Selling American Medical Equipment in Japan

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America's growing trade deficit with Japan has aroused deep concern in the United States. There has been heated debate regarding the primary causes of the deficit and disagreement about how to respond to it. Some authorities treat the deficit as a short-run economic problem that can be solved by market-driven exchange rate adjustments. Others blame the Japanese government for creating barriers to market entry. Still others contend that the problem can be traced to American firms' poor management of their Japanese operations.

American observers must be wary of the dangers of overgeneralizing about Japan. Like all modern nations, the Japanese political economy is complex; a broad range of legal, cultural, and organizational institutions influence trade and development patterns. There is tremendous variation among industrial sectors. A strategic or policy response that is appropriate for one Japanese market may completely miss the mark in another. The adjustment of exchange rates cannot help sell products for which there is no demand. American pressure to lower trade barriers will only increase sales in sectors where barriers exist and where government policy is responsible for maintaining them. Efforts to improve business strategy will increase sales only in cases where trade problems stem from lack of vision rather than from structural barriers. In many cases, all three factors may be present to some extent and in varying degrees of importance. To truly understand trade problems with Japan, and increase American sales there, we must examine the Japanese market by individual sectors.

This article examines the Japanese medical equipment marketplace and discusses sales of American equipment in it. The medical equipment industry has long been a source of American trade strength with Japan and with

The authors acknowledge the support of the Herrick Foundation.
the rest of the world. Like many other sectors of the economy, however, there has been a precipitous decline in the U.S. medical equipment balance of trade relative to Japan since 1980 (see Figure 1). While the balance of trade problems are not limited to U.S.-Japan exchanges, the U.S. global annual positive balance of more than $1 billion from 1978 to 1982 became a small deficit by 1986 (see Table 1, column 2).

Why has this deficit occurred? If the growing deficit is associated with adverse exchange rates, macroeconomic policy solutions would suggest themselves. On the other hand, if the decline is due to increasing trade barriers, then pressures for other kinds of policy change are in order. Finally, if the problem is due to ineffective industry strategies, then firms must learn how to improve their marketing in Japan.

Our conclusion is that while both trade barriers and exchange rates have adversely affected American medical equipment sales with Japan, they are not the complete or even the primary explanations underlying medical equipment trade patterns between the two countries. What is unusual about this sector is that sales of American equipment have in fact been increasing in Japan. Japan imports at least as great a proportion of its medical equipment as does the United States (about 20% compared to 15%). Despite adverse exchange rates, the American share of medical equipment imports to Japan has grown from 30 percent in the early 1970s to over 60 percent in the mid-1980s.

The deficit has occurred because American purchases of Japanese-manufactured goods have risen faster than American sales in Japan. It is critical that American firms do better in Japan.

Figure 1. U.S. Japan Medical Equipment Trade Balance

5 Medical Equipment SIC Categories ($ Million Deflated by PPI, 1982 = 1)
Table 1. American and Japanese Medical Equipment Consumption and Trade

