

Analyzing Competitiveness in the Services

Given the usual assumptions of international trade theory, nations should be able to gain individually and collectively by specializing in goods that each can produce with greatest efficiency.¹ The United States produces and exports food and aircraft, among other things. South Korea produces and exports television sets and steel. Does the theory of comparative advantage, developed originally for goods depending on static resource endowments—wheat, cotton, cloth—apply to trade in services? The answer is yes. The theory, after all, simply provides a framework for explaining observed patterns of trade. So long as the framework remains an open one, capable of accommodating dynamic effects—shifting economies of scope and scale, learning, development of new technologies—trade in services fits just as well as trade in goods.

Indeed, trade in services exemplifies what is perhaps the principal feature of dynamic comparative advantage: efficiencies resulting from experience that accumulates over time. Agriculture, mining, and some kinds of manufacturing (steel if not computers) depend heavily on inherent, thus static, resource endowments. Services like banking or health care depend on know-how and expertise—technology, broadly defined—on human resources rather than natural resources. At least in theory, liberalization of trade in services should help increase global economic efficiency. Moreover, because of the dynamic learning effects, countries that currently have inefficient service industries should be able to improve quite rapidly by bringing in people and technology from more efficient foreign industries; competition will serve as a spur to domestic firms, while the foreign-owned firms will enlarge the pool of know-how that all can draw upon.

Influences on Competitiveness²

When OTA began studying the competitive standing of U.S. industries in 1978, no one had a very clear idea of how to do this. Economists tended to rely on output-side indicators—trade balances and market shares, employment and profit levels—in many respects little more than symptoms. The need

was to get at causes, to grasp the dynamics of change in industries as varied as microelectronics and steel, and to sort long-run competitive trends from short-term events. This means understanding the internal workings of firms and industries: how business decisions are made; where investment capital comes from; how new products are developed.

As a result, OTA has stressed factors that affect competitiveness on the input side—i.e., as influences on the behavior of firms. In particular, OTA has attempted to understand competitive strategies in various parts of the world as affected by the many forces that condition management decisions (table B-1). Direct and indirect impacts of Federal policies—taxes, regulations, trade measures—have been central concerns, along with foreign industrial policies.

Note that all the factors listed in table B-1 are, to considerable extent, sector- and firm-specific. In any economy, sectors compete with one another to attract skilled labor, to push government regulations in directions that will benefit them relative to other industries. Within sectors, firms compete in much the same way. BankAmerica and Chase share some interests that differ from those of, say, insurance companies; in other cases, one bank may seek regulatory decisions that will help it against others. Thus, as the table suggests, OTA's approach begins with the internal workings of firms and industries.

The approach concentrates on forces with differential impacts across industrial sectors. While control of the money supply, for instance, influences economic conditions, the impacts, though not necessarily identical, remain much the same across the economy. In contrast, the corporate tax code treats economic sectors in quite different fashion. The Economic Recovery Tax Act of 1981, while decreasing average corporate tax liabilities, widened the spread in effective tax rates across sectors. The effects of the Tax Reform Act of 1986, which represents a more sweeping set of changes in U.S. policy, have not as yet become fully apparent (the appendix to chapter 10 illustrates a few of the probable impacts on service industries).

While analysis of individual service sectors demands a relatively detailed approach, analogous to that suggested in table B-1, the forces listed in the table can nonetheless be summarized under two main categories: those under the control of the firm, and those subject to public policy influence but largely beyond the control of individual companies (table 7, ch. 2).

¹For a discussion of comparative advantage and its relationship to competitiveness, see *International Competitiveness in Electronics* (Washington, DC: Office of Technology Assessment, November 1983), pp. 164-177.

²For an expanded version, with examples from manufacturing industries, see J.A. Alic, "Evaluating Industrial Competitiveness at the Office of Technology Assessment," *Technology In Society*, vol. 9, 1987, p. 1.

