
Japan as Number One

17

In the mid-1970s Volkswagen was surpassed as the major foreign-car exporter to the United States, first by Toyota, then by Nissan. By 1978 Honda's American sales too exceeded Volkswagen's. Twenty years before, Japan's entire annual production had been fewer than 100,000 passenger cars. As has been noted, in worldwide production Japan passed Germany to rank second in 1967 and passed the United States to take first place in 1980.

“Given its limited resources, Japan has dealt more successfully with more of the basic problems of postindustrial society than any other country,” writes Ezra F. Vogel. “It is in this sense . . . that the Japanese are number one.” He is correct in his contention that this “Japanese success [has] had less to do with traditional character traits than with specific organizational structures, policy programs, and conscious planning.” But his 1979 analysis was outdated by the mid-1980s, if only because it was predicated on a weak dollar in relation to the yen. More important, at least for the automobile industry, he is wrong in his unsupportable assertions that “the effort to explain these Japanese successes as a result of cheap labor is out-of-date, for by 1978 with devaluation of the dollar, Japanese wages were slightly higher than those of in the United States” and that “the modernity of technology used in Japanese manufacturing had edged past the United States by 1973.” He is also wrong in claiming that decision making in Japanese firms characteristically proceeds from the “bottom up” rather than from the “top down,” that there is “much authority concentrated on low levels,” and that “the morale of young workers in their thirties tends to be very high.” On all of these counts, the evidence is that the opposite is true.¹

Economic Nationalism and the Rise of the Japanese Auto Industry

The Japanese automobile industry from its beginnings has been the most protected and nationalistic in the world. In the 1930s the military-controlled government attempted to build an entirely Japanese-owned and Japanese-controlled automobile industry. Following the war the 70-percent tariff on motor vehicles was reduced to 40 percent, as opposed to 35 percent in Western Europe and 10 percent in the United States, then to 30 percent in 1968, as opposed to 17.6 percent in the EEC countries and 5.5 percent in the United States. This very high level of protection insulated the industry from foreign competition into the early 1970s. Additionally, there were nontariff barriers. "Whether officially violating the General Agreement on Tariffs and Trade or not, Japanese bureaucrats use a variety of ways to support Japanese producers," Vogel informs us. "When foreign cars were more competitive, the Japanese required that foreign cars off the assembly line had to be inspected in Japan before they could be sold there . . . and Japanese inspectors could find problems as small as location of mirrors or door handles. It thus was difficult for the foreign car maker, subject to such tactics, and sometimes to delays as well, to enter economically into the Japanese market."²

The Japanese automobile industry began its postwar resurgence by filling orders for military trucks from the American occupation forces. These orders became substantial during the Korean War. As late as 1965, Japan produced only 696,000 passenger cars to 1,179,000 commercial vehicles. And production up to the early 1970s was largely for the rapidly expanding and highly protected Japanese domestic market.

Rising incomes in the 1960s brought a phenomenon called "my-carism." In 1970 fully 77.2 percent of the 3,179,000 passenger cars and 68.2 percent of the 2,110,000 commercial motor vehicles produced in Japan were for the domestic market. And although the Japanese automobile industry in 1970 was by no means as efficient in production as the American or the German industry, the high tariff barrier kept total imports at only 19,552 motor vehicles.

The year 1970 was the first in which Japanese records showed more passenger cars (8,779,000) registered than trucks (8,282,000), while outdated three-wheel vehicles still accounted for 243,934 registrations. The small three-wheel truck, uniquely suited to use by small businesses on Japan's narrow streets, had been the most popular vehicle in Japan and the mainstay of Japanese motor vehicle production until about 1960.

As the domestic market reached maturity and imminent saturation in

the 1970s, the Japanese automobile industry shifted its emphasis dramatically to exports. By 1976 exports accounted for 50.5 percent of Japan's passenger car production and 30.5 percent of its commercial vehicle production.

Government sponsorship of this shift had been presaged as far back as 1949, when the Ministry of Commerce and Industry was reorganized as the Ministry of International Trade and Industry (MITI). MITI targeted specific industries for protection from foreign competition in order to encourage their development as strong international competitors. In 1955 the automobile industry became one of these, and by the early 1970s it was strong enough to compete abroad. The MITI formula for international success was very conventional—a combination of eliminating foreign competition from the domestic market, eliminating competition among Japanese producers so that economies of scale could be gained, and getting more labor productivity at lower wages than did foreign competitors.