<table>
<thead>
<tr>
<th></th>
<th>U.S. medical equipment domestic purchases</th>
<th>U.S. medical equipment trade with Japan</th>
<th>¥/$ (real)</th>
<th>Japan medical equipment domestic purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>($ billion)</td>
<td>($ million)</td>
<td>Exports</td>
<td>Imports</td>
</tr>
<tr>
<td>1986</td>
<td>16.4</td>
<td>-0.01</td>
<td>355</td>
<td>526</td>
</tr>
<tr>
<td>1985</td>
<td>17.1</td>
<td>0.2</td>
<td>279</td>
<td>396</td>
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<tr>
<td>1984</td>
<td>16.1</td>
<td>0.4</td>
<td>260</td>
<td>282</td>
</tr>
<tr>
<td>1983</td>
<td>14.6</td>
<td>0.7</td>
<td>243</td>
<td>217</td>
</tr>
<tr>
<td>1982</td>
<td>14.1</td>
<td>1.1</td>
<td>231</td>
<td>149</td>
</tr>
<tr>
<td>1981</td>
<td>12.2</td>
<td>1.3</td>
<td>258</td>
<td>110</td>
</tr>
<tr>
<td>1980</td>
<td>11.5</td>
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<td>1978</td>
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<td>1.0</td>
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</tr>
<tr>
<td>1977</td>
<td>11.5</td>
<td>0.8</td>
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<td>1976</td>
<td>10.0</td>
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<td>124</td>
</tr>
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<td>1975</td>
<td>9.5</td>
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<td>9.3</td>
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<tr>
<td>1970</td>
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<td>0.4</td>
<td>37</td>
<td>46</td>
</tr>
<tr>
<td>1969</td>
<td>6.5</td>
<td>0.4</td>
<td>31</td>
<td>35</td>
</tr>
<tr>
<td>1968</td>
<td>6.0</td>
<td>0.4</td>
<td>27</td>
<td>20</td>
</tr>
</tbody>
</table>

Derivation:
(a) Domestic Manufactures plus imports minus exports (SIC 3693, 3641, 3842, 3843, 3851).
(b) Exports minus imports.
(c,d) Export and import equivalents of SIC categories in (a).
(e) (c) minus (d).
(f) Nominal yen/dollar times the ratio of the U.S. medical price index (1972-86: QTA index for SIC 3693; 1968-71: Producer Price Index) to the Japanese Wholesale Price Index.
(g) Japanese medical equipment purchases net of trade. Converted at nominal exchange rates and deflated by the U.S. medical price index. Estimates not available some years. All figures deflated by the U.S. medical price index as defined in (f), except as noted in (f).

Sources:
(c-e) Country market series
(f) Japan Statistics Annual, 1987
Safety Regulation As A Non-Tariff Barrier

It is a common complaint that closed Japanese markets exacerbate America's trade deficits with Japan. Explicit and implicit trade barriers do appear to influence sales of agricultural, semiconductor, and telecommunication products. Ever since the Japanese government suspended the "Buy Japanese" program in the early 1970s, the most significant barrier to entry of medical equipment arises in the form of safety regulation.

Like all other industrialized countries, Japan regulates pharmaceutical and medical equipment to insure product safety. However, it has been argued that Japan's Ministry of Health and Welfare (MHW), the government agency which administers the regulations, imposes non-tariff trade barriers that discriminate against foreign producers in a protectionist manner. With regard to the trade deficit, one observer commented: "This downward trend in U.S. exports to Japan can be attributed to Japanese regulatory barriers ... to incoming devices." While safety regulation presents some hurdles for producers of medical equipment, the regulatory structure has not presented an impenetrable barrier for foreign firms and is becoming more accessible in response to pressures at home and abroad.

In 1961, Japan enacted the Pharmaceutical Affairs Law to control the marketing of medical devices and pharmaceutical products. To bring a product to market, all domestic and foreign producers must obtain either manufacturing or import approvals (shonin) of the product itself. Shonin are obtained after documentation of safety and efficacy. MHW issues approvals after consultation with the Central Pharmaceutical Affairs Council which reviews the scientific data submitted. In addition, every producer must receive a license to manufacture or import (kyoka) upon documentation that appropriate safety and manufacturing standards have been met. After the shonin and kyoka have been obtained, the next step is to receive a price listing. MHW sets prices for drugs and procedures involving medical equipment based on rules established by the Social Insurance Medical Affairs Council (Chuikyo).

