's past studies of international competitiveness demonstrate that the shifting positions of U.S. industries have no single, simple cause

[1]See ch. 10 of this report, and *International Competitiveness in Electronics* (Washington, DC: Office of Technology Assessment, November 1983), ch. 12.

Box D.-Innovation and Product Development in the Financial Services Industry

In 1980, Merrill Lynch applied for a patent on its Cash Management Account, later suing Dean Witter for patent infringement–one example among many of the institutionalization of R&D by financial services firms.[1] Major commercial and investment banks have created new product groups, much as found in manufacturing firms. Seeking to turn R&D to competitive advantage, banks search for new products that can differentiate their services in a highly competitive market. They also seek better production methods that can reduce their costs.

Interactions of the macroeconomic environment, regulations, and technology drive innovation in banking:

- The *Macroeconomic* Environment–Inflation in the 1970s made it profitable for mutual fund companies to offer money market accounts. Banks, which still faced regulatory ceilings on deposit interest rates, could not compete and lost business. Eventually, the banks were able to convince government regulators to relax interest rate ceilings on some accounts. Inflation was the first step in a process that led to a broad array of new financial products. Rapid swings in exchange rates have likewise created new demand for products that hedge or exploit currency risks.
- Deregulation—Today, banks have far more freedom to offer new and different products than 15 years ago. So do firms outside the industry, now permitted by regulators to offer many bank-like services.
- Technology—Back-office automation has lowered the costs of processing financial data. New services can be offered at attractive prices. Lower prices have increased demand for old as well as new services.

At least since the first transatlantic cable, advances in communication technologies have brought national capital markets closer together. Today, differences in rates of return are almost instantaneously arbitraged. Morgan Stanley can transmit its entire "book" of outstanding investments from London to New York at the end of the London trading day; still later, the book can be transmitted to Morgan Stanley's Tokyo offices.[2] New analytical capabilities reduce some banking activities to a set of rules (lending to individuals, foreign currency trading) that can increasingly be automated, sometimes with the aid of expert systems (see chs. 3 and 8). Program trading on stock exchanges reflects the development of new products such as stock index futures, and a new ability to quickly find arbitrage opportunities.

Table 8 lists some recent developments in financial products, focusing on those important in international banking. Chapter 3 discusses several of these in detail, while the glossary in appendix A defines the less familiar terms. Given the volatile behavior of both exchange rates and interest rates, demand has grown for *price-risk-transferring* products that tie the prices of financial assets more closely to market indicators. With the widespread perception that creditworthiness has declined generally, markets for *credit-risk transferring* instruments have expanded. *Liquidity-enhancing* products are a consequence of high interest rates, which make highly liquid investments more costly, coupled with worries about the creditworthiness of banks. *Credit-generating* innovations follow from increased

[1] The lawsuit was eventually settled out Of court.

For examples of R&D by a bank, see K.J. Freeze and R.S. Rosenbloom, "Bane One Corporation and the Home Information Revolution," Harvard Business School Case Study *9-682-091, 1982.* This bank has been budgeting *3* to 5 percent of earnings for R&D for many years.

For a broader survey, see "Recent innovations in International Banking," Bank for International Settlements, Basel, Switzerland, April *1986,* p. *184-86.* Box FF in ch. 9 summarizes services-related R&D spending, while ch. *3* examines competition in international banking.

[2] J. Maranoff, P. Tate, and B. Whitehouse, "Around the World in 24 Hours, " *Datamation,* Jan. 15, 1987, p. 75. While this might seem a technologically simple step, it has only recently become feasible. Other large firms, including Citicorp and Merrill Lynch, do not yet have the capability to manage a global inventory of financial instruments in real time and multiple currencies.

The huge dollar amounts involved in financial communications make reliability and security critical. Some banks have established their own communications networks, others have hired experts trained in security, intelligence, and encryption away from governments.

demand for credit, especially in the United States. Many of these products are possible only because of deregulation in the United States and abroad, and practical only because of new communications and data processing capabilities.

Innovations in the payments process have also been rapid—-for both small transactions (credit cards) and large (funds transfers between banks using national and international computer networks—see box G in ch. 3). Here, competitive advantage for any one bank will be limited; because payments by definition involve transactions between two or more financial institutions, new developments must be shared. Thus banks have found it in their interest to link their automatic teller machines.

Changes such as those outlined above have profoundly affected the nature of competition over the past 15 years. Cheaper, more reliable, more pervasive communications systems mean that local banks face competition from money center institutions. Restrictions on interstate banking have crumbled. Non-financial firms–including retailers like Sears and diversified corporations like General Electric (through its GEISCO subsidiary, ch. 5)—have drawn on capabilities and experience developed in internal data processing operations to compete with banks. New products and proprietary technology have given American firms like Citicorp a competitive edge in markets abroad, but internationalization of capital and financial markets has led to increased competition from foreign banks here.

Table 8.— Examples of Product Innovations in Banking

	Function			
	Price-risk-transferring	Credit-risk-transferring	Liquidity-enhancing	" Credit-generating
Floating rate loans	✓			
Back-to-back loans	✓			
Securitized assets		✓	✓	
New cash management techniques			✓	
Negotiable money-market instruments			✓	
Zero coupon bonds				✓
Junk bonds				✓
Futures	✓			
Swaps	✓			✓
Forward rate agreements	✓			
Note issuance facilities	✓	✓	✓	

SOURCE Adapted from Recent Innovations in Internal ional Banking, Bank for International Settlements Easel, Switzerland April 1986 p 172

(such as the strength of the dollar). Nor do shifts in competitive standing have single, simple consequences. For the United States, a strong dollar during the first half of the 1980s, combined with ongoing structural shifts in the U.S. and world economy, led to seriously declining competitiveness in major industries. Many of these structural shifts can be traced back to the 1960s; in the steel industry, for example, worldwide overcapacity—creating strong incentives for price-cutting and subsidies—has had greater impacts on the plight of the large, integrated American firms than exchange rates, Other generalizations concerning international competitiveness, typically underappreciated, include:[2]

1. When a nation such as the United States engages in international trade, some of its industries must by definition be competitive, but some will likewise be uncompetitive, Over time, in order to export, a nation must import; if it imports, it must export. This suggests that *increasing competitiveness in some industries will nec-*

[2]*International Competitiveness in Electronics*, op. cit., pp. 166-168.

essarily be accompanied by declining competitiveness in others.

2. If, as has been true of the United States for several decades, a nation's overall rate of productivity growth lags compared to its competitors and trading partners, the result need not be losses in competitiveness for all industries, provided exchange rates are free to adjust and trade barriers do not intervene, But if overall productivity in the United States were to increase faster than in other countries, some formerly competitive American industries might become uncompetitive. The productivity increase would make U.S. exports more attractive. Domestic customers would also choose U.S. products as substitutes for imports. In the normal course of events, the dollar would appreciate compared to other currencies. This, in turn, would make some industries—probably those with relatively low productivity growth-less competitive.
3. When industries experience relatively rising costs in world markets, and lose market share both at home and abroad, the price system may be signaling that resources should be reallocated internally, Prominent examples in the United States include shrinkage in the domestic steel industry, and in textiles and apparel, Because the services and manufacturing compete for export sales, expansion in the services will interact in complex fashion with declines in the international competitiveness of U.S. manufacturing industries.
4, Almost any policy adopted by the Federal Government may affect, directly or indirectly, the competitive standing of U.S. industries: all Federal policies that affect business and industry must be assumed to result in winners and losers, In an economy open to imports, it is not possible to simultaneously help all sectors compete internationally. *The Federal Government makes choices among industries all the time, explicitly or implicitly.*

Multinational Operations

During the postwar period, many American corporations have concluded that successful competition against other U.S. and foreign firms requires a multinational presence; when a U.S.-based company sets up manufacturing operations in a new country, American banks and accounting firms often follow. Spreading investments by multinationals over the past 35 years have led to rapid growth in international trade among affiliates. Microelectronics provides one of the more dramatic examples; up to three-quarters of U.S. imports have consisted of intra-firm shipments, primarily from subsidiaries in Asia. Overall, the interdivisional shipments of U.S.-owned firms account for about 20 percent of the nation's goods imports,[3] Most of the same motives operating in manufacturing have driven multinational integration and intra-firm trade in the services. But there is a major difference: many services cannot be supplied in a foreign market without an on-the-ground presence,

The Need for a Foreign Presence

Goods can be shipped from place to place and held in inventory; most services cannot. Of course, there are exceptions. Construction can be viewed as a service (or not); if designing a bridge or a hospital seems less ambiguously a service than carrying out the construction, the plans, drawings, and bills of materials are quite tangible—they can be stored, transmitted from place to place, and modified during building. The package of information constituting a "design" (or a computer program or an advertis-

[3]Based on B.F. Brereton, "U.S. Multinational Companies: Operations in 1984, " *Survey of Current Business,* September 1986, table 2, p. 28. Thirty percent of U.S. exports go to overseas affiliates (both figures are for 1984). Other estimates have been as high as 40 percent on the import side and 35 percent for U.S. exports—J. S. Little, "Intra-Firm Trade and U.S. Protectionism: Thoughts Based on a Small Survey, " New *England Economic Review*', January-February 1986, p. 42. On microelectronics, see *International Competitiveness in Electronics,* op. cit., p. 136.

ing campaign) has a permanent physical existence quite unlike the services provided by a trial lawyer or a banker. But regardless of such distinctions, exporting means selling to a foreign customer (the importer) a service produced by factors of production (inputs) located in the exporter's country. This may not be possible for intangible and nonstorable services, If it is possible, it may still require a physical presence in the importing country, with some of the value added there. Direct investment in a subsidiary corporation or joint venture may be essential, particularly in view of foreign government regulations. Other possibilities include branches, franchises, sales agents, and marketing or distribution affiliates.

A commercial bank or an accounting firm will not get many sales in foreign countries without foreign offices. In some contrast, businesses such as reinsurance and investment banking operate in what amounts to a global market. The primary buyers and sellers not only know one another, they tend to be less parochial than smaller firms; to a multinational corporation (MNC) seeking to insure its risks worldwide, it will make little difference whether the carrier has offices in all the countries where the MNC operates.

Even tourism depends on advertising and representation in the importing country (i. e., the home country of travelers). National tourism industries staff promotional offices in major importing countries, They advertise, cultivate ties with travel agents, seek favorable publicity in the media. Similarly, airlines need reservation/information offices in the major cities and countries they serve. Hotel chains provide marketing/reservation networks for their members, For manufacturing companies, on the other hand, services like technical licensing may simply be an occasional business, and thus an exception to the need for a foreign presence. Even so, some American firms with high volumes of overseas licensing have established offices to help their licensees; RCA opened a laboratory in Japan for this purpose in 1954.

In some cases, communications technologies may reduce or eliminate the need for a foreign presence, in others not; 24-hour securities trading, with exchanges always open somewhere in the world, will probably mean stationing brokers overseas. While a trader in New York could place an order on the Tokyo exchange in the middle of the night, most transactions will probably be made by people in Tokyo who are wide awake.