Table B-1.—Influences on Competitiveness in the Services

Factor/examples

1. **Industry and market structure:** Number of *firms*, their size and market power, financial resources; *market size*, rate of growth, degree of saturation.
2. Labor **force:** Labor costs; availability of skilled employees; government support for *training* and education; incentives for corporate training programs; labor *mobility*, vertically as well as geographically; labor-management relations; unionization; mechanisms for employee participation.
3. Managerial **work force:** Education and training; attitudes and value structures; characteristic approaches (e.g., in terms of risk taking) to *developing, marketing, and exporting services*.
4. **Inputs:** Stability of costs and *supplies* for inputs to the production process (data processing hardware and software, telecommunications links); domestic availability v. dependence on imports; delivery schedules.
5. **Supporting infrastructure:** *Vendors, subcontractors*, and other suppliers, including those who provide services such as equipment maintenance; basic research organizations; government support for military and for generic, pre-competitive R&D as these may affect the services.
6. **The environment for innovation and technology diffusion:** Interactions and synergies among firms, within an industry and across national boundaries (mobility of personnel, licensing and other technical exchange agreements, openness to inward transfers of technology and management know-how); *clusters of know/edge and ski/s*, as in major banking centers; intellectual property law.
7. **Business and economic conditions:** Overall economic prosperity as indicated by gross national product or gross domestic product, levels of disposable income, inflation rates, costs of capital, exchange rates; less tangible factors such as consumer confidence, political stability, social welfare.
8. **Government policies and interactions with the private sector:** Regulations affecting the workplace and products, as well as resource supplies; *tax policies*; antitrust enforcement; less tangible factors including traditions of cooperation or conflict among government, business, labor, and other interest groups.
9. **International trade relations:** Policies enacted by domestic and foreign governments affecting *imports, exports, and foreign investment*; non-tariff barriers; taxes on overseas profits; the role of international agreements and organizations such as the GATT (General Agreement on Tariffs and Trade) in providing frameworks for policy and mechanisms for dispute resolution.

SOURCE Office of Technology Assessment, 1987

Cost-Competitiveness in the Service Industries

Fundamentally, international competitiveness depends on the ability of companies in various parts of the world to develop, produce, and distribute services and goods in competition with one another. When the products are more or less the same (e.g., a bank loan), the comparison reduces to one of costs.

Of course, companies differentiate their products, even when they are nominally quite similar (checking accounts, life insurance, air travel).

Trade and foreign investment result because costs for producing services differ across countries. These costs include:

- investments in physical capital (e.g., buildings, office equipment, airplanes);
- wages, salaries, and fringe benefits;
- human capital premiums, over and above other labor costs, paid to attract highly skilled employees;
- natural resource costs, often important for goods, but seldom for services; and
- costs for developing or acquiring proprietary technology (firm-specific know-how, patented or otherwise protected technology).

Costs associated with human capital and proprietary technology are closely related, because people develop and transfer technology; much of a firm's proprietary know-how resides in its more highly skilled employees. The remainder of this appendix outlines some of the factors that complicate cost comparisons internationally, beginning with exchange rate fluctuations.

Exchange Rates

For qualitatively similar products, actual selling price becomes the critical factor in commercial competition. Everything else the same, a free checking account will attract more customers than one with a monthly service charge. For internationally traded services, it is landed, tax-paid prices in the country of sale that matter. Prices for imports must cover transport costs, if these exist. In addition, the price of an imported service will reflect the rate of currency exchange between the country where the service was produced (wholly or partially) and the country of sale.

When the U.S. office of an American engineering and construction (E&C) firm prepares a bid on the design of an airport—say in Egypt—it will typically compile its cost estimates in dollars. The company may plan to carry out some or all of the design work in the United States. The people working in its U.S. offices must be paid in dollars. So must the expenses for the equipment they use, the buildings they work in, and other overhead costs. Similarly, an E&C firm in Japan bidding on the same project would denominate its costs in yen. If the American company entered a bid for the design work priced at \$10 million, the Japanese firm bid 2000 million yen, and the rate of exchange were \$1 = 200 yen, the bids would be equivalent. If the ex-

change rate later dropped to $\$1 = 150$ yen, the American firm would have an advantage of 33 percent; the Japanese company's bid of 2000 million yen would then convert to \$13.3 million. Likewise, if the dollar rose to $\$1 = 250$ yen, the American firm would find itself at a disadvantage.