Until the late 1970s, Japanese medical equipment purchases were low (see Table 1, column 7). Many American firms had little interest in the Japanese market. However, as Japanese consumption of medical equipment increased in the 1980s, American exporters began to look seriously at the Japanese marketplace. In the process, they experienced frustration with the regulatory system. The two governments held trade meetings in the winter of 1982; the United States submitted proposals to the MHW in February of 1983. Additional meetings were convened in 1984. On January 2, 1985, President Reagan and Prime Minister Nakasone discussed trade issues; they specifically identified pharmaceutical and medical equipment trade as one of four important sectors in the market-oriented, sector-selective (MOSS) talks that followed. In January 1986, the U.S. and Japan MOSS negotiating teams issued a final report."
There were two types of issues discussed in the negotiations: those that affect both domestic and foreign producers, and those that have a particularly adverse impact on foreign importers. First, U.S. negotiators reported the frustration caused by uncertainties and delays in the regulatory process as well as the limited opportunities for producers to communicate with regulatory authorities. Koichi Ichikawa, President of the Japan Medical Equipment Manufacturers Association, stated: “[The Japanese] industry has nothing against the U.S. demands which are, for the most part, legitimate concerns regarding the approval-obtaining procedure. Considering that the procedural problem is shared by domestic manufacturers and importers, the industry recommends that the U.S. demands be accepted.”

The MOSS talks in 1985 resulted in agreements to provide standard processing periods for new approvals.

Both domestic and foreign producers also agreed that the regulatory process did not deal easily with kits, combinations of drugs and devices marketed in a single package such as pre-filled syringes and diagnostic tests. As a result of the talks, MHW devised new approval and pricing procedures for these products. In addition, in-vitro diagnostic reagents (those used “in glass” in a laboratory, as opposed to “in-vivo” products which are used within the body) received expeditious approval review processes to distinguish them from drugs. These agreements are being monitored by American officials who have generally expressed optimism about the results.

Other issues raised in the MOSS negotiations were primarily of concern to foreign producers. The most important was the acceptance of foreign clinical test data as evidence of safety and effectiveness. Some American companies argued that the requirement that all clinical tests be done in Japan on resident Japanese citizens was deliberately designed to discriminate against foreign companies, requiring duplication of clinical testing and delay in market entry. However, hesitation about the acceptability of foreign clinical trials is neither irrational nor unrelated to legitimate health concerns. Indeed, the United States has its own reservations about foreign clinical data. Our Food and Drug Administration (FDA) dismisses many foreign tests as scientifically flawed or poorly monitored. Problems in reviewing foreign studies arise due to different research traditions and language barriers. Moreover, the Japanese believe strongly in the uniqueness of their racial makeup. The government argued that these racial differences require validation of safety on Japanese people prior to marketing. Moreover, MHW officials feel personally responsible for the outcome of their decisions. If harm should befall the citizenry as a consequence of an approved product, the ministers would be disgraced and ashamed. This accounts for their cautious approach.

In the 1983 talks, Japanese negotiators refused to accept the argument that foreign data provides sufficient safety information. In 1986, however, they made significant compromises. Under the MOSS agreement, except
where there are demonstrable immunological and racial differences, foreign clinical data will be acceptable for all examination and testing requirements. For equipment, foreign clinical test data will now be acceptable except for implantable devices, such as heart valves and pacemakers and those affecting organic adaptability. Finally, foreign data will be acceptable for many in-vitro diagnostic reagents.\textsuperscript{16}

Another set of concerns of the American firms revolved around the approval and licencing processes. Again, some of these procedures frustrated all producers, both foreign and domestic. Others, in particular the restrictions on transfers of shonin from one business entity to another, adversely affected foreign firms. American companies are considerably less stable than Japanese firms,\textsuperscript{17} often changing ownership and expecting corresponding flexibility in business arrangements, such as shifts in licensees or place of operations or manufacture. The rules for transfer of shonin were quite rigid; any change in name or ownership required producers to get new approvals and prices.