Integration

Vertical integration implies sequential operations under common management. A chain of fast-food restaurants that raises its own chickens has integrated vertically. When two firms competing in the same market merge, they have integrated *horizontally,* Other forms of integration include *geographic* expansion—as when a hotel chain or financial institution enters another country, Citibank offers much the same range of services in many nations (ch. 3). A foreign branch or subsidiary gets advantages from the parent bank's expertise, international linkages, reputation, and visibility in the marketplace. Engineering and construction (E&C) firms that utilize proprietary knowledge at home and abroad have likewise integrated across technologically related markets. Diversification of a firm's product lines can lead to integration; when United Airlines merged with Westin Hotels and Hertz, it could capitalize on its existing relationships with travelers and travel agencies. Finally, a firm can expand into totally unrelated areas, as ITT did with its purchase of Sheraton,

Vertical integration especially—raising one's own chickens—can be a source of competitive advantages that accrue over both short and long time periods, Internal transactions usually carry lower costs for information and control (purchasing, negotiation and monitoring of contracts, quality assurance), These advantages hold for geographic integration as well, A firm that manages its own production chain may be able to maintain lower inventory levels as *pro*tection against supply interruptions, with savings in inventory and transportation costs particularly attractive for an MNC that can effectively coordinate production and shipping in many

parts of the world. When the MNC relies on a telecommunications network to capture these benefits, the result may be intra-firm trade in data-processing services as well as in the firm's end products. Cost savings and quality improvements in day-to-day management accrue through established working relationships, similarities of attitude and outlook, and other characteristics of an established (and exported) corporate culture. Indeed, many American MNCs go to considerable lengths to transplant their cultures overseas, seeking the benefits of improved communications, shared goals and commitments, common jargon. Networks of acquaintances among employees, and mutual trust among people who must deal regularly with one another, can be of real importance to a multinational, even though precise benefits may be hard to pin down in terms of costs or other measures of competitive ability. a

Because companies can protect their technology more effectively, they will normally be more willing to pass on learning-by-doing knowledge to an overseas subsidiary or joint-venture partner than to an unaffiliated concern. Efficient markets seldom exist for proprietary technology, particularly technology based on tacit knowledge and experience (ch. **6).** Nor can a bank or an E&C company sell or lease its know-how as easily as a hotel chain or manufacturing firm, If a company cannot readily market its experience, however, it maybe able to transfer it internally—for instance, by sending employees abroad to train local peoples For services, where no blueprint can describe the product, integration under a common management structure makes it easier to achieve consistency and quality of output. Examples include accounting, the hotel industry, and consulting services. Through franchising arrangements which include training programs for overseas employees, Holiday Inns can exploit its know-how and reputation without the need for equity investments. Advertising campaigns that build brand recognition work to the advantage of all franchisees.

Service firms with widespread name recognition have a head start in expanding into new geographic areas or product lines; Hertz and Hilton rely heavily on reputation to get the business of harried travelers just arrived in Munich or Manila. But for name recognition to be a useful marketing tool, consumers must believe that products differ among firms. When all firms in an industry produce services that are essentially the same, competitors try to differentiate their output, seeking to build brand allegiance, Airlines do this, along with Caribbean islands. On balance, reputation and name recognition (and track record) have been advantages for American service firms operating internationally. When they have followed their U.S.-based customers abroad, their reputations have helped them sell to foreigners as well, American E&C firms like Bechtel benefited from heavy foreign direct investment (FDI) by American firms in the 1950s and 1960s. American Express grew rapidly during the years when U.S. tourists could more readily afford to travel than those from other countries,

U.S. firms continue to be leaders in global integration. American franchisers have more than **27,000** overseas outlets; by comparison, foreign franchising has been almost nonexistent in the United States. G But American companies have never been alone as multinationals; some large European firms (Shell, Unilever) have operated in many parts of the world for years. Since the end of the **1970s,** Japanese firms have been expanding rapidly through direct in-

[4]Consider Vernon's vision of the ultimate multinational: Picture an MNC with an innovating capability that has developed a powerful capacity for global scanning Communication is virtually costless between any two points on the globe; i nformat ion, once received, is digested and interpreted at little or no (est. Ignorance or uncertainty, therefore, is no longer a function of distance; markets, wherever located, have an equal opportunity to stimulate the firm to Innovation and production; and factory sites, wherever located, have an equal chance to be weighed for their costs and risks.
"The Product Cycle Hypothesis in a New International Environment, " *Oxford Bulletin of Economics and Statistics, vol.* 41 (November 1979), p. 261.

[5]See R. K. Shelp, J .C. Stephenson, N .S. Tru itt, and B. Wasow, *Service Industries and Economic Development (New* York: Praeger, 1984). Firms can also exploit proprietary technology through management consulting contracts and turn-key plants.

[6]*Trade in Services: Exports and Foreign Revenues* (Washington, DC: Office of Technology Assessment, September 1986], p. 69.

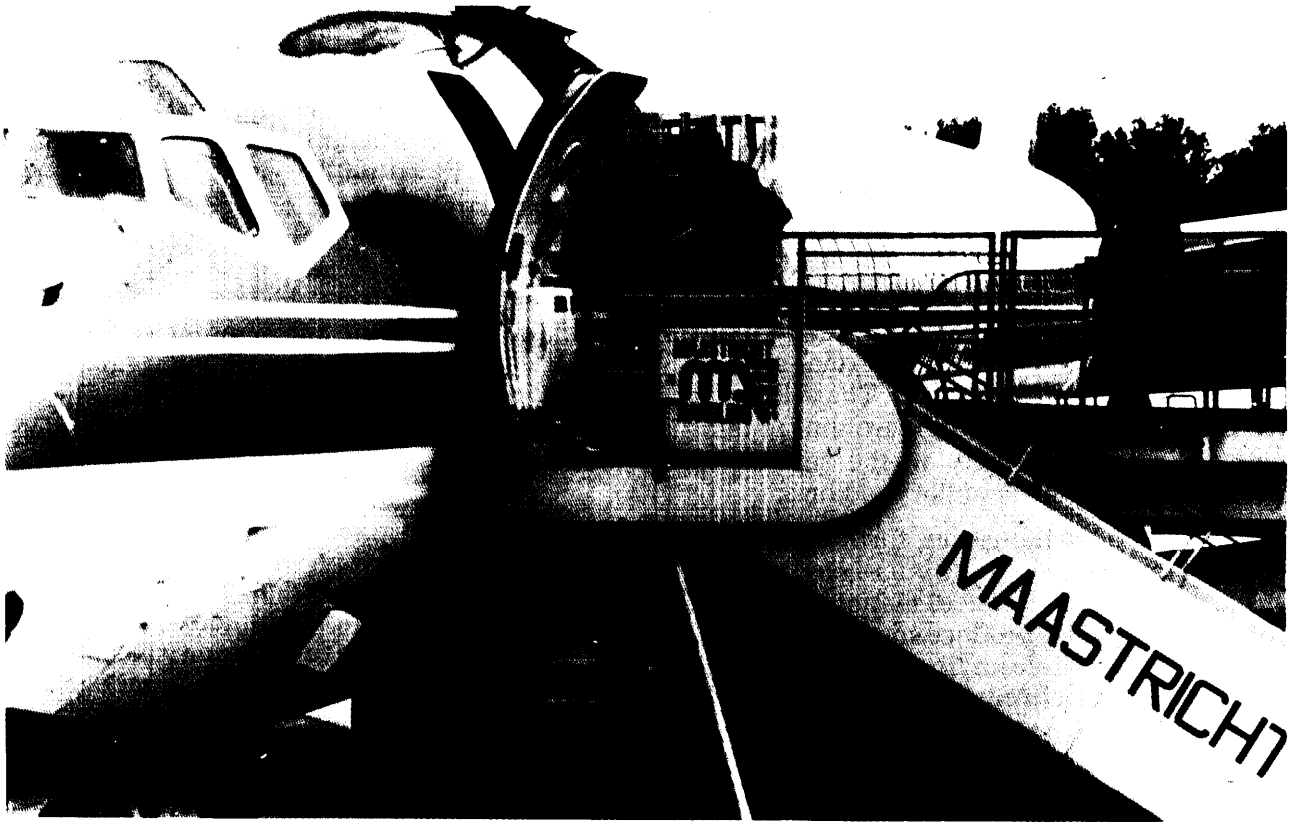


Photo credit: Emery Air Freight

International air freight

vestment, with trade friction and the threat of protection a powerful driving force, In manufacturing industries, Japanese FDI in Europe and North America has doubled since 1983.[7] With Japanese manufacturers becoming true multinationals (rather than simply exporters), Japanese service firms–banks, E&C companies, and others—have been following them overseas. Japan's trading companies are there already.

As firms based in other countries follow the example of American MNCs that began expanding abroad in earlier years, the competitive advantages U.S.-based multinationals have enjoyed through worldwide integration will probably diminish. At present, U. S.-based MNCs have an edge in managing globally integrated organizations, in part through the application of technologies such as the computer and telecommunications networks discussed in chapters 5 and 8. Maintaining this source of advantage will be vital for future U.S. competitiveness, Liberalization of trade and investment in the services will help.

[7] "Japanese Direct Investment," *Japan Economic Survey*, January 1987, p. 16 Despite the rapid rise in manufacturing investments, Japan's total foreign investment position remains heavily concentrated in real estate and financial services.

Services and Goods

Goods and services compete with one another. Market forces and flexible exchange rates imply that an increase in exports of one good or service may lead to a decrease in exports of others. Sometimes, of course, success in exporting services will lead to new exports of merchandise—most obviously, when E&C contracts

result in exports of capital goods, B When an American E&C firm designs, say, a petroleum refinery, it will ordinarily specify American-made equipment. Likewise, selling goods overseas may lead to new service exports; as the installed base of computers grows in other countries, markets for software and for data processing and information services expand. In still other cases, services may be bundled with manufactured goods—software goes with computers, maintenance and training contracts with capital equipment (commercial aircraft, power-generating equipment). These linkages magnify the importance of maintaining international competitiveness in the services or goods that lead to secondary exports.

Manufacturing industries, furthermore, rely heavily on services as inputs–engineering, sales, accounting, finance, management consulting. Companies produce some of these services internally, while buying others on the outside, Even when a firm's output consists wholly of manufactured goods, more of its employees may be performing service functions today than in the past—in support of others in the organization, or customers on the outside (ch. 7). Knowledge-intensive or high-technology manufacturing firms employ substantially higher fractions of white-collar personnel than firms in more traditional industries; production workers account for about two-thirds of U.S. employment in consumer electronics, only a little over a third in the computer industry (where many more people work in R&D or in company-owned marketing and service organizations).

Advertising and other marketing-related services have traditionally been purchased externally, along with banking and some kinds of accounting services. These patterns can change quite rapidly. As noted in the next chapter, large corporations have begun to take care of many of their own financing needs—e. g., by floating bonds and commercial paper themselves. At the same time, companies in manufacturing industries like automobiles and steel have begun purchasing more technical services on the outside. Even those with vast technological resources, like General Motors and Daimler-Benz, have contracted out engineering services—for instance, the design and development of cylinder heads. Contract design services easily shade over into contract manufacturing, particularly when volumes are low; Cosworth Engineering (a British firm) not only designed a specialty cylinder head for one of Daimler-Benz's car lines, but produces them.

Reasons for external purchases include the following:

- External specialists may be able to supply services, ranging from software maintenance to plant security, more cheaply. By selling to many customers, they can develop expertise and achieve scale economies that users cannot match within their own organizations. An outside firm may be able to provide hazardous waste disposal services more efficiently both because it has experience with available technologies and because it knows the government regulations. Airline deregulation has led to shifts in cost structures that may make it cheaper to contract out services such as refueling, baggage handling, and pilot training to specialist firms.
- Companies may turn to service firms for temporary personnel or contract production to meet peaks in demand without expanding their own work force or investing new capital (ch. 7); when the aerospace firm Grumman hired 20 free-lance software engineers on a temporary basis, it avoided both several months of recruiting and subsequent dismissals at the end of the year-long project.[9]

[8]While quantitative data are sparse, the U.S. International Trade Commission's report on the subject includes many examples. See *The Relationship of Exports in Selected U.S. Service Industries to U.S. Merchandise Exports*, USITC Publication 1290 (Washington, DC: United States International Trade Commission, September 1982). For 1982, the 67 U .S. service industry firms responding to the Commission's voluntary survey estimated that their overseas activities generated *$3.4* billion in merchandise exports (p. 4).

[9]The engineers were needed for work on a new a i rplane's computer system- 1,. Reibstein, "More Companies Use Free Lancers, Avoid Cost, Trauma of Layoffs," *Wall Street Journal*, Apr. 18, 1986, *p. 23.*

- Firms may license or purchase technology to save on R&D costs (ch. 6), or hire management consultants to help with new or unusually complex problems (including international operations].