Note that these comparisons assume the actual costs to the E&C firms in the two currencies to be independent of the rate of exchange—an assumption that is usually valid over the short term. With time, as prices and wage levels in a national economy change, exchange rates normally adjust in sympathy. If prices rise in the United States, the value of the dollar should drop compared to other currencies (so that prices would remain about the same when denominated in these currencies). But the point of the example is a simpler one: to compare costs or prices internationally, they must be expressed in the same currency. One or more conversions will be required; the bids could be compared in dollars, in yen, or in Egyptian pounds,

Determination of Comparative-Cost Advantage

For a given rate of exchange, then, prices can be compared, and relative costs inferred. These costs, particularly their indirect components, will depend on factors including human capital requirements and technology (table B-1). Not all countries can produce all services; some lack the necessary skills (or other inputs). It is impractical if not impossible to perform heart transplant operations in Ecuador, or to conduct much international banking from a base in Nigeria. A wealthy resident of Ecuador would travel to another country for such an operation; Nigerian firms procure international financial services from branches of foreign banks in Lagos or through the correspondent relationships of Nigerian banks.

Trade barriers, in one way or another, raise costs for imports compared with domestic goods and services: this is their purpose. A tariff is the simplest example—as a tax levied only on imports, it raises the costs of products entering the country compared to domestic output. Barriers to services trade tend to be indirect, with impacts less obvious than for direct barriers like tariffs (chs. 2 and 9). Nonetheless, to be effective, indirect or non-tariff barriers must have impacts on relative prices. Thus subsidies for domestic firms permit them to lower prices, while quotas drive up prices for imports.

Relative costs say nothing about the *volume* of trade. But because costs generally drop with output, trade volumes themselves will affect cost com-

parisons. While a rank ordering by industry of a nation's structure of comparative advantage cannot yield predictions of trade flows, such a listing does give insights into the gains to be expected from trade: for instance, transactions involving goods or services at the far ends of a nation's ranking lead to much greater benefits than for goods or services near the middle. In the extreme, potential gains from non-competitive imports (where no domestic production exists) can be very large. Technical licensing, for example, can be a great help for an importing nation unable to develop comparable technologies on its own.

Transportation Costs

Modes of transport for the services are not so obvious as for goods. Sometimes consumers move to the source of the service; sometimes producers must be transported to the point of consumption. Leased equipment may have to be shipped overseas, then returned (though the lessor may choose to sell it locally after expiration of the lease, rather than shipping it back).

When service products consist of information that can be transported or transmitted in the form of images, text, or data, the transmittal costs are sometimes (though not always) small compared to the value of the information. New communications and information processing technologies have helped break down the constraints that in an earlier era required services to be produced close to the customer or end-user. But much more may be involved than simply transmitting information. Licensing transactions typically entail substantial expenses for transferring knowledge, as well as for the protection of know-how (ch. 6). Negotiating tightly written contracts for safeguarding proprietary knowledge can be viewed as part of the process of packaging technology before sending it overseas. Licensers may send technical specialists to the importing country to help train the licensee's work force, or aid in startup operations—one of many examples where cheap air transportation has helped firms move people to markets in order to supply service products across national boundaries.

At an opposite extreme, when transportation costs would be large compared to the value of the product, the service becomes effectively non-transportable, and can be viewed as non-tradeable. Many tertiary and personal services (table 6, ch. 1) fall in this category; not many people cross national borders to get their hair cut. Where either the consumers or the producers of services do travel, it is usually

for high-value-added services: tourism; medical care; education; business services such as accounting. For tourism particularly, a nation's exports normally rise if travel costs—e.g., air fares—drop.

Flexibility in Pricing and Production

An empty hotel room, a vacant airline seat—both represent irretrievably lost production. While a factory that is shut down this week may be able to run double shifts next week, little or no flexibility exists in capacity utilization for service businesses like hotels or restaurants; capacity that goes unused means revenues that can never be regained. In such industries, profits depend critically on occupancy rates and load factors; an airline may lose money if its planes operate at an average load factor of 60 percent, make a healthy profit if it can fill 70 percent of its seats.