Although Japan presents barriers for American firms, there is often no substitute for familiarity with the language and the nuances of culture and tradition. While some of the regulatory procedures continue to be particularly frustrating for foreigners and have discriminatory effects, there are a number of countervailing pressures that indicate that the barriers are far from insurmountable. First, the sales of U.S. medical equipment in Japan have been increasing as the Japanese market has grown, from $128 million in 1975 to $355 million in 1986 (Table 1, col. 3, figures in constant dollars). Clearly, products were being approved and sold. Moreover, there is often strong pressure for access to innovative products. Doctors in Japan have political power and social respect.\textsuperscript{18} As a group, they are comfortable with foreign innovations and interested in providing the latest technologies. Unlike products without health care benefits, new medical equipment can ameliorate social ills and transcend ethnocentric trade concerns. Thus, while the regulatory system must be reckoned with, it is only one of the institutions that govern the Japanese medical system.

The Japanese Medical Marketplace

A fundamental understanding of the health care system is essential to successful penetration of the Japanese medical equipment marketplace. Japan has a combination of public commitment to health and a private sector delivery system. Article 25 of Japan’s constitution declares that promotion and improvement of public health, together with social security and social welfare, are the responsibilities of the nation.\textsuperscript{19} The Japanese medical system provides health coverage for virtually all of the population. The private sector delivers the services and government reimburses. In essence, payment is centralized, but delivery is fragmented.
The marketplace is diffuse, with thousands of autonomous hospitals and other medical institutions purchasing equipment and supplies. In 1984, there were 181,000 doctors. By law, the head of a hospital must be a doctor: 76,000 physicians owned their own hospitals or clinics. Solo practice is the norm; hospital chains are rare. Relationships among hospitals are not close and joint purchase of equipment is not common. Many of the decisions are directly controlled by key doctors within the hospitals and indirectly influenced by university professors at medical schools. Because the market is diffuse, direct government control of purchasing decisions would be difficult or impossible.

However, the government can influence purchase and use decisions through the reimbursement system. Valuing widespread access to advanced medical care, the MHW has supplied the resources to pay for technology, whether domestic or imported. For example, Japan, with half the population of the United States, has about as many CT scanners. At the same time, however, the MHW can restrict spending on equipment.

The trade barrier has been more the result of foreign firm's inability or unwillingness to meet prices than the intended consequence of Japanese public medical care payment policy.

The MHW sets the prices for all drugs and diagnostic procedures. In a system dominated by private practitioners, the incentives to provide these products are related to their profitability. The government sets the reimbursement price. Physician and laboratory profits are then determined by the difference between the government's rate and the price paid to purchase the drug or device or to deliver the service (such as a diagnosis) using the device. At present, price issues are highly controversial because the government is trying to contain costs while maintaining high-quality medicine. The MHW has decreased the set prices for drugs in recent years as medical costs have shrunk from 5.2% of GNP in 1984 to 4.9% in 1986; pharmaceutical producers are pressing for changes in the present pricing policies. Producers of diagnostic kits are also carefully monitoring government policies. Profits from their use are determined by the difference between the sale price of the kit and the reimbursement price, which can be as much as 60%. Profits are shared by the wholesalers, the doctors, and, if relevant, the laboratory.

MHW policies have restricted the ability of American and European firms to sell equipment to Japanese purchasers. However, the restriction has not occurred by direct fiat or even by an unstated preference in favor of Japanese manufacturers. Instead, the restrictions have occurred because
foreign manufacturers have usually charged more than Japanese companies for medical equipment. The trade barrier, therefore, has been more the result of foreign firms’ inability or unwillingness to meet prices than the intended consequence of Japanese public medical care payment policy.

The Importance of Corporate Strategy in the Japanese Medical Market

In order to succeed in this fragmented but quality- and price-conscious market, producers have needed excellent products and sophisticated delivery systems. In the following sections, we evaluate the product attributes and describe the organizational structures that have been used to distribute them.

Product Attributes

Innovative products are likely to succeed. Japanese physicians respect innovation and often associate that attribute with American goods. They have been willing to seek out foreign suppliers of innovative products even if the manufacturer’s distribution system was weak. Baird Corporation, for example, succeeded in marketing nuclear medical cameras in the 1970s, despite selling through an agent.