The only part of the MITI formula that failed to materialize was the restructuring of the industry into two passenger car producers, Toyota and Nissan, and a third producer of specialty vehicles and buses. Being merged out of existence was recalcitrantly resisted by Mitsubishi, Toyo Kogyo, Honda, and Isuzu, because they were making satisfactory profits on their own. However, in the July 20, 1967, MITI-sponsored "Hakone Declaration," all six major automobile manufacturers agreed to develop on a national basis, as Japanese-owned and Japanese-controlled companies, under national guidance, to meet MITI export policy objectives.

As befitted the new emphasis on international trade, the Japanese tariff on motor vehicles evaporated—from 40 percent on small cars, 35 percent on large cars, and 30 percent on trucks and buses on May 1, 1968, to zero by 1978. Yet this made absolutely no difference in import penetration of the Japanese market. Imports accounted for 1 percent of new Japanese passenger car registrations in 1968 and 1.2 percent in 1982; in between, they ranged from a low of 0.7 percent in 1970 and 1971 to a high of only 1.8 percent in 1978. In 1982 only 36,119 motor vehicles of all types were imported into Japan, and of these only 3,305 were imported from the United States. The reason is an array of nontariff barriers.

One of these barriers is a split-rate commodity tax on imports, amounting to 15 percent on cars with engines having less than 2,000 cc of displacement and 20 percent on cars with a larger engine displacement. This tax is based on the import value cif (cost, insurance, and freight included in price), rather than fob (free on board from point of origin) as in other countries, while Japanese cars are taxed on their ex-factory value. Imports are also discriminated against by the requirement that they be

adjusted to comply with an extensive list of unique Japanese safety and environmental standards.

The commodity tax discriminates in two ways. In addition to restricting imports into Japan, it is used to lower the prices of cars exported from Japan to make them more competitive abroad. Unlike most American taxes, which are built into the retail price of a car, the commodity tax is a value-added tax. An amount equivalent to about \$800 of the commodity tax is rebated by the government to the Japanese automobile manufacturers on every unit they export. This makes Japanese cars cheaper at the dock in the United States than in Tokyo.

Beyond these protective tariff and taxation policies, as Alexander D. McLeod documents, “government support measures to strengthen the international competitiveness of the industry included low-interest loans from public financial institutions, government subsidies, special depreciation allowances, the exemption of import duties on necessary machinery and equipment, and authorization for essential technology imports.”³ Loans from the Japanese Development Bank between 1951 and 1955 amounted to ¥1.5 billion, about 10 percent of the investment in plant facilities to manufacture passenger cars. Funds allocated by the Development Bank to the automobile industry under the 1956 Law Concerning Provisional Measures for Development of the Machinery Industry averaged 13.6 percent of fixed investment and, during 1957–1959 and 1964–1965, reached as high as 30 percent. Subsidies and commissions amounting to ¥369 million were paid out by the government between 1951 and 1959 to the Automobile Technology Association and similar organizations. Special depreciation allowances on selected essential machinery went into effect for the automobile industry in 1951 and for the automobile parts industry in 1956, reducing the expenditure to purchase ¥64.36 billion of designated machinery to only ¥11.85 billion, or 18.4 percent of its worth. Moreover, essential machinery and tools not manufactured in Japan were exempted from import duties by the 1954 Tariff Law and the 1960 Provisional Tariff Measures Law.

Finally, the Japanese automobile industry has been aided by the Japanese government’s policy of keeping the yen undervalued in relation to the dollar. As a result of this policy, Japanese-made products, including automobiles, are cheaper than equivalent American-made products in both the U.S. and world markets.

William Chandler Duncan makes an important distinction between the reorganization of the Japanese automobile industry by MITI and the more familiar ways in which governments protect “infant industries.” The difference is that “though a prosperous and competitive industry was of top priority, the reorganization policy came to center on a political

objective, i.e., management control. By 1962 the issue among MITI planners was not how to maximize automobile production but rather how to maximize domestically controlled automobile production.”⁴

Japanese car manufacture remained a technologically backward industry into the 1950s. Labor productivity was so low that in 1952, for example, a two-door, 27-horsepower Toyopet cost more than a new four-door eight-cylinder Ford, including transportation and import taxes. Acknowledging the technical superiority of foreign makes, the major Japanese companies sought to establish technical tie-ups with foreign producers. In 1952 and 1953 agreements were signed between Nissan and Austin, between Hino and Renault, between Isuzu and Rootes, and between Mitsubishi and Willys-Overland, stipulating the payment of royalties for technical assistance, the rights to Japanese assembly of imported knockdown units and to eventual components manufacture, and sole import rights for imported cars and parts. Direct investment by the foreign companies was negligible and financed from the royalties that they received.