At the same time, many costs of production in the services tend to be fixed, leading to a good deal of flexibility in pricing. Because manufacturing firms purchase not only labor, but raw materials, energy, and, in many cases, substantial volumes of components and subassemblies, they will generally have a higher ratio of variable to fixed costs (e.g., plant and equipment) than service firms. The major U.S. automobile manufacturers buy parts and components from thousands of suppliers. Service firms, in contrast, may buy or lease equipment such as computers, but otherwise purchase little in the way of goods and services—certainly compared with manufacturing firms having comparable payrolls. (Construction is perhaps the major exception; projects of any size normally involve many subcontractors. Of course, a bridge or a building fits few of the usual criteria for a service products) An automaker can shut down for a week to adjust its inventory levels, while an airplane flies with a full cockpit even if half-empty. Moreover, the airplane will burn about as much fuel carrying 100 passengers as 200. And, while much manufacturing labor can be treated as a variable cost—because people can be put on short hours or laid off if demand drops—the salaried professionals in, say, a computer software or legal services firm normally get paid even when business is bad. Thus, more of the bill for wages and salaries in a service firm may effectively be fixed.

³ If designing a bridge or a hospital seems more unambiguously a service than carrying out the construction, the plans, drawings, and bills of materials are nonetheless quite tangible; they can be stored, transmitted from place to place, and modified during the course of construction. The package of information constituting the design—or a computer program or an advertising campaign—has a permanent physical existence, unlike many of the services provided by a trial lawyer or a banker.

When fixed costs are high compared to variable costs, the firm has more room for maneuver in pricing decisions. A company must pay its variable costs as they are incurred; an added unit of output means added costs. No matter the short-run competitive pressures, it cannot cut prices below variable costs without losing money. But fixed costs, by definition, neither rise with added output nor fall when output is cut back. A computer software firm with mostly fixed costs can cut prices deeply while still covering variable costs.

This relative freedom in pricing opens a range of marketing strategies seldom available in manufacturing. Airlines not only offer cheaper fares for advance purchases to help keep their planes full, they charge different fares at different times of the day and different times of the year. When they slash fares for travel on Thanksgiving and Christmas, the rationale is simple. The planes will be flying anyway. In the past, fewer than half of all airline seats had been filled on these 2 days. Any revenue gained by selling more tickets helps pay for the fuel, flight crews, and other expenses that will be incurred in any case. Different fares depending on the day of the week illustrate the same point: market conditions determine fares more than costs. In the winter, air fares may be lower to Chicago on the weekend, but higher to Miami, because business travelers (who fly mostly during the week) go to one city and vacationers to the other; the airlines are simply trying to fill empty seats.⁴

Service firms where production is in the hands of skilled or professional employees also gain extra latitude in pricing because they can ask people to work overtime without paying them more. In industries like banking or law, salaries may be high but the added costs of extra output are small—and the added profit may be large. (At some point, of course, the bank will have to hire more loan officers or the law firm add more attorneys.) Furthermore, the greater the reliance on salaried employees, the greater the firm's discretion in allocating costs and setting prices. Labor costs on a factory assembly line can more easily be traced to output than in the loan department of a bank. While the differences may be matters of degree, if costs cannot be allocated directly to each unit of output, then the notion of cost-based comparative advantage becomes less useful. Likewise, discretion in allocating fixed costs suggests that dumping—selling abroad at less

⁴ staff of 90 people handle American Airlines' future fare structure—at any one time, a matter of more than half a million future flights (1,600 per day, for 330 days ahead)—E. Schmitt, "The Art of Devising Air Fares," *New York Times*, Mar 4, 1987, p. D 1

than domestic prices or costs—will be more difficult to prove for service firms than for manufacturing firms, a difficulty compounded when service outputs are non-standard and differ qualitatively.

Of course, any firm must, over time, cover its total costs, not just its variable costs, else risk bank-

ruptcy. The point is simply that, all things considered, service firms tend to have more freedom than manufacturing firms in setting prices. They can cut prices when entering foreign markets, or to keep imports out of their home market.