American producers have significant leads in a number of technologies. American companies, such as SmithKline Beckman Corp. and Abbott Laboratories (through Dainabott, a joint venture with Dainippon Pharmaceutical), have established strong leadership positions in clinical chemistry products, such as blood analyzers, immunochemistry, and reagents.

American firms have established an important edge in implant technology. American Medical Systems, Inc. (owned by Pfizer Inc.) is a leader in testicular implants. Medtronic, Inc. dominates the implanted pacemaker technology in Japan, with Cardiac Pacemakers Incorporated (a subsidiary of Eli Lilly & Company) a strong force as well. Indeed, in pacemaker technology, several major Japanese firms, notably Toshiba Corporation, NEC Corp., and Silver Seiko Ltd. tried to enter the field, but have abandoned it. Knowledgeable observers speculate that these companies retreated because they lagged in technological and clinical know-how. The lack of clinical expertise has been particularly important. Companies that market implantable goods, such as pacemakers or prostheses, typically provide staff to assist in the surgical processes of installing them. Success in the market, therefore, requires both a product that is mechanically reliable and a staff that understands its use.

In the case of implants, Japanese firms fear that their corporate images would be damaged if patient deaths were to be associated with products bearing their names. There is also a cultural inhibition against the introduction of artificial devices into the body. American companies have been more
willing to advocate the use of implants than Japanese firms and doctors have been receptive because of the medical and financial benefits of implants.

Products must meet the demands of Japanese physicians. Foreign companies must be responsive to specific demands of physicians. Some products that have been successful in other international markets have failed in Japan. For example, Beckman Instruments Inc. developed a sophisticated instrument for measuring patients' electrolyte levels in emergency rooms. The equipment automatically measures four elements: sodium, potassium, chloride, and carbon dioxide. Japanese doctors do not believe that it is appropriate to measure carbon dioxide in emergency rooms. They were reluctant to invest in the equipment, despite the fact that the particular feature that measured carbon dioxide did not add to the cost of operation, did not affect the price of the product, nor the speed of the results, had no impact on the patient, and could be turned off by the physician. Japanese buyers simply did not want to purchase an unnecessary feature. Beckman modified the device for the Japanese market by eliminating the undesired test from the automatic process. The company now controls 80% of the market.

Baxter Travenol Laboratories, Inc. makes hemodialysis products, devices that remove impurities from the blood. Baxter Travenol once held nearly all of the Japanese hemodialysis market. Then both Torii & Co., Ltd. and Asahi Corp. entered the market, using sophisticated fiber filter technology that had been developed in Japan. They now dominate the market, while Baxter Travenol retains only 2%. Observers believe that the Japanese firms were more responsive to the demands of physicians. Japanese customers are used to greater variety and do not accept standardization common in American health care products. American users were willing to accept only one method of sterilization of dialyzers. However, Asahi and Torii produced more than twenty different options tailored to meet a wide range of Japanese medical preferences.

Products must be competitively priced. The Japanese medical purse is not bottomless. While the direct control of MHW over doctors' purchasing decisions is weak, the ministry does exert indirect pressure. Many of the new medical technologies that have diffused through the Japanese medical system have been simpler or cheaper than the versions that have sold best in the United States. CT scanners, for example, were introduced into Japan in 1976, about 3 years after they were first sold in the U.S., and are now in almost all hospitals. Most of the scanners, however, are head units rather than the more expensive whole-body imagers that are most common in the United States. Magnetic resonance imagers have also diffused through the Japanese medical system. Most of those sold in Japan have been low-powered units with resistive magnets. These units cost about half a million dollars as compared to the two million dollar helium-cooled superconducting units that have sold well to American institutions.
Innovative products do not maintain their unique status forever. Japanese companies have eventually entered most innovative product markets with competing units, and they have usually offered them at lower prices. Part of their ability to charge less may lie in lower production and capital costs. In addition, the competing products have often been less sophisticated than the original version and, therefore, cheaper to manufacture. Some foreign firms have taken advantage of the demand for their innovative products and charged a premium on goods that they sell in Japan. While such pricing may make sense in the short-run, it enhances the incentive for Japanese firms to produce competing products. Several of the companies with which we spoke listed the innovative products that they sell in Japan at up to twice the price that they charge for the same goods in the United States or Europe, believing that they can maintain a technological lead on their Japanese competitors. Those rivals, however, are often close behind with competing products.