The more competitive the service industries that provide inputs to American manufacturers, the easier it is for those manufacturing companies to compete; the more competitive the manufacturers, the greater the market opportunities for suppliers of services. Both the service provider and the customer may benefit if the former follows its customers overseas. An American accounting or advertising firm that has dealt with an American client previously should be able to provide services more quickly and cheaply than a potential competitor, because its employees are already familiar with the client's business. It follows that restricting exports and investment in the services harms the competitive postures of both sets of firms.

To the extent that the process of buying services on the outside has moved the furthest in this country, American suppliers may also find new opportunities in less-developed markets overseas—e. g., in hospital management or data-processing services. In this, they would be following a common pattern in which firms offering new services or goods develop domestic markets first, then expand abroad. Management consulting, for example, is a relatively new business, one that got its start in the United States; today, most of the large American management consulting firms operate on a worldwide basis, On the other hand, as it becomes easier for local firms to procure business services (such as those listed in table 4) in their home markets, U, S.-based multinationals may lose some of the advantages they once gained from their internal knowledge and expertise.

Manufacturing companies not only supply services bundled with goods, they sell services directly, The major automobile manufacturers operate subsidiaries that provide financing. So does Sears. Some manufacturing firms own commercial banks. Many sell technology overseas. Aerospace and accounting companies have branched out into computer services (ch. 5). Outside purchase of services once produced internally can be viewed as part of a larger trend toward decentralization, smaller corporate units, and dispersed decisionmaking—a trend visible in corporate organizations in many parts of the world. Decentralization is not inconsistent with the movement toward greater global integration stressed above and in other chapters of this report; indeed, the goal of multinational integration is to couple the units of a sprawling, decentralized organization so that they can be left autonomous in some respects but not others. Integration and disintegration go on dynamically as firms seek greater efficiency and competitiveness.

MEASURING SERVICES TRADE[10]

The United States exports services when a firm located here makes a direct sale to a foreign buyer; *domestic* resources must be used to produce services sold to foreigners (including the overseas subsidiaries of American companies). When a tourist from Japan rents a car in Los Angeles, or buys a ticket at Disneyland, the transaction counts as an export of services just as for shipments of computer software. But if an overseas affiliate of an American company sells a service, exports from the United States take place only to the extent that value is added to the service here. Otherwise, the transaction simply involves domestic parties in the foreign country; any impacts on the U.S. economy, positive or negative, would then be indirect. These indirect impacts can be considerable. Data on exports and imports of services, even if accurate, do not fully reflect the significance of service exports that may, for example, lead to merchandise exports.

[10]See *Trade in Services: Exports and Foreign Revenues*, op. cit., for a detailed treatment.

U.S. Government Balance of Payments Figures

The Bureau of Economic Analysis (BEA) in the Department of Commerce estimates U.S. imports and exports of services, and uses these in its calculations of the Nation's balance of payments. Table 9 gives BEA's categorization for invisibles (services plus investment income), representing the maximum level of detail possible with BEA's current database. BEA figures for exports and imports of services are subject to large errors and uncertainties, as discussed below.

Table 9.— Disaggregate Categories in the U.S. Invisibles Accounts

Travel
- overseas travel
- Canada and Mexico

Passenger fares

Transportation
- ocean freight
- air freight
- other freight
- air port services
- ocean port services
- other port services
- other transportation

Fees and royalties"
- royalties and license fees between affiliated firms
- other affiliated fees and royalties
- royalties and license fees with unaffiliated firms
- other unaffiliated fees and royalties

Private miscellaneous receipts and payments
- contractors' fees (net receipts only)
- reinsurance
- communications
- foreign governments/international organizations (receipts only)
- Canadian affiliate trade unions
- temporary resident wages
- temporary resident expenditures
- film rentals
- commissions (receipts only)
- other private miscellaneous services

Investment income
- direct investment[a]
- other private receipts and payments
- U.S. Government receipts and payments

U.S. ***Government transactions***
- defense agencies
- other government agencies

[a]Receipts and payments by Industry or Industry group available

SOURCE Service *Transactions in the U S International Accounts 19771983* (Washington, DC Department of Commerce, Bureau of Economic Analysis no date)

Figure 7 compares U.S. exports of services with investment income and trade in goods over the period 1960-85, according to the official statistics, with figure 8 the corresponding chart for imports. (In these charts, and throughout the chapter, all values are given in current dollars.) Over many years, the current account remained roughly in balance, as indicated by figure 2 (ch. 1), but the picture changed radically in the middle 1970s. Earlier in the 1970s, the balance on trade in goods had dipped into the negative region; after 1975 it plummeted. Imports of goods grew much faster than exports. During the 1970s, rapidly rising oil prices led to much of the imbalance, but the causes had shifted by the end of the decade; a strong dollar and declining U.S. competitiveness in manufactures lie behind the steeply negative trend during the first half of the 1980s.

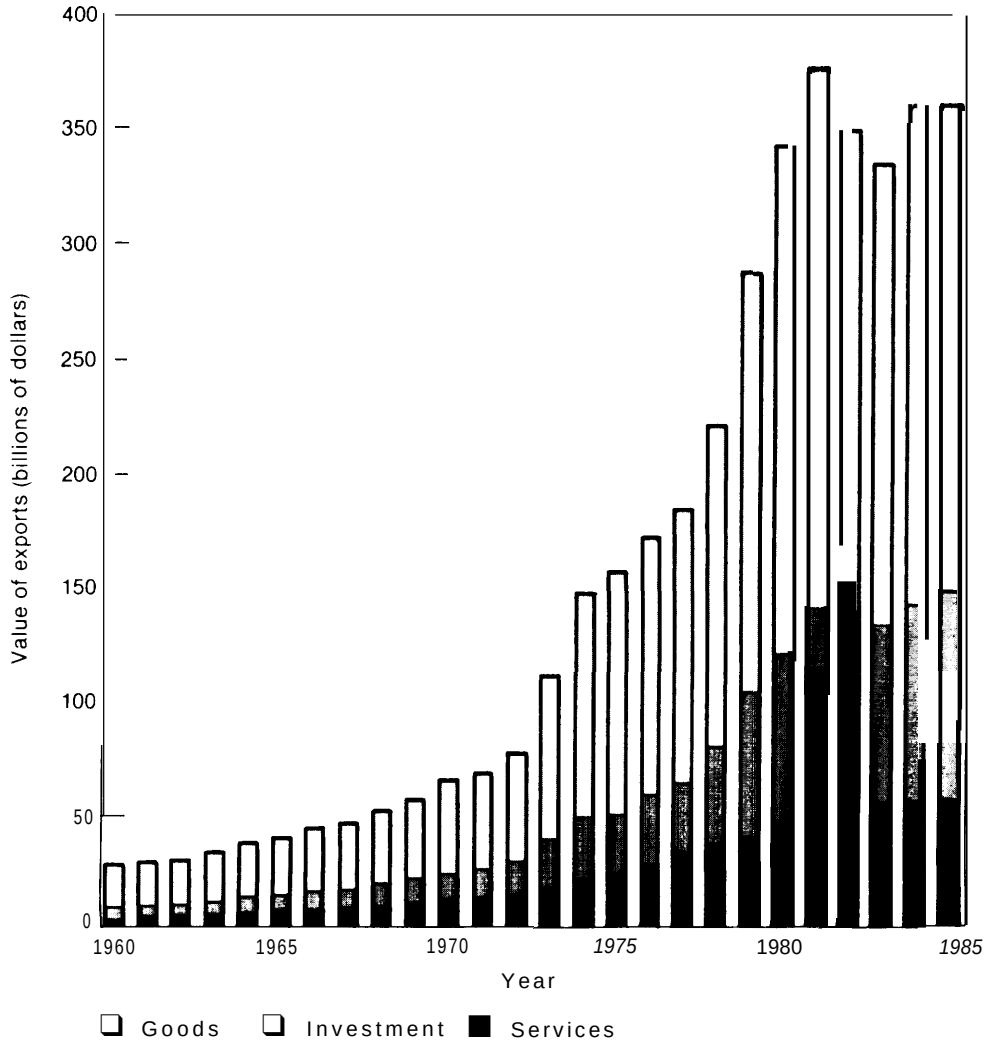
As late as 1983, surpluses on investment income and services approximately counterbalanced the goods deficit. But in 1984, the (official) surplus on services vanished, while the overall U.S. current account deficit reached the unprecedented level of $106 billion (and increased to $141 billion in 1986). Nonetheless, while it has been several years since the surplus on invisibles exceeded the deficit on goods, *invisibles in total continue to be in surplus [figure* 2, ch. 1); *they represent a major source of strength in the overall U.S. trade position.*

Figures 9 and 10 give the *1986* shares of total U.S. exports and imports accounted for by goods, services, and investment income. Invisibles–services plus investment flows-totaled 38 percent of U.S. exports, but only 27 percent on the import side; more accurate data for services would raise both percentages.

Exports

U.S. service exports expanded steadily over the period covered in figure 7, from $5 billion in 1960 to a BEA estimated $49 billion for 1986—an average annual increase of 9 percent. The growth rate for receipts of investment income was even higher, averaging 12 percent per year. Over this same period, exports of

Figure 7.—U.S. Exports

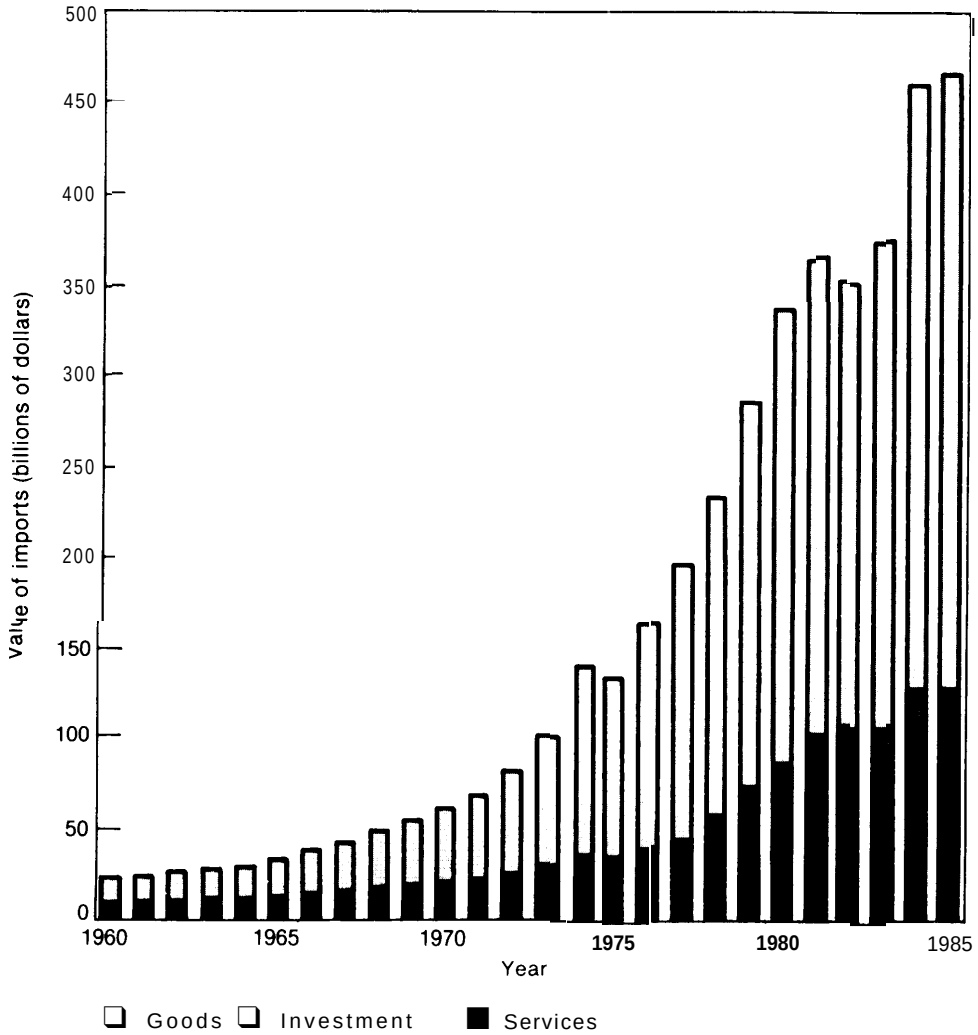


SOURCES 1960.85: R C Krueger 'U S International Transact Ions First Quarter 1986 Survey *of Current Business* June 1986 pp 4243

goods increased at an annual rate of only 7 percent. Even so, it would take many more years of greater relative expansion in the services to change the overall proportions of goods and services in U.S. trade by very much.