The assembly of imported knockdown units through these technical tie-ups had been encouraged by the Japanese government. But, as Duncan observes, by 1955 MITI was “pushing for a ‘nationalization’ of the passenger car industry—i.e., domestic production of parts as well as assembled vehicles.” As part of a general “buy Japanese” campaign inaugurated by the Hatoyama government in December 1954, an order went out that all motor vehicles purchased for government use must be domestically produced. In March 1955 MITI announced its “New Policy of Nationalizing Foreign Passenger Cars,” which restricted the foreign exchange allocated for automobile parts. “By 1958 all foreign passenger car assembly operations had converted to the use of domestically produced parts. The demand of the 1960s was filled almost exclusively by Japanese companies.”⁵ A MITI quota limited the import of engines to only 1,000 units a year. A MITI regulation announced in June 1967 limited foreign ownership of stock in existing Japanese companies to 7 percent per investor and a total investment of 15 percent before application for approval had to be made to MITI under the Foreign Investment Law. In automobile manufacturing, both joint ventures with foreign firms and 100-percent foreign-owned subsidiaries in Japan were prohibited.

In response to growing protectionist sentiment in the United States, the Japanese made concessions to American negotiators between 1968 and 1973 that liberalized trade in engines and parts and relaxed limitations on foreign investment. By August 1968 the Japanese had agreed to raise progressively the engine import quota to 30,000 in 1969, 50,000 in 1970, and 70,000 in 1971, with full liberalization (the end of quantitative quotas)

for engines and automotive parts beginning in October 1971. The tariff on large passenger cars was reduced to the Kennedy Round rate of 17.5 percent, that on small cars to 20 percent; and after 1978, as noted, tariffs were entirely eliminated. Effective October 1971, the Japanese commodity tax on large cars was equalized at 20 percent (down from 40 percent) in exchange for the repeal of a surcharge on Japanese automotive imports into the U.S. levied by the Nixon administration. It was announced in August 1968 that foreign investment proposals for the assembly of automotive parts in Japan would be considered on a case-by-case basis. Effective April 1971, joint ventures between Japanese and foreign automobile producers involving investment in kind were examined for approval on a case-by-case basis, and the restriction on direct investment in new enterprises was liberalized to permit a maximum of 50 percent foreign ownership. Foreign investment in existing automobile enterprises remained for a short time limited to 35 percent by a MITI guideline, which stipulated that the remaining 65 percent of company shares be controlled by so-called stable stockholders. Then in April 1973 the Foreign Investment Council announced abandonment of the 50 percent limitation except for a few industries. This made 100 percent foreign ownership of a Japanese automobile company at long last a legal possibility.

Under the 35 percent MITI guideline, Detroit's Big Three gained a foothold in the Japanese automobile industry, which they have not strengthened significantly under the Foreign Investment Council liberalization. A Chrysler contract to purchase 35 percent of Mitsubishi over a three-year period was approved in June 1971; but a year later the financially shaky Chrysler announced it would limit its investment to 15 percent. Ford's negotiations for 20-percent ownership of Toyo Kogyo reached an impasse in 1972 over the price Toyo Kogyo demanded for its shares and its desire to prevent Ford from increasing its holdings in the future. Ford did, however, enter into joint ventures with both Toyo Kogyo and Nissan to manufacture automatic transmissions in Japan, and it marketed the Toyo Kogyo-built Courier pickup in the United States. The resumption of negotiations led to Ford's acquiring a 25-percent interest in Toyo Kogyo in 1979. In a contract approved in September 1971, General Motors acquired a 34.2-percent interest in Isuzu, which made only commercial vehicles and accounted for only 3 percent of Japanese production. The contract included provisions for cooperation in safety and antipollution research, cooperation in marketing the small Isuzu truck through the GM sales network, and the establishment of a joint venture for manufacturing automatic transmissions. GM agreed to severe limitations on its control, including a stipulation that the Isuzu chairman of the board and president would remain Japanese. Subsequently, GM also entered into an agreement

to sell trucks made by Suzuki under the GM nameplate in the United States and acquired a 5.3-percent interest in that firm. Thus, despite liberalization to the point of permitting 100 percent foreign ownership, direct foreign investment in Japanese automobile companies has remained very limited.