**Marketing and Distribution**—Medical equipment marketers have needed more than price-competitive products. Because of the size and fragmentation of the medical equipment market, sellers must possess sophisticated and well-developed distribution systems. Language barriers and cultural norms require a Japanese sales force. In turn, sales personnel need to develop stable, long-term relationships with the thousands of physicians who make the purchase decisions. Most foreign companies have been only partly successful in meeting these institutional demands.

*American firms have often lacked commitment.* To set up a distribution system requires a large financial investment. Until the 1980s, few American companies had established direct sales subsidiaries in Japan or had even identified it as a distinct territory. Some companies operated their Japan office out of a foreign subsidiary. The size of the Japanese market explains part of the failure to invest. In the early 1970s, the market was only one-tenth the size of that in the United States. Even now it is only about one-fourth as large. The expansion of the American market, after the establishment of the Medicare system in 1966, is another reason; managers had their hands full meeting domestic demand. Only in the 1980s, as the Japanese market began to expand, have many American companies seriously invested in a Japanese operation. Part of the investment took the form of time and energy spent in addressing regulatory issues, which culminated in the MOSS accord. Much of the investment was in establishing direct manufacturing, sales, and service facilities in Japan. Not surprisingly, this investment has been associated with an increase in American medical equipment sales to Japan (see Table 1).

An endemic characteristic of American business operations that hinders penetration of the Japanese market is that American firms tend to be less stable than their Japanese counterparts. They are more likely to fail and
shut down, or to engage in some form of corporate reorganization either through mergers or take-overs. While this instability may be a way of life in corporate America, it creates two major problems in Japan. First, it is hard for American firms to attract good personnel for their Japanese operations. New Japanese graduates expect long-term employment and view the corporation as a lifetime commitment. Midcareer job changes are rare and difficult. Thus, qualified graduates are cautious about going to work for a company that may disappear. As part of its Japan strategy, SmithKline Beckman established its headquarters in a prestigious Tokyo location to attract good staff. In addition, SKB recruited Hachiro Koyama, the well-respected and successful chairman of Johnson Wax in Japan, to serve as Chairman of SKB Japan. This strategy was particularly important because Beckman and SmithKline had just merged and needed to assure its Japanese personnel and customers that it would continue to be a stable force in Japan. Companies that have undergone major restructuring privately admit that corporate reorganizations have hurt their credibility among workers in Japan.

Instability affects the purchasers as well. Japanese medical equipment buyers, valuing long-term relationships, are more likely to purchase equipment from stable companies. Expensive high-technology equipment requires continuing training and service. It is no surprise that instability leads to concern about maintenance and repair, as well as access to incremental product advances that can be incorporated into existing equipment.

Some organizational modes work better than others. Until the 1980s, most American firms simply used Japanese sales distributors or licensed their products to Japanese manufacturers. Even today, most of the two hundred American companies that sell medical equipment in Japan use third-party distributors for their products and maintain no direct presence. For complex equipment, involving tacit knowledge in its dissemination and use, this is not likely to be a successful organization mode.

There are two basic forms of indirect participation in the Japanese markets: using distributors for goods that a company has manufactured outside Japan or licensing the right to manufacture products to a Japanese company. Neither of these alternatives requires major investment in a Japanese operation. Neither, however, permits close contact with users of the products. This creates several problems: tailoring goods for the Japanese market is difficult; maintaining service and training relationships is problematic at best; and informing customers of new advances in technology is uncertain. There is also the potential that the distributor or licensee will use the knowledge that it gains about the product and the product's market to develop competing items. X-ray systems that were distributed for Siemens Corporation and Philips Medical Systems, for example, are reputed to have formed the basis for Japanese advances in that field.
have been practical in cases where products were standardized and involved no potential for future development or where little competition existed. The methods have not provided solid bases for continuing access to Japanese markets for innovative equipment.