Figure 11 breaks down the investment and service components of the invisibles account for the years *1977-85.* BEA estimates *1985* receipts of investment income (exports) at **$90** billion, **67** percent of total exports of invisibles. As the figure indicates, transportation (i. e., freight) has been the single largest export category among the services, followed by travel. (The travel category includes all expenditures by tourists and other foreign travelers except passenger fares.) The totals in both categories are considerably larger than for passenger fares, while both private miscellaneous services and royalties and fees make substantial contributions to U.S. exports. Passenger fares have grown the fastest over the past few years, followed by transportation, private miscellaneous services. travel, and royalties and fees, Note that most of the intermediate services discussed in this report fall into the miscellaneous category, with little detail available—an indication of the need for better data on services trade.

Figure 8.—U.S. Imports



SOURCES 1980-85: R.C. Krueger, "U S International Transactions, First Quarter 1986, " *Survey of Current Business*, June 1986, pp 4243

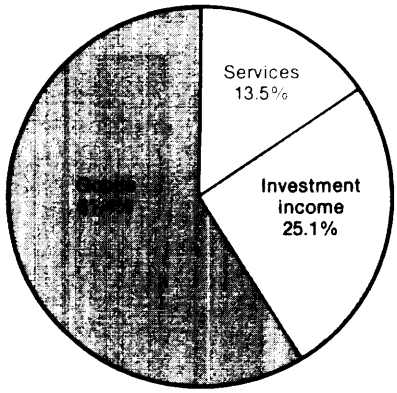
Figure 12 gives the distribution by region of U.S. service exports, 60 percent of which have gone to other advanced industrial nations (a similar percentage of U.S. service imports come from these same countries). In 1985, the European Community (EC) accounted for nearly one-quarter of U.S. service exports, followed by Canada and Japan.

Imports

Investment income is the largest item among U.S. invisibles payments–at $65 billion in 1985, coming to well over half of all private invisibles imports (figure 13)—just as among receipts. As figure 13 also shows, spending by Americans traveling overseas heads the list of service imports, followed by transportation. As for exports, passenger fares have grown the fastest, Other categories remain small by comparison.

Figure 14 shows that U.S. service imports are heavily weighted toward Latin America and Europe—much of this associated with travel and tourism. Deficits in passenger fares and travel grew steadily during the first half of the

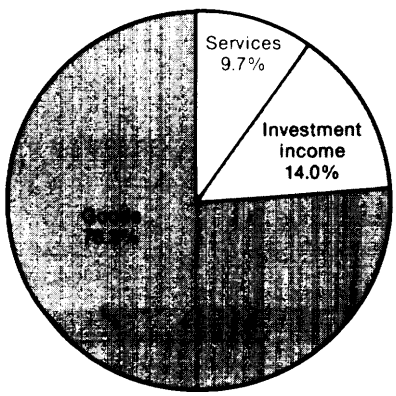
Figure 9.–Composition of U.S. Exports, 1986



Total" $361 billion
(preliminary, excluding military transfers)

SOURCE C L Bach U S International Transact Ions, Fourth Quarter and Year 1986 Survey *of Current Business*, March 1987, p 4 4

Figure 10.—Composition of U.S. Imports, 1986



Total: $484 billion
(preliminary, excluding military transfers)

SOURCE C L Bach, 'U S International Transact Ions, Fourth Quarter and Year 1986,'" Survey *of Current Business*, March 1987, p 44

1980s (figure 15) in part because the strength of the dollar made overseas travel attractive to Americans.

OTA Estimates

OTA has reviewed BEA's services data elsewhere, and presented independent estimates of U.S. services trade .11 These estimates demonstrate that current government procedures for reporting services in the balance of payments lead to large errors and uncertainties. The errors, much greater than for trade in goods, stem in part from difficulties inherent in measuring production and trade in service products. The historical origins of the services categories in the current account—as a residual for items that did not appear elsewhere—also contribute. Some service transactions are simply omitted from BEA's coverage. Other categories commingle services and investment income. Some services are misclassified. Uncertainties in assigning values, extrapolations from past surveys—some in the quite distant past—and incomplete coverage of sample surveys all contribute. Even using the best available data sources, private as well as government, the uncertainties remain large; therefore OTA has presented its estimates as ranges. (The special report cited above discusses means for improving the data on services trade, as does ch. 10 of this report.)

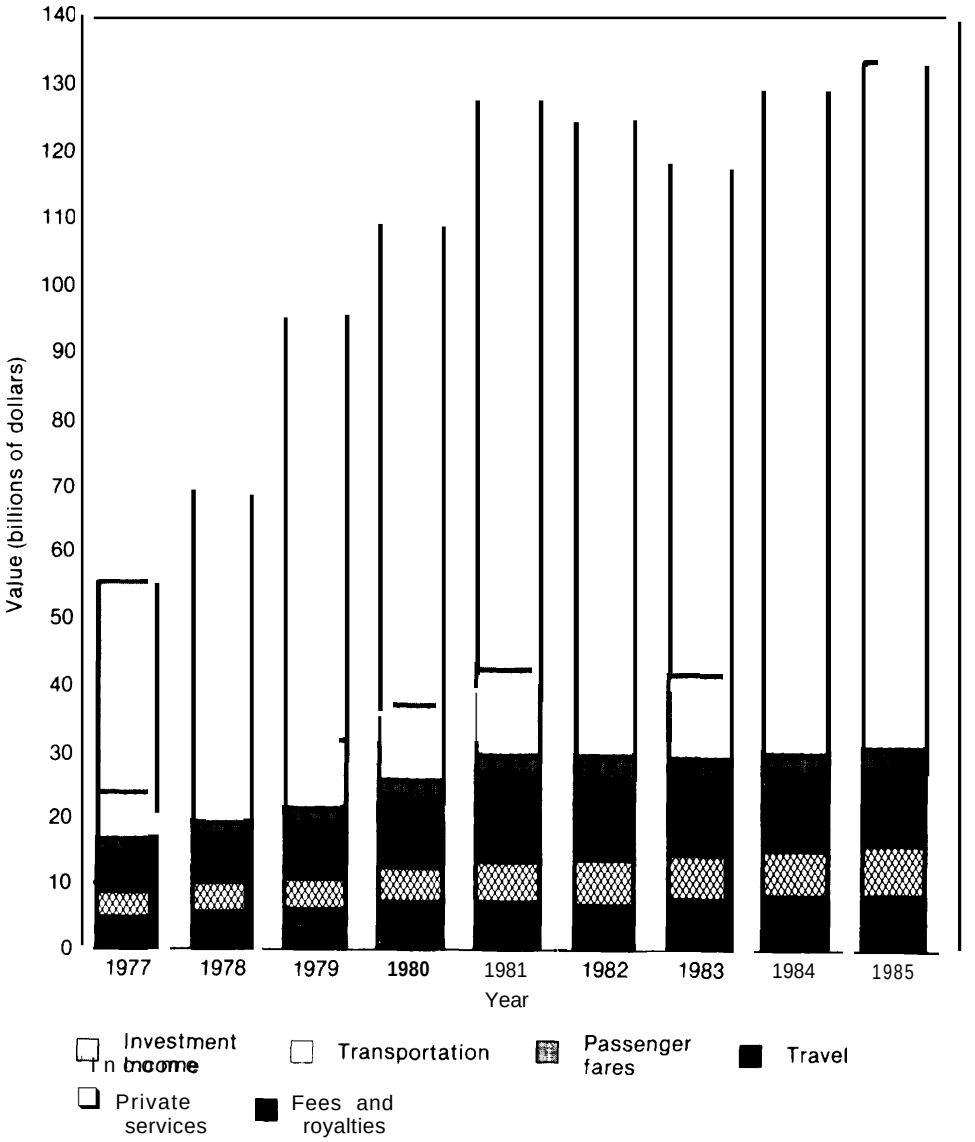
Export and Import Figures

Excluding banking (and services bundled with goods), OTA estimates that the U.S. balance of payments understated exports of services by $25 billion to $47 billion in 1984, with non-banking imports of services underreported by an estimated $16 billion to $33 billion. Because OTA's figures include only those service transactions that could be estimated with some reliability, they do not reflect the full impact of services on the balance of payments. Banking, in particular, has been excluded from the summary figures in this chapter because the data are so poor.

Figure 1 in chapter 1 compared the OTA and BEA results. Even basing comparisons on the lower bound of the range of OTA's estimates, BEA's figures show substantial underreporting —36 percent for exports, 28 percent for imports; actual underreporting by BEA is almost certainly a good deal larger. While OTA's estimates span a wide range, they do make it plain that the Nation's balance of payments surplus in services has been considerably larger than officially reported.

11 For sect or. b].. sec t o r est I m ates o f 22 servic e industries, see *Trade in Services: Exports and Foreign Revenues*, op. c it , ch. 5. C)' I', A'\ estimates in this special report do not provide geographic detail comparable to figures 12 and 14.

Figure 11 .—U.S. Invisibles Receipts



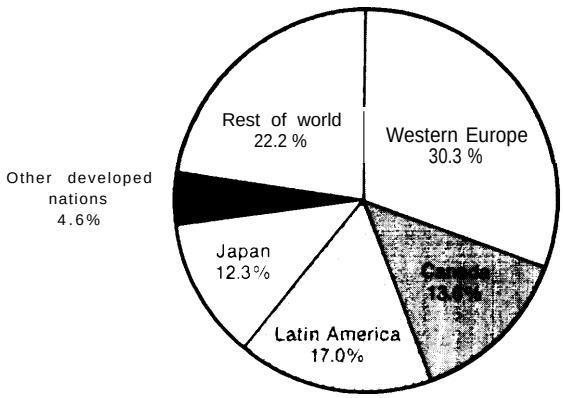
SOURCE R C Krueger, 'U S International Transact Ions, First Quarter 1986, " *Survey of Current Business,* June 1986, pp. 36-70.

Figure 16 presents the OTA high and low estimates for service exports by industry, including a number of sectors for which no corresponding BEA figures exist, While confirming the importance of transportation and travel, the OTA special report shows many other industries to be considerably more significant as exporters than the official figures suggest. Insurance and investment banking/brokerage, for example—both largely omitted from BEA's coverage—emerge as comparable to or larger than technical licensing, and considerably greater export earners than, say, telecommunications,

Sales by Foreign Affiliates

Services provided through overseas subsidiaries or affiliates do not count in the balance of payments unless value has been added by

Figure 12.—U.S. Service Exports by Region, 1985



NOTE Excludes Investment income and government transactions Rest of world also includes the unal located port ion of total service exports and Imports, most of it flag of convenience shipping.