“If direct investment in Japan by foreign vehicle manufacturers was very limited up to 1973, so too was Japanese overseas investment in manufacturing and assembly,” writes George Maxcy. “Indeed so small was the proportion of overseas production and assets to that of the parent company that, on some definitions of the MNE [multinational enterprise], even the largest Japanese companies would not have been qualified. Moreover, each of the foreign plants manufactured or assembled solely for its local market, so that no Japanese company had the semblance of a multinational network or system.” The fifteen overseas assembly plants in which Japanese auto makers had a financial interest were all small joint ventures with local companies. The largest was Nissan’s 85-percent-owned Mexican facility, which produced only 25,000 units in 1973. The annual capacity of Toyota’s wholly owned Brazilian facility was a mere 1,200 units. Most of the Japanese overseas operations were in Southeast Asia. Maxcy concludes, “Tariffs and local content requirements meant that some investment by the Japanese firms was needed in each case to preserve access to these markets. That approval by the Japanese government for these investments was obtained is another indication that they were ‘necessary,’ since the policy throughout this period was one of strongly encouraging exports and restricting overseas manufacturing investment.”⁶

That policy remains in effect today. Only under the compulsion of local restrictions and penalties that threaten access to markets have the Japanese automobile producers invested in manufacturing operations abroad. The reason is a unique Japanese combination of a protective government, close relationships with financial institutions and ancillary industries, and an exploitation of labor unparalleled in any other advanced industrial country. The consequence of this unique combination is that automobiles can be produced cheaper in Japan than elsewhere in the world.

Japanese Manufacturing Advantages: Myths and Realities

The automobile manufacturing enterprises that got started in Japan in the 1930s entered a business community in which firms were traditionally organized into family-controlled industrial/financial groups called *zaibatsu*

(literally, “financial cliques”). An attempt by the American occupation authorities to break up the zaibatsu after the war had only limited success and minimally affected the automobile industry. For example, Toyoda Loom was forced to divest two thirds of its holdings in Toyota Motors, which in turn had to dispose of its stock in some forty affiliates. The Toyoda Loom holdings were retained by Toyota Motors, however; and it remains a moot point whether, as McLeod claims, “the loss of rights over its affiliations inhibited Toyota Motors’ ability to integrate production vertically.”⁷

The zaibatsu were replaced by looser conglomerates of industrial enterprises called *keiretsu* that are centered around the “city” banks—such as Mitsui, Sumitomo, and Mitsubishi. These banks obtain funds for reloan to industry from the Bank of Japan, the Japan Development Bank, the Japan Industrial Bank, and the Export and Import Bank. The keiretsu operate through a pattern of affiliation and cooperation based on cross-equity holdings. The MIT Report explains that “the group’s lead bank will hold 5 percent or less of the equity in each of the other group enterprises and each of the other group enterprises will hold a small share of the equity in each of the other group enterprises, including the bank. The net result is that the group members hold a controlling interest in each others’ enterprises. Foreign ownership is effectively blocked. . . . In addition, to the benefit of each group member, a system of group cross-checks of producer performance has evolved.”⁸

As an illustration of the way in which the keiretsu pattern works, the Sumitomo group came to the aid of Toyo Kogyo after sales of its gas-guzzling rotary-engined cars collapsed as a result of the 1973–1974 energy crisis. With annual revenues of about \$200 billion, or three times the annual revenues of GM, the Sumitomo group had more than adequate resources to bail out Toyo Kogyo. “However, the group and the lead bank were deeply concerned about the adequacy of TK’s management and were determined to completely understand the true condition of the company before proceeding with massive lending. Their solution was to remove the senior management, headed by the grandson of the firm’s founder, and its largest private stockholder. . . . With its own representatives in charge of Toyo Kogyo, the group proceeded with sufficient lending to finance the simultaneous development of three new models and to completely overhaul the production system.” The resulting turnaround saw Toyo Kogyo become profitable once again as both labor productivity and market shares in Europe and the United States increased. The MIT Report observes, “The contrasting experiences of Toyo Kogyo (Mazda) and Chrysler during recent periods of financial crisis illustrate the unusual features of this

Japanese system and the competitive advantage it carries over American and much European financial practice.”