In the early 1970s, only a few American medical equipment companies had undertaken direct investment in Japan. These included Hewlett-Packard Company (whose 1963 laboratory instruments joint venture with Yokagawa Electric Works had expanded to include medical measuring instruments); Beckman Instruments (which had established a glucose-analyzer joint venture with Toshiba); and Abbott Laboratories’ joint venture with Dainippon Pharmaceutical. By the mid-1980s, the list of direct participants had expanded. Between 20 and 30 American firms now have direct investments in Japanese medical equipment operations, either through joint ventures or as wholly owned distribution and/or manufacturing operations.

Joint ventures and wholly owned subsidiaries have had distinct differences. First, most joint ventures, such as those between Baxter Travenol and Sumitomo, Hewlett-Packard and Yokagawa Electric Works (YEW), General Electric and YEW, or Beckman and Toshiba, have involved both manufacturing in Japan and distribution of American-assembled goods. Yokagawa Medical Systems (YMS), GE’s alliance with YEW, is particularly notable. When General Electric entered the Japanese CT scanner market in 1976, it used YEW as its distributor. In 1982, it decided to utilize YEW’s manufacturing skills and set up a 51:49 joint venture with the Japanese firm to produce ultrasound systems and mid-line CT scanners for international markets. Many key managers and engineers at YEW joined YMS. They provided credibility to the alliance, and YMS was able to keep and attract good personnel. General Electric has recently used it as the manufacturing site for a medium-field magnetic resonance imaging system. Both parties believe that the alliance has successfully mixed technology and manufacturing capabilities from Japan and the United States.

We must avoid sweeping generalizations about how to improve our aggregate trade balance with Japan. The first step is understanding the subtle influence of public policies and private strategies for each industrial sector.

Fewer joint ventures have been created solely to distribute products that were manufactured in the United States, although Narco Scientific Industries Inc.'s neonatal monitors and Sherwood Medical Company's disposable products were distributed via joint ventures with Japanese firms. Most wholly owned subsidiaries, though, have been established to distribute American goods, not to manufacture products in Japan.
A second difference between joint ventures and wholly owned subsidiaries is that joint ventures have tended to be shorter-lived. Problems between these partners have been common. Just as with licensing, there is a risk of inadvertent technology transfer. In addition, a poor relationship between venture partners can harm relations with end-users. Some American firms, including Narco, have suspended their Japanese ventures after only a few years. Several, for example the Travenol-Sumitomo and Baxter-Toshiba ventures, have been converted to 100% subsidiaries. Others, such as the HP-Yokagawa alliance have had longer lives, but took many years to become profitable. Even the successful GE-YEW alliance appears to be moving toward sole ownership, as General Electric has recently expanded its share of YMS to 75%.

In general, those firms with which we spoke agreed that direct investment had several key advantages: it allowed companies better control of their sales, and it facilitated follow-up and service. Direct organizations have been particularly suitable for sales of complex, innovative equipment that require customer training and after-sales contact, whether those sales were made by company personnel or by agents with corporate staff acting as back-up. Conversely, however, direct operations are expensive. The market must be large enough to justify the investment and the firm must be able to protect that investment from competitors.

Conclusion

There is much to be learned from both the American successes and failures in Japan. The medical marketplace is complex and requires direct investment if long-term access is desired. As the market grows, more American firms are making the necessary commitment. Future trends will depend upon how well American firms respond to the complex demands of an international marketplace. Without ignoring the important policy aspects of our trade problems, a successful approach will combine intelligent corporate strategies with public policy reforms.

Finally, American policymakers and Japan watchers must avoid sweeping generalizations about how to improve our aggregate trade balance with Japan. The problems are complex and require sophisticated solutions. An important first step is an understanding of the subtle influence of public policies and private strategies for each industrial sector. Less simplistic approaches will ultimately lead to real solutions rather than empty rhetoric.