SOURCE R C Krueger 'U S International Transact Ions, First Quarter 1986, ' *Survey of Current Business*, June 1986, pp 36-70

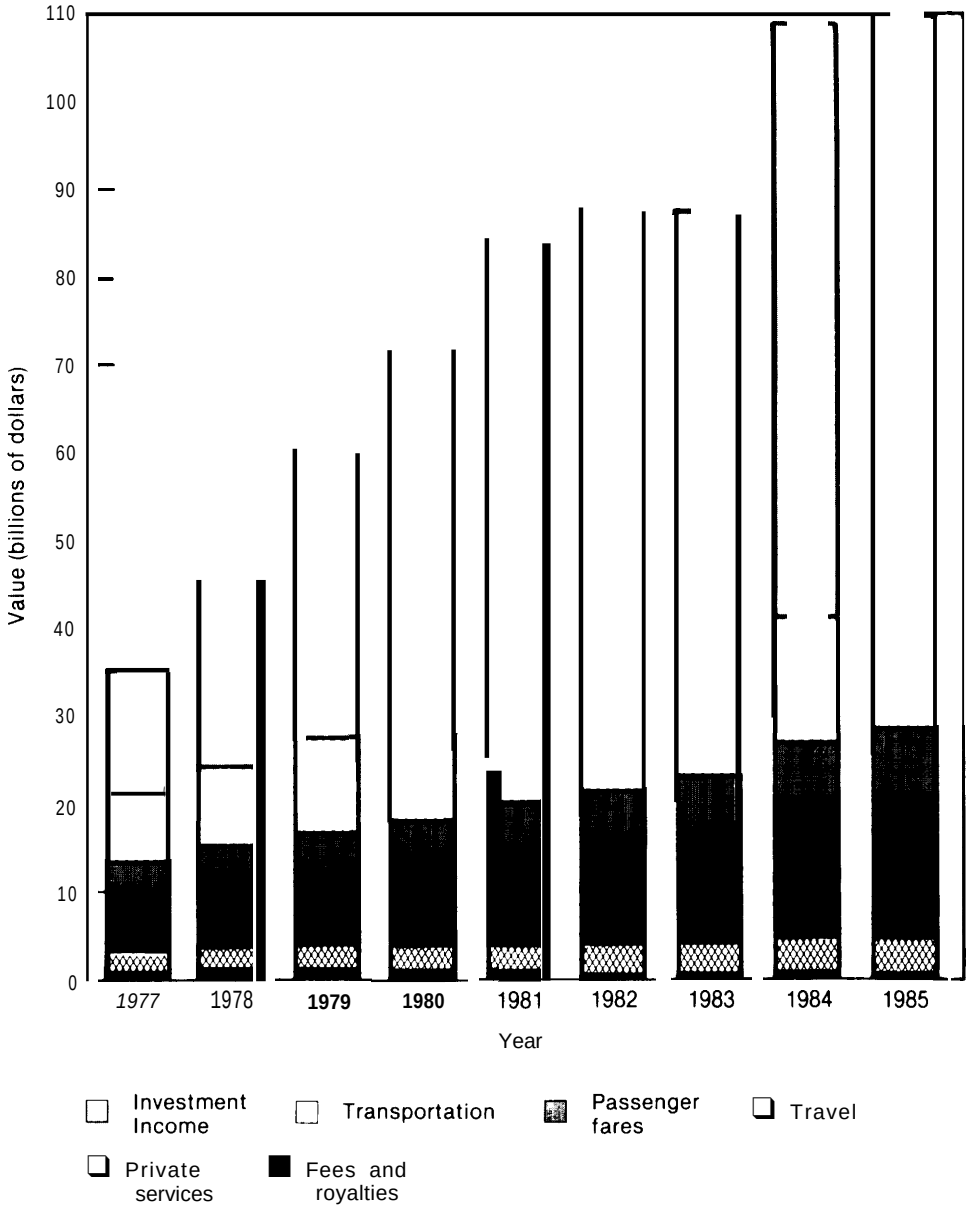
residents of the United States. In services as in manufacturing, foreign affiliates may purchase most of their inputs, including labor, on the local market. Nonetheless, as pointed out above, integration across national boundaries can be a significant source of competitive strength for American firms, Thus, measures of foreign activity broader than direct exports have a place in any assessment of the international competitiveness of U.S. service industries, The measure adopted by OTA in its special report—foreign revenues—consists of direct services trade (exports and imports) *plus* sales through affiliates (less any intra-firm trade that would otherwise be double-counted). The primary drawback of this measure lies in the broad definition of foreign affiliates used by the U.S. Government-it) percent or more ownership interest. In the normal course of events, the control of American firms over minority-owned affiliates will be limited, and these affiliates will not have a great deal to do with U.S. economic interests, Note that affiliate sales will be zero, by definition, for services like travel.

Figure 17 compares OTA estimates for exports and for affiliate sales by industry, based on the mid-points of estimated ranges. A large percentage difference between direct exports and foreign revenues warns that a focus on either of these in isolation could be misleading. In the past, given the spotty data on trade in services, confusion between exports and foreign revenues has been common, far more so than in goods-producing industries. Sometimes this confusion has extended to policy discussions. Foreign revenues in retailing, for example, consist almost entirely of sales by U.S. affiliates located abroad. Trade in retailing services is very small; when U. S.-owned retailers abroad sell goods originating in the United States, these are counted as merchandise exports. Foreign revenues in retailing—more than $25 billion in 1983 (figure 17)–have little to do with U.S. competitiveness.

Foreign service revenues of U.S. firms in 1983, the latest year for which data are available, totaled $152 billion to $169 billion, compared with direct exports of $61 billion to $75 billion. Total foreign revenues in commercial banking, for which no direct export figures are available, came to about $9 billion. (OTA estimates place service revenues of foreign firms operating in the United States at $113 billion to $131 billion in 1983, with imports accounting for $44 billion to $56 billion of this.) As figure 17 shows, much U.S. international activity in the services, whether measured by exports or the more inclusive foreign revenue figures, comes in traditional or tertiary services (table 6). Notable examples include transportation and travel. Knowledge-based services-e.g., accounting, legal services, and information services-remain small by comparison.

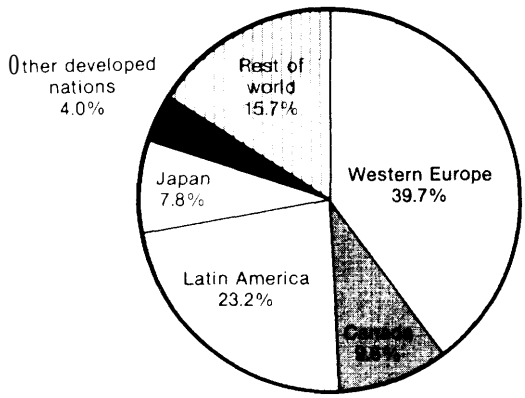
Any and all measures of services trade continue to be subject to substantial errors and uncertainties—as figure 1 showed. Current BEA practice leads to serious underestimates of the value of trade in services. OTA has estimated the impact of services on the U.S. balance of payments only for the years 1982-84; more than anything else, the results should be taken as evidence of the deficiencies of the existing database (and as an indication of the need to improve it). The *data on services trade are poorest for precisely those industries-the knowledge-based services-where the United States should have the greatest dynamic comparative advan -*

Figure 13.— U.S. Invisibles Payments



SOURCE R C Krueger, "U S. International Transact Ions, First Quarter 1986. "*Survey of Current Business*, June 1986, pp 36-70

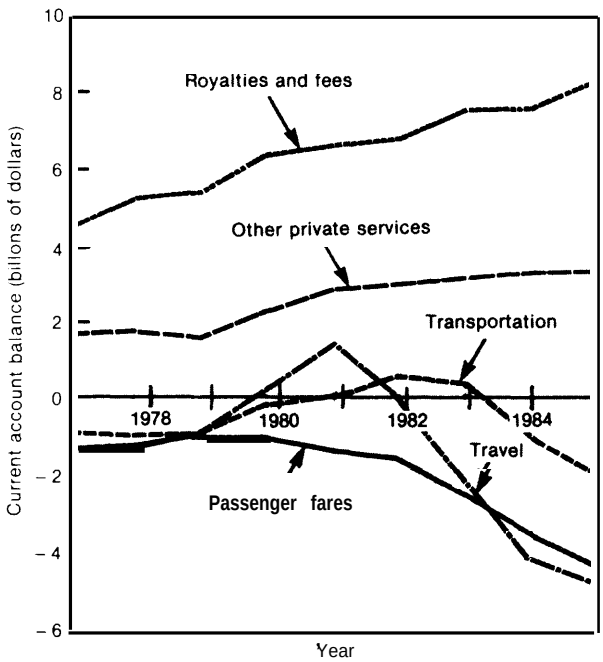
Figure 14.— U.S. Service Imports by Region, 1985



NOTE Excludes Investment income and government transactions Rest of world also includes the unallocated portion of total service exports and imports, most of it flag of convenience shipping

SOURCE R C Krueger, U S International Transactions First Quarter 1986, " Survey of Current Business, June 1986 pp 36-70

Figure 15.— U.S. Service Trade Balance



SOURCE R C. Krueger, "U S International Transactions, First Quarter 1986, ' Survey of *Current Business*, June 1986, pp. 36-70

tage, and where the greatest strategic benefits for other American industries lie,

World Trade in Services

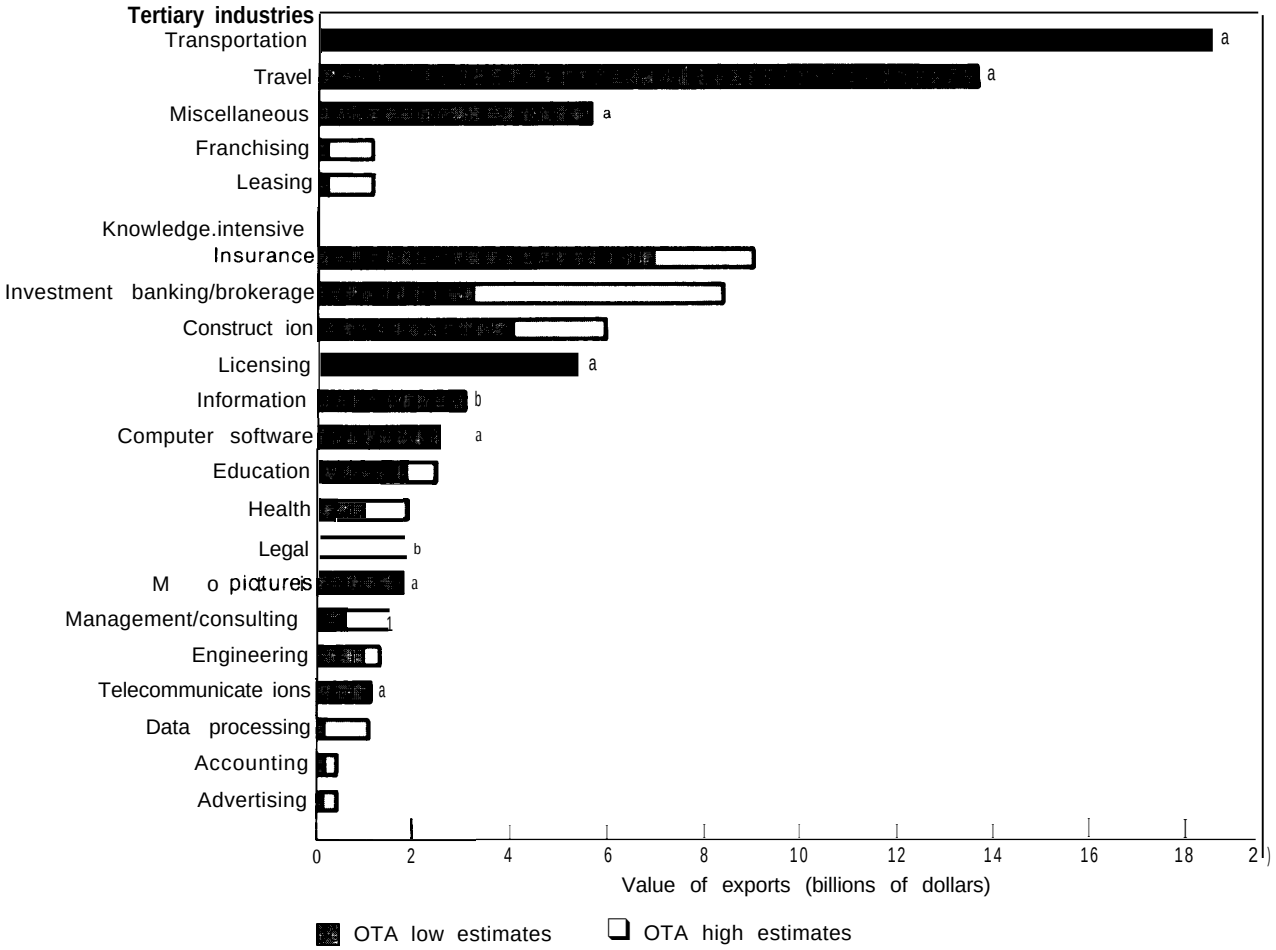
Total world services trade—the sum of all countries' exports or imports—grew at an annual rate averaging **6** percent during the period *1978-84,* although, at $360 billion in 1984, still below the 1981 peak (figure 18).[12] Investment income has grown even faster, along with trade in goods—the latter at a bit over 10 percent annually during the 1978-84 period. World exports of services (excluding investment income) have remained a little less than one-fifth of world merchandise exports—a proportion unlikely to change much over the rest of the century, The "other services" category in figure 19, accounting for about 40 percent of world service exports, includes such diverse items as construction, insurance, telecommunications, and technical licensing,

Together, the United States and the other members of the Organization for Economic Cooperation and Development (OECD) account for nearly three-quarters of world service exports (figure 18). Since 1978, the share of total service exports originating in the advanced industrial nations has fallen slightly—from 81 percent to 76 percent in 1984—but the U.S. share has gone up from 10 to 11 ½ percent. Asian nations other than Japan (an OECD member), and

[12] When expressed in U.S. dollars, world exports of goods have also dropped since 1981, but these declines are, in essence, artifacts caused by the strength of the dollar. When expressed, say, in SDRS (Special Drawing Rights], totals for both services and goods have continued to rise, although not at the rates of the late 1970s.