The high debt/equity ratios of Japanese automobile companies up to the 1970s reflected not financial weakness, as they would in America and Europe, but the confidence of the banking structure. And these high debt/equity ratios were cushioned by commitments of long-term financial support. The confidence of the banks has proved more than justified, and the debt/equity ratios of Japanese automobile manufacturers have declined steadily. Toyota was debt free by 1977, while between 1971 and 1982 Nissan’s debt/equity ratio declined from 37.7:1 to 16.1:1, Honda’s from 57.8:1 to 25.1:1. During the same period, in contrast, GM’s debt/equity ratio increased from 5.1:1 to 19.6:1, Ford’s from 12.6:1 to 26.4:1.

Japanese automobile manufacturers enjoy a huge cost advantage over their American and European competitors that is explained by a combination of lower wages, higher labor productivity, and a unique system of material controls and plant maintenance. The MIT Report estimates “that the U.S.-Japan production cost difference on a small car exceeds \$1,500 (at 215 yen = \$1) and that some recent estimates of the U.S.-Japan cost gap, setting it lower than \$1,000 on a typical small car, are impossible to support given the evidence at hand. With regard to the European producers . . . the Japanese have a substantial, although lesser, cost advantage.”

On an annual basis the wages paid to Japanese automobile workers seem to compare fairly well with the wages of automobile workers in other countries. But it must be remembered that most Japanese automobile workers still work a six-day week with only two weeks of annual vacation and that much overtime is required. Although from 1975 to 1980 Japan posted the greatest gains in hourly compensation of automobile workers of any automobile-producing country, the average hourly compensation of Japanese automobile workers in 1980 still was about half that paid to American automobile workers, with fringe benefits being about equal.

Japanese labor-management relations go beyond being paternalistic to be premodern. They are less advanced in some important respects than those instituted at the Ford Motor Company in 1914–1915, far less advanced than those common in American and European automobile factories a generation ago. Wages are paid not on the basis of what workers do but on the basis of a combination of individual skill level, seniority, and the company’s performance.

Although the claim remains untested in a long-term declining market for motor vehicles, in principle the permanent workers of the major Japanese auto producers enjoy lifelong employment. Even during crises, as at Toyo Kogyo, layoffs have been rare. This is possible only because

cyclical fluctuations in demand are accommodated by increases or reductions in both mandatory overtime and the number of “seasonal” or temporary workers, the latter comprising a significant proportion of the work force in Japanese automobile plants. These seasonal workers are generally farmers from the north seeking winter employment. Annual production schedules are adjusted to take advantage of their availability. They reside in regimented company-owned bachelor dormitories, where their private lives come under the close scrutiny of security guards recruited from the National Self-Defense Forces. No women are hired as permanent workers. Also, wages are lower and working conditions worse in the plants of the components suppliers upon whom all of the major automobile assemblers heavily depend.

Japanese assembly lines are undermanned by Western standards. There are fewer workers on the lines; each worker typically performs more tasks; and a worker is expected to learn a greater variety of “production skills” during his term of employment. Given that one routine task is much like another, it is open to question whether this should be characterized as “upgrading skills through lifelong learning” or as a speedup. Most certainly, Japanese semiskilled automobile workers do not develop into craftsmen over the course of their employment—only into semiskilled workers who are adept at a larger number of routine tasks.

More important to labor productivity, however, work rules in American automobile plants limit the tasks that given workers can perform. In contrast with the usual 400 to 500 work rules in American automobile factories, Japanese plants have only 4 or 5. That Japanese workers are not prevented by work rules from performing a wide variety of tasks results in a need for far fewer workers and consequently far greater labor productivity.

About six times the number of industrial robots in relation to units of output were used in Japanese automobile plants in the early 1980s than in American plants. Notably, however, the Japanese count as “robots” many relatively low-level automatic machine tools that are not considered robots in the American auto industry. Visitors have been impressed by the small number of operators in sight monitoring them. While it is probably true that the Japanese have progressed furthest in mechanizing dehumanizing assembly operations, it is also true that the use of robotics until very recently has been fairly well limited to welding operations, which robots perform more precisely than do humans. The workers out of sight have been out of the visitors’ minds. Most jobs in automobile manufacturing still exact a high human toll, and the evidence is that Japanese automobile workers are pushed harder than their Western counterparts.

The “quality control circle” meetings praised as an example of Japa-

nese industrial democracy are held on the workers' own time, generally for the purpose of discussing how to implement management directives without increasing labor costs. This means that Japanese automobile workers in fact have no more effective input into the structure of the workplace than do American automobile workers, somewhat less input than German or Swedish automobile workers, and a good deal less input than British automobile workers.