References


3. It is difficult to measure medical equipment sales precisely, because the firms that compose the medical equipment sector produce thousands of items. In turn, the goods are sold to homes and individuals. No completely accurate record exists. However, reasonable estimates are possible. The aggregate figures we report are drawn from five Standard Industrial Classification (SIC) categories of the United States Department of Commerce Census of Manufacturers and the international trade equivalents of those categories. The SIC categories include SIC 3693, X-ray and Electromedical Apparatus; SIC 3841, Surgical and Medical Instruments; SIC 3842, Surgical Appliances and Supplies; SIC 3843, Dental Equipment and Supplies; and SIC 3851, Ophthalmic Goods. These five categories are generally agreed to be the most accurate record of trends in the medical equipment manufacturing sector. See M. Poprik, "The Medical Device Industry: An Updated Profile and Approach to Creating an Industry Inventory System," Consumer Safety Staff, Office of Planning and Evaluation, Food and Drug Administration, U.S. GPR, Washington, D.C., 1976; Office of Technology Assessment, "Commercial Biotechnology: An International Analysis," Washington, D.C. 1984; Office of Technology Assessment, "Federal Policies and the Medical Devices Industry," Washington, D.C., 1984. We have drawn domestic shipment figures from the Census of Manufacturers for 1954-1982 (U.S. Department of Commerce, Bureau of the Census, "Census of Manufactures," issued 1956-1985) and the 1987 Industrial Outlook (U.S. Department of Commerce, January 1987). We have used comparable trade data from Bureau of Census and Department of Commerce sources (Bureau of the Census, 1957-1985; Bureau of the Census, 1965-1984; Department of Commerce, 1987; International Trade Administration, 1987). When possible, we have compared several sources of trade figures. In most cases, they are similar. Sometimes, though, there have been significant differences. For example, Japanese trade figures show a more gradual increase of early 1980s American exports to Japan than American records report. At least two reasons underlie the differences: goods are sometimes reported in different categories or in different years. In some cases, we have taken the average of the differing figures; in others, we have chosen that which appears most accurate. In all cases, we have been conservative in our selection of the shipment figures on which we base our analyses. Although the calculations are estimates, and must therefore be interpreted cautiously, we believe that they portray medical equipment sales trends accurately.


26. Japanese companies sometimes make similar mistakes. When Toshiba first entered the American ultrasound market in the 1960s, for example, it offered the same equipment that it sold in Japan. The scanning assemblies were too small for the larger North American body and the units didn’t sell well. Toshiba, though, eventually introduced an American line of revised scanners that it now markets successfully.
29. We must note, though, that several of the companies with which we spoke do not follow this practice and, in fact, view the Japanese market as a highly competitive one.
30. To verify the contention that Japanese firms are more stable than their American counterparts, we took two samples of medical equipment companies (the analysis is described in more detail in Mitchell & Foote, op. cit., 1988.) The first sample was of Japanese and American firms that sold medical equipment in a neutral territory, Europe, during 1966-1968. The second sample was of American firms that were doing business, either directly or through distributors, in Japan in 1978 and Japanese companies that were selling in the United States in the same year. We then determined the cross-
national comparative number of companies in our samples that were still in existence in 1986. From the 1978 sample, all 20 Japanese firms were still in existence in 1986, while 24 of the 50 American companies had either closed or merged with another. The difference in stability is statistically significant.

31. Abegglen and Stalk, op. cit.

32. The preface for buying from stable companies is not unique to Japanese buyers. Firms with a reputation for stability, such as General Electric, have benefited in the American CAT scan market, where buyers remember being stuck with unserviceable machines when companies like Varian Associates and G.D. Searle Inc. left the market in the late 1970s. Diagnostic Imaging, Business Briefs, 7/8 (August 1985):39.

33. Pacific Projects, op. cit., 1987