Worldwide trade data come from the International Monetary Fund, which relies on figures supplied by individual countries. The quality of the data, and the basis for the services trade figures reported, differ considerably among countries; as for the United States, most of the services data are probably quite poor. (Also see the footnote to table 10, p. 69)

Figure 16.–OTA Estimates of U.S. Service Exports by Industry, 1984



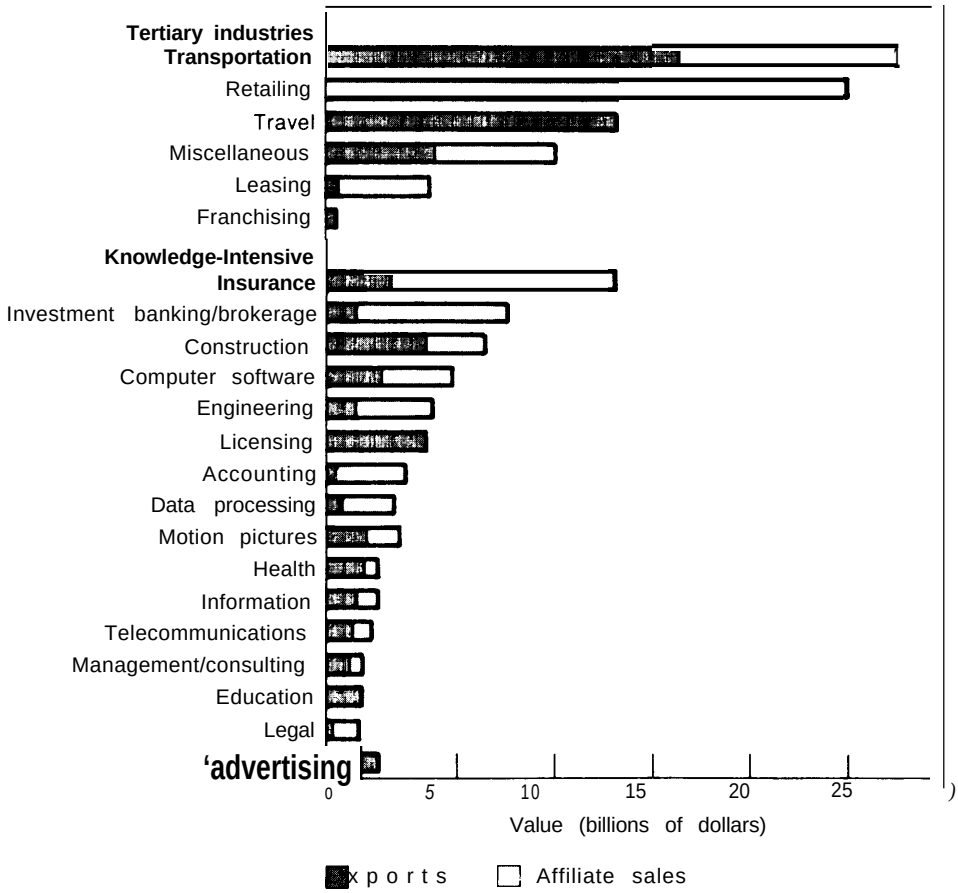
[a]High and low estimate Identical
[b]Low estimate equals zero

SOURCE *Trade in Services Exports and Foreign* Revenues (Washington. DC Off Ice of Technology Assessment September 1986), p 38

to a lesser extent the Middle East, also increased their shares of service exports over the 1977-84 period.

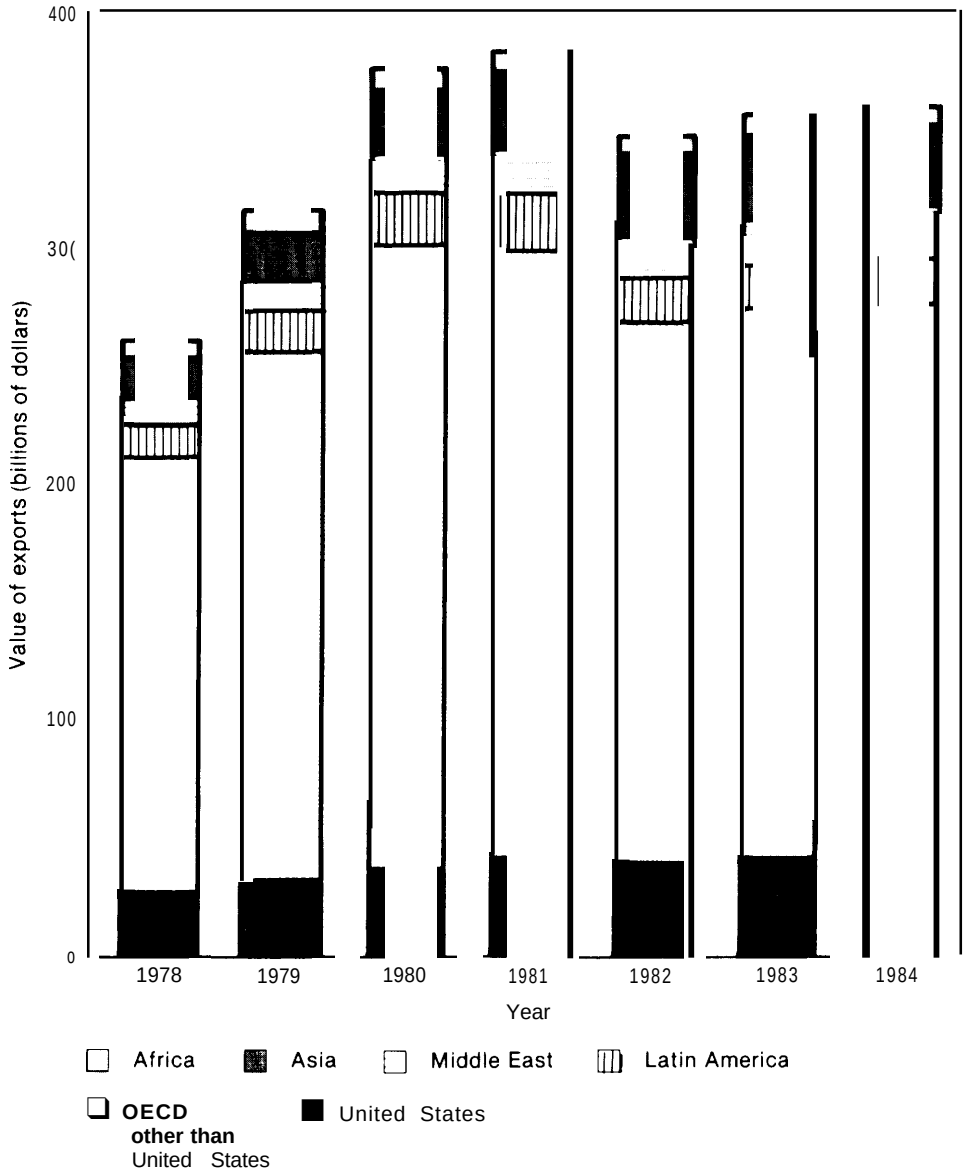
Much the same picture emerges from examination of the performance of individual countries. Although rankings vary from year to year, the United States has remained at or near the top—leading al] service exporters in 1984 (table 10), the latest year for which data are available. (Note that the United States heads the list even though the rankings depend on the official BEA figures; while more accurate values for U.S. exports and imports would be much larger, the figures for other nations are probably understated too.) OECD nations fill the top 10 export positions in table 10, and 15 of the top 20. Among importers, the 6 largest—and 16 of the top 20—come from the roster of OECD members, Trade in services, then, occurs mainly among the developed economies, but just as for trade in goods, newly industrializing countries —Singapore, South Korea—are becoming more prominent. India and Brazil, however, the most vocal opponents of liberalizing services trade, appear far down on both lists.

Figure 17.— Foreign Revenues of U.S. Firms by Service Industry, 1983 (OTA mid-range estimates)



SOURCE *Trade in Services Exports and Foreign Revenues* (Washington DC Off Ice of Technology Assessment September 1986) p 41

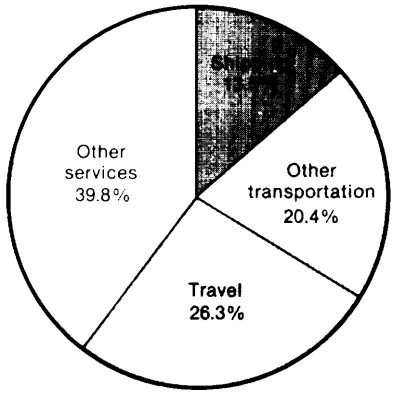
Figure 18.—World Service Exports



NOTE Excludes Investment income

SOURCE *Yearbook of Balance of Payments Statistics*, Part 2 (Washington, DC. International Monetary Fund, 1985), pp *42-59*

Figure 19.— World Service Exports by Type, 1984



NOTE Excludes Investment income

SOURCE *Yearbook of Balance of Payments Statistics,* Part 2 (Washington, DC International Monetary Fund, 1986), pp 42-59

Table 10.— Leading Exporters and Importers of Services, 1984

	Value of exports (billions of dollars)		Value of imports (billions of dollars)
United States	$41,4	United States	$41.5
France	35.5	Federal Republic of Germany	40,1
Federal Republic of Germany	27,0	Japan	35,0
United Kingdom	26.2	France	27,1
Italy	21,3	United Kingdom	20,7
Japan	20.9	Italy	15.2
Netherlands	14.4	Saudi Arabia	14.4
Spain	12,6	Netherlands	13,9
Belgium/Luxembourg	11.3	Canada	11.4
10. Canada	8.0	IO. Belgium/Luxembourg	10.2
Singapore	7,7	Norway	7.0
Austria	7.7	Australia	6.7
Switzerland	7,6	Sweden	6.6
Norway	7.1	Switzerland	6.5
Sweden	6.4	Taiwan	5,2
Egypt	6.4	Mexico	5.0
Mexico	6.2	Spain	4.8
South Korea	6.1	Austria	4,7
Denmark	5.1	Denmark	4.4
20. Saudi Arabia	4.3	20. Malaysia	4,3
Australia	3.7	India	4,1
Yugoslavia	3.3	South Africa	4,0
India	3.1	South Korea	4,0
Israel	3.0	Singapore	3.9
Greece	2.8	Israel	3.4
Taiwan	2.7	Brazil	3.3
South Africa	2.5	Kuwait	3.1
Finland	2.4	Yugoslavia	2.8
30. Malaysia	2.0	30. Venezuela	2,6
Philippines	2.0	Finland	2.6
Thailand	1.9	Egypt	2,1
Brazil	1.8	Thailand	1.9
Panama	1.1	Greece	1.2
Venezuela	0.8	Philippines	1.1
Subtotal	$316.3 (88%)	Subtotal	$324.8 (84%)
Rest of world	$ 43.3 (12%)	Rest of world	$ 62.9 (16%)
Total	$359.6 (100%)	Total	$387.7 (100%)

[a]Statistical discrepencies in aggregated world trade statistics such as here between total imports and exports of services tend to be relatively large, reflecting errors and omissions m the data reported by individual countries

SOURCE *World Invisible* Trade (London British Invisible Exports Council July 1986), pp 14-15 Basedon data compiled by the International Monetary Fund

WHAT CAN BE GAINED THROUGH LIBERALIZATION?

The U.S. Position Relative to Other Nations

What do the trade data summarized above imply for probable negotiating positions and possible outcomes during the Uruguay Round? While the OECD nations account for most of the world's exports and imports of services, not all these countries show surpluses. Japan, for one, had a $14 billion deficit in 1984. West Germany's deficit was almost as large. Both nations have been running large surpluses on trade in goods, suggesting a comparative advantage over services.

How about the United States? Does this country currently have an underlying comparative advantage in services? The question cannot be answered with any precision, especially at present. Effects on trade of the Federal deficit, rapid shifts in the strength of the dollar, and continuing inflows of foreign capital have created a situation without real precedent. But the data as a whole–and the OTA estimates much more than BEA's figures—suggest that American firms remain generally competitive in services. OTA's estimates show continuing surpluses in most of 22 service industries independently examined.[13] That surpluses continue to be recorded during a period of massive deficits in goods trade points, at the least, to considerable underlying strength in services, and suggests an ongoing comparative advantage in most sectors.

Does this mean that further opening of international markets for services will bring big dividends for U.S. service industries, and help the Nation's trade balance? Or does it mean that American industries are doing so well already that reductions in barriers to trade and investment would make little difference? The paragraphs that follow examine such questions on several levels.

[13] At the same time, the data on trade in services are so poor, the uncertainties so large, that it cannot even be demonstrated conclusively that the United States has a net surplus on services trade. See *Trade in Services: Exports and Foreign Revenues*, op. cit., p. 38.

Who Will Benefit?

Along with countries like Japan and West Germany, many developing nations have deficits that are uncomfortably large compared with their overall volume of services trade and net balance of payments position. Brazil's 1984 deficit on services trade came to $1.5 billion (table 10), while the country had a surplus of something over $13 billion on trade in goods, together with net payments on direct and indirect investment of $9 billion, reflecting past borrowing.[14] Should it be a surprise that Brazil has been a leading opponent of GATT negotiations on services? From Brazil's perspective, liberalization could be quite damaging if it led to a greater deficit in services; after all, the country needs to maintain a surplus on goods and services in total in order to meet its debt repayment obligations. Indeed, it is not obvious that opening Brazil's services markets would be in U.S. interests. Brazil owes much of its debt to American financial institutions; a greater Brazilian deficit in services trade, leading to a worsening overall trade position, could make the repayment of these loans even more problematical.

Furthermore, the aggregate figures in table 10 conceal differences that often reduce still further the enthusiasm of developing countries for negotiations. Latin America does well in net tourism receipts, where liberalization will have little effect—tourism being relatively free of restrictions. Conversely, the United States runs surpluses in those sectors slated to be subjects of discussion during the Uruguay Round: financial services of all kinds; information-related products; licensing and other business and professional services.

But OTA's estimates also indicate that intermediate and business services account for a relatively small fraction of trade. No geographic breakdowns exist for trade in knowledge-based

[14] *World Invisible Trade*, (London: British Invisible Exports Council, 1986), pp. 14-16; *Balance of Payments Statistics.' Yearbook, Part I* (Washington, DC: International Monetary Fund, 1985), pp. 84-85.

services as a class. Nonetheless, it seems likely that much of this trade takes place among OECD countries–and probably among affiliates. (The data show this to be the case for the United States, and it is probably true for other OECD nations as well.) Where detailed information is available—as for technical licensing (see ch. 6)–the pattern is clear: intra-firm transactions within the OECD nations predominate. Two quite different conclusions follow:

1, Foreign investment may benefit recipients, particularly developing countries, through transfers of know-how and technology without doing serious damage to their balance of payments positions because direct trade in these services will remain small.
2. Liberalization will not make for much of a difference, directly, in the overall U.S. trade balance. Unless reductions in barriers lead to unexpectedly rapid expansion of total world services trade, U.S. firms will continue to exploit their competitive strength in the knowledge-based services primarily through foreign investment and transactions with affiliates. Exports to affiliates will continue to be concentrated within the OECD, These exports will probably grow at about the same rate as in the past, because—granting exceptions such as insurance—OECD nations have seldom imposed severe restrictions on trade in knowledge-based services.

A further implication follows: although an increase of a few billion dollars in the U.S. surplus on services would certainly be helpful, the argument that liberalization of trade and investment in the services will work in the interests of the United States rests primarily on the indirect and strategic benefits, rather than on short- or medium-term improvement in the U.S. balance of payments position.

Over the past few years, as the stage has been set for the Uruguay Round, the positions taken by both the United States and the developing countries generally mirror the structure of comparative advantage as suggested by the data summarized above. The available statistics imply that developing countries have not been major factors in international services trade—and will not become so in the near to medium-term future, Although some depend heavily on industries like travel and tourism, to the extent that typical developing nations trade in services at all, they tend to have deficits. Few seem to have thought through the implications of opening their markets to foreign service firms. They commonly take the view that the risks of wider deficits outweigh possible benefits from greater imports of services embodying advanced technology—or from foreign investment that would bring them knowledge and expertise (see box E–ch. 9 explores these positions, and the motives underlying them, in more detail). The *developing world seems to have overemphasized narrow balance of payments considerations, while minimizing the possible gains from increased trade in services*. But the available data also suggest that *the United States may have exaggerated the benefits of liberalization,* at least the direct gains.

Sectoral Questions

At the sectoral level, the concerns become more specific: Are there service industries where international expansion by U.S.-based firms has been slowed, or competitiveness dampened, because of foreign government trade barriers? Are these conditions subject to change through initiatives of the U.S. Government? Most important, are there *particular* service industries where liberalization could bring especially large gains for the United States, gains that might escape the generalizations above? Indeed, there are two—computer software and telecommunications—as outlined below and discussed in more detail in later chapters.

The computer industry can serve as a reference point, American firms have led the world in computer hardware and software. More specifically, they have led the world in *applications* of computer systems, In sectors ranging from agriculture to banking, computer applications have enhanced U.S. competitiveness. Software —treated as a service in this report—embodies these applications, helping American firms cut

Box E.-Benefits From Liberalization

There is more to the argument for trade liberalization than gains from specialization (as predicted by theories of comparative advantage). When a country opens its markets to imports and foreign investment, domestic companies forced to confront new competition may take steps to improve their own efficiency-steps that can constitute a two-edge sword. Under the spur of Japanese competition, American automobile manufacturers redesigned their product lines and improved their manufacturing methods. They also cut their overhead by firing white-collar workers as well as production employees, and moved some production to foreign countries. In many U.S. manufacturing industries, rising import competition over a period of years has dampened wage increases in unionized industries and led to givebacks and two-tier wage systems—to some observers, evidence of earlier distortions in the form of union-induced wage premiums. As many such examples show, when a company reorganizes to meet new competition, its employees often bear heavy adjustment costs. But reorganization may be essential for survival.

Sheltered industries often lag in introducing new products. One of the primary arguments for deregulation in telecommunications, nationally and internationally, has been that regulation slows the adoption of new technologies. As the United States has deregulated financial services, Britain has been forced to follow suit [ch. 3]. With easier entry for foreign banks, some British institutions may be unable to meet the new competition. At the same time, Britain's insurance companies have been pressing for admittance to the West German market, in part because they believe that government protection in Germany has bred inefficiencies there that they can exploit.*

Developing economies where service industries have been sheltered from outside competition should get significant benefits through greater efficiency.** While some governments have learned to steer economic growth and development with at least modest effectiveness, other countries—trying to accomplish the same thing-do more harm than good. Trade protection has been one of the standard tools in such efforts, but even among more traditional services, protection can be directly counterproductive-a developing country that restricts landing rights to support a national airline stands to hurt its tourism industry. And, while reducing barriers to services trade will help some countries more than others, the benefits in terms of world economic growth and efficiency improvements should be greater than for lowering barriers to trade in goods. Why? Most fundamentally, because international transactions in services are more likely to involve the transfer of technological knowledge, in all its dimensions. In the services, on-tariff barriers (NTBs) can easily and invisibly slow the diffusion of knowledge and learning that lead to increases in productivity and efficiency through organizational learning and a better-trained work force. MNCs contribute to global efficiency in large part through such dynamic effects: aiding in the spread of know-how, both product-specific (judging risks for loans to developing countries) and technology-specific (computerized systems for accounts receivable). Because services-related technologies must be brought to the location of production, they add directly to the storehouse of knowledge in countries lacking home-grown technical expertise. Moreover, exchanges of patents, copyrights, and other forms of proprietary technology often entail direct transfers of tacit know-how by people with experience that cannot be put down in words (how to debug a computer program, when a bank should risk a loan that does not meet its formal criteria). While the gains cannot be measured directly, trade and investment in services clearly helps economies that need such knowledge, including managerial skills, in order to develop and expand. As a result, the total gain to the world economy from international exchanges of services, per dollar of transaction, probably exceeds that from international exchanges of goods.

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*J. Carr and C. Taylor, "Brussels Puts Four Member States in Dock: An EEC Trade in Services Case is Corning Up for Close Scrutiny Today," *Financial Times*, Nov. 6, 1985, p. 8; W. Dawkins, "Court Judgement Opens Door to Lucrative European Market," *Financial Times*, Dec. 5, 1986, p, 2.

**A.F. Ewing, "Why Freer Trade in Services Is In the Interest of Developing Countries," *Journal of World Trade Law*, vol. 18 (March/April 1985), p, 147.

Beyond specialization and competition, is it possible that lower barriers to services trade could help in a third way—by easing adjustments to dislocations or disturbances originating elsewhere in the economy? Economic growth and new competition brings change, often wrenching. Companies merge, go out of business, enter different markets; new firms create new jobs. Industrial sectors prosper or decline, cities and regions follow. People who lose jobs in the steel industry may (or may not) find work in the services. The processes–normal and unavoidable-bring pain to some, prosperity to others. If the services have characteristics that make them unusually good buffers, that would add extra force to the argument for liberalization. But are the services in any sense special in their ability to cushion adjustment? Appendix 2A examines this question, finding that the answer is no. Thus liberalization of services trade has no added claim on this basis.

costs, raise productivity, and pursue new business strategies. In a very real sense, software provides the brains of the system, International *competitiveness in the computer software industry is vital for U.S. economic interests. So, by similar reasoning, is competitiveness in telecommunications* (in part because the worldwide telecommunications infrastructure is rapidly becoming a network of computers),

Of course, when U. S.-based companies sell software abroad, they help the foreign firms that use this software compete more effectively. But this is also true when American manufacturing companies transfer technology through licensing agreements, or when E&C firms undertake projects overseas. In fact, system-wide applications of digital data processing and communications technologies should greatly enhance *global* economic efficiency,

For different reasons, *the financial services industry will also remain critical for U.S. interests* (and those of other countries). Companies look to financial markets for the capital they need to grow, Governments rely on the financial sector to implement macroeconomic policy. All countries have an interest in efficient capital markets. All countries have an interest in world financial stability. Liberalization by itself—particularly in the sense of deregulation —would not necessarily enhance stability, but the analysis in the next chapter stresses the need for negotiations aimed at harmonizing regulatory and supervisory practices internationally,

Trade Barriers in the Services

Given a fluid competitive environment for U.S. firms, affected by forces as different as the strength or weakness of the dollar today and the fruits of R&D investments made 20 years ago (for instance, research in artificial intelligence, sponsored for many years by the U.S. Department of Defense and just now finding its way into the civilian economy), a primary question for trade negotiators becomes: In terms of overall impacts and significance—and in terms of effects on the U.S. economy—how important are barriers to trade and investment in services compared to goods? In other words, given an international trade regime that seems to be slowly deteriorating even in its ability to maintain reasonably open trade in goods, does it make sense to place a high priority on services in the Uruguay Round, particularly if this may mean slower progress elsewhere?

The starting point is to acknowledge that, without much question, freer trade in services will work to the benefit of the United States; the gains may not be that large or that immediate, but foreign government restrictions handicap any American industry with an underlying comparative advantage, At the same time, for reasons discussed in box E, countries that restrict trade in knowledge-based services risk depriving their own economies, But it will not be easy to reach meaningful agreements on services trade.

Today, as discussed in chapter 9, barriers to international trade and investment are typically

Photo credit: Port Authority of New York and New Jersey

Container ships passing under the Verrazano Narrows bridge.

higher for services than for goods. Protection remains the norm in agriculture, but seven previous rounds of multilateral trade negotiations have left tariffs on manufactures at low levels. Of course, governments bent on protecting goods-producing industries have many tools for doing so, and NTBs such as quotas have become widespread as tariffs have fallen. Non-tariff barriers—whether explicit (quotas on imports of Japanese machine tools) or implicit (the difficulties faced by foreign firms seeking to buy a Japanese company have been called NTBs)—create new problems for trade negotiators and for international bodies such as GATT.

With few exceptions, all barriers to trade in services are non-tariff in nature. But NTBs in the services differ fundamentally from those affecting goods. While governments can close their borders to imports of goods, rely on uncooperative customs inspectors to harass importers, or otherwise restrict entry, services—except for those embodied in a tangible object (motion picture film, magnetic disks or tape)–do not pass through a port of entry. Given the need for a foreign presence to supply services, governments limit the operations of firms from abroad through controls on inward investment or discriminatory regulations. The regulations need have no obvious protective intent: typi-

cally, governments supervise industries like banking and insurance to protect consumers and ensure stability. Some countries have sought to control international telecommunications traffic in the name of safeguarding personal privacy—steps that could, at the same time, raise prices or hinder the operations of foreign-based MNCs. In many countries, service industries function as government monopolies, with legal restrictions on entry by any firm, foreign or domestic. Public ownership exists in manufacturing as well, but a list of service industries where it has been common—banking, telecommunications, airlines, ocean shipping, railroads, health care facilities, education, radio and television—suggests the dimensions of the problem. (Still other industries are organized as private near-monopolies, like insurance in Japan and South Korea.)

Barriers in the services, then, range from outright prohibitions on trade (quotas set at zero) or investment, to subtle discrimination against foreign-owned firms. Whenever regulations with a nominally domestic thrust have been tailored to make life difficult for foreign-owned firms, they function as NTBs.

What, then, is to be considered "fair" and what "unfair" in the services? The problems posed by NTBs affecting trade in goods have proven difficult enough, Given the intangible nature of service products, NTBs, in a very real sense, will remain less visible than for trade in goods. And, with patently obvious NTBs rare, progress in negotiations implies efforts to reduce barriers that have some measure of justification in terms of domestic policies. This will be difficult, Such regulations–e.g., in banking—typically have a wide range of indirect impacts, few of them clear-cut. Tariffs raise prices directly; negotiators can agree to cut tariffs on wheat in exchange for reductions on computers. Many NTBs have uncertain quantitative effects; discussion can bog down in debates over the respective magnitudes of barriers. For just these reasons, the Tokyo Round had only modest success in dealing with NTBs for goods. Adding another layer of complexity, services such as shipping, air travel, and communications have long been regulated internationally on a more or less ad hoc basis. Agreements have grown up with little consistency from sector to sector, and little relationship to codes of conduct covering trade in goods,

Chapters 9 and 10 discuss the kinds of progress that may be possible. Here, the primary point is this: given the predictable difficulties in moving quickly towards liberalization, there seems little reason to give the services unusually high priority in the U.S. negotiating strategy. Liberalization in the services deserves to be a long-term goal, but other objectives are at least as important. For instance, if the United States is serious about strengthening GATT as an institution, logical priorities begin with efforts to create effective enforcement mechanisms and to close the loopholes that have permitted NTBs for goods to proliferate. In such a context, an umbrella agreement establishing a general set of rules governing services trade (see chs. 9 and 10) fits quite naturally, particularly if it could be coupled with extension of GATT coverage to foreign investment.

CONCLUDING REMARKS

The discussion above points to a number of themes that recur in the remainder of this report:

- Direct exports of U.S.-produced services will remain relatively small compared to exports (and imports) of goods, if only because of the need for an overseas presence to market so many services, Given the importance of foreign investment, justification for placing a high priority on *international* negotiations concerning services trade must depend to considerable extent on indirect gains to the U.S. economy.
- s Major sources of indirect benefits from more open trade and investment in the

services include an infrastructure and environment internationally that: 1) can aid American exporters of goods as well as services, and 2) provide strategic support for efforts by U. S.-based multinationals to build globally integrated organizations.

- An open international economy—with relatively free flows of technology and know-how, vast pools of low-cost labor, more and more-capable competitors—will mean greater uncertainty and less stability for American firms. Given such an environment, U.S.-based firms will find themselves moving towards more flexible organizational structures, in part simply to adapt and survive—but in part also to capitalize on evolving applications of computer and communications systems.
- Flexibility and adaptiveness carry many shades of meaning, among them: heavier reliance on technology (broadly defined); decentralization and delegated decision-making; greater dependence on communication channels, both horizontal and vertical; continuing learning; rapid adjustment to competitive pressures (which may mean utilization of part-time and temporary employees to cope with fluctuating demand). In both the services and in manufacturing, new approaches to integration —geographic, and in terms of products and production processes—will help companies develop and market products with, for example, a greater degree of customization, hence higher value-added. For at least some companies, the boundaries between production of services and goods will continue to blur. Many companies will purchase more services on the outside.
- For the U.S. labor force, continued job creation in the services, coupled with a stagnant or declining manufacturing sector and new demands for flexibility, will mean: 1) relatively large numbers of new jobs in the traditional, tertiary services, 2) but also many new jobs in knowledge-based services. The former will remain at the bottom of the pyramid in terms of skill requirements and wage levels. The latter will demand high skills, rewarding them in many cases with high pay. Greater stratification within the U.S. labor market could sharpen policy-related conflicts over issues of education, (restraining, and mobility, not to mention income distribution.
- Effectively utilizing the capabilities of the U.S. labor force, and the potentialities of new and emerging technologies, will remain critical for international competitiveness in both services and manufacturing. Well-integrated organizations, making effective use of people's skills, as well as technology, will have better prospects for competitive success, for growth, and for the creation of new jobs, High value-added products, depending on high skills and able to support a high-wage economy, will in many cases result from applications of computer-related technologies that enhance rather than replace people's skills.

How can Federal Government policies support the knowledge-based industries, so dependent on human capital, that will lie at the core of a high-skill, high-wage economy in the 21st century? This report suggests that commitment to open international trade and investment, in the services as well as in manufactured goods, and commitment to economic deregulation, must carry a significant corollary: commitment to policies that help individual Americans take advantage of the opportunities created in such an economy.

APPENDIX 2A: THE SERVICE INDUSTRIES IN ECONOMIC ADJUSTMENT

Adjustment Processes

The international competitive environment for U.S.-based companies seems less stable today than even a decade ago. As other nations climb the technology ladder, competitive pressures on the United States will continue to build. New technology, shifts in domestic demand, import competition—all these force adjustment. Big changes within a short time period—in 1979-80 when the U.S. automobile industry was hit simultaneously with recession, a shift in consumer demand toward small cars (resulting largely from gasoline shortages), and rising competition from Japan—can overwhelm the economy's capacity to adjust by re-deploying resources no longer needed in declining sectors.[1] This capacity—the economy's resiliency or robustness—depends on government policies as well as economic structure. When people who lose their jobs remain unemployed for long periods, and other resources remain underutilized, this is evidence that change is being forced on an economy faster than it can respond.

Rapid shifts in one sector mean adjustment elsewhere. In the computer industry, technological improvements have led to huge increases in price/performance ratios and an ever-expanding range of applications—with impacts that wash through the entire economy. A given disturbance can hurt a small or less diversified economy more: if Americans stop spending tourist dollars in Mexico, for whatever reasons, the adjustments will be painful. Agrarian nations are susceptible to drought. The Middle East will eventually run out of petroleum. The U.S. economy, in contrast, has the advantages of both size and diversity—sources of resiliency whether disturbances are domestic (bank failures) or global (energy shock). Beyond this, adjustment will be easier if the mix of resources released by declining industries resembles that needed by expanding sectors: the shift from low-skilled factory work to services taking place since the mid-1970s creates a substantial source of disturbances, if only because the social environment of the services differs so greatly from that of the factory. As chapters 7 and 8 suggest, the rapidly growing knowledge-based services, in particular, need people with both technical skills and social skills quite unlike those of many of the Americans who earlier found jobs in traditional manufacturing industries.

Adjustment Policies

Lower trade barriers also create disturbances and force adjustment—a problem recognized in the GATT escape clause mechanism (Article XIX). The escape clause permits governments to give temporary protection to industries injured by reductions in tariffs or NTBs; governments can call on temporary protection or a variety of other policy tools to ease adjustment (retraining programs, relocation assistance, tax incentives for expanding sectors that might soak up displaced resources, R&D support for sectors expected to grow rapidly).

Many governments have viewed infant industries as worthy of protection or subsidy because of their future potential (e.g., electronics in Japan during the 1970s). On the other hand, growth rates that turn negative often call forth sector-specific responses intended to arrest or manage decline (trade protection for steel in the United States and the European Community). Whether or not adjustment is the primary motive, governments choose from a more or less standard list when seeking policies to aid a given industry: financial subsidies; protection; regulation; government procurement; funds for R&D. Direct, sector-specific intervention has seldom worked very well in the United States or in Western Europe, with most of the failures stemming from attempts to counter deep and powerful economic trends. Government aid can seldom enable industries suffering from mounting comparative disadvantage to maintain customary output levels; such policies easily become counter-adjustment measures.

Are Services Special?

Pressures for adjustment can start anywhere; service industries are potential disturbances, as well as potential buffers. While some disturbances originate abroad (oil price increases in 1973-74 and 1979-80, rising imports of steel and automobiles from Japan), differential growth rates within the U.S. economy, as well as surging foreign investments by American corporations, have created severe stresses in the past. So have U.S. Government

[1] Disturbances can have other causes [illegible] 1985 Mexico City earthquake [illegible] no adjustment for Mexico's economy of course [illegible] operate on longer time scales. When [illegible] gets slow [illegible] has impacts associated with small portions of the economy [illegible] process can be relatively benign.

[2] For an analysis of labor market adjustment in the United States, see *Technology and Structural Unemployment: Reemploying Displaced Adults* (Washington, DC: Office of Technology Assessment, February 1986).

initiatives—e. g., President Nixon's renunciation of the gold-exchange standard in 1971, following the breakdown of the Bretton Woods Agreement.

Within an economy as large as that of the United States, only the banking industry among the services seems to carry the potential for major disturbances. The international banking system links national economies; any shock from the collapse of a large U.S. (or foreign) bank, perhaps resulting from too many bad loans, could spread through the system's network of interlocking deposits and credits. If other banks were to fail in a domino effect, instability in national financial markets would be only a short step away.

If only the banking industry among the services carries the potential for severe disruptions, what about the potential of service industries for facilitating adjustment? Do any of the services enhance the robustness and resiliency of the U.S. economy out of proportion to their size and their contribution to economic diversity (by, say, quickly adapting to new conditions, soaking up resources displaced elsewhere, using a shifting mix of inputs or changing their rates of output in response to new conditions)? Here, the services show no outstanding advantages compared to goods-producing industries. At the same time, the services (other than banking) should generally be able to respond to disturbances without aggravating adjustment problems. The implication: if none of the service industries have unusual potential for offsetting adjustment pressures, then none has much claim on government policies that would favor it over other industries in the name of smoothing adjustment.