Unionization, in the Western sense, does not exist in Japanese automobile plants. Both blue- and white-collar employees are members of company-dominated "enterprise unions," affiliated into the Federation of Japanese Automobile Workers' Unions, which is in turn affiliated with Domei, the Japanese Confederation of Labor. These automobile workers' unions have not confronted management with workers' demands since the early 1950s, with the result that work stoppages over wages and conditions of employment do not occur to disrupt production.

It is doubtful whether this means that Japanese automobile workers are more contented with their lot than Western automobile workers. McLeod points out, for example, that a "1970 study of alienation among Japanese automobile workers found a high proportion who felt their jobs made them work too fast, were dull and tiresome, and were too simple."⁹ It must further be borne in mind that the work force in Japanese automobile plants is very young, averaging in 1980 only 35 years of age at Nissan, 32 at Toyota, and 30 at Honda. It remains to be seen whether the principle of lifelong employment will be compatible with high labor productivity and low wages as the average age of this work force increases.

The best recent estimate of the U.S.-Japanese labor productivity difference shows a Japanese advantage in 1980 of 39 employee hours per vehicle to 74 hours per vehicle in American plants. Other reliable data show the productivity of Japanese automobile producers to be vastly superior to that of European as well as American producers. In 1979 GM-U.S. produced 10.4 motor vehicles per employee and Ford-U.S. 12.8:1; European productivity ranged from 14.9:1 at Ford-Werke and 14.4:1 at Opel to only 3.9:1 at Mercedes-Benz and 3.5:1 at British Leyland, with Volkswagen productivity at 10.6:1 and Renault at 8.3:1. In contrast, Toyota produced 26.9 motor vehicles per employee and Nissan 22.4:1, better than doubling the labor productivity of their Western competitors.

After analyzing all available labor productivity and hourly compensation data, the MIT Report reaches the conclusion that "the [national] difference in total employee cost per vehicle is large. Use of approximate hourly compensation estimates . . . indicates a U.S.-Japan employment cost difference per vehicle approaching \$2,000 and a German-Japanese difference roughly half as large." Additionally, Japanese capital costs

per vehicle are lower. The report explains that this “is not due primarily to capital costs in Japan but to the fact that Japanese producers seem to require much less plant and equipment per unit produced and to have much lower in-process inventories than the American or German producers.”¹⁰

A research panel charged by the National Academy of Engineering and the National Research Council to study the competitive status of the U.S. auto industry reported in 1982, as its “most striking finding” about the U.S.-Japanese performance gap, “the relative unimportance of the factors connected with technology. Neither automation nor product design is accorded a large measure of explanatory power. Despite the publicity devoted to robotics and advanced assembly plants, such as Nissan’s Zama facility, U.S. firms appear to have maintained comparable levels of advanced process techniques and equipment.” The panel was unanimous in explaining the great Japanese advantages in cost and quality as due to “an amalgam of several management practices and systems related to production planning and control. . . . [T]he key to Japan’s lead . . . appears to be the interaction of the material control system, maintenance practices, and employee involvement.”¹¹

American automobile manufacturers have tended either to absorb their suppliers or to keep them at arm’s length and pit them against one another. In contrast, the Japanese develop cooperative relationships with their outside vendors and link them to the final assembly schedule through the *kanban*, or “just-in-time,” system of inventory control. Raw materials, parts, and components are delivered in small lots just before they are needed, by independent suppliers located in close geographic proximity to the point of assembly. This largely eliminates the costly keeping of an in-process inventory and waste in handling materials and components. It is a production system that will not work if there are frequent lengthy breakdowns. “Maintenance programs, preventive and scheduled, are therefore pursued vigorously. Plants operate with only two shifts, and equipment is maintained through nonproduction time. The result is a much lower rate of machine failure and breakdown.” Notably, the Japanese copied this system from practice at the Ford River Rouge plant in the 1920s.

Far fewer inspectors are employed in Japanese than in Western automobile plants, because the “just-in-time” system does not permit extensive inspection of incoming materials and components. As a result, responsibility for quality control is pushed back to the suppliers. “This same approach—quality control at the source—is used in production on the line, where workers have the authority to stop the operation if they spot defects or other production problems,” the National Academy of Engineering–National Research Council panel observes. “Worker-initiated line stops

are central to the concept of *jidoka*: making problems visible to everyone's eye and stopping the line if trouble occurs; all thoughts, methods, and tools to avoid stops are *jidoka*." The MIT Report concludes that the kanban-*jidoka* system "establishes a new standard of best practice for the world. It supplements the old Ford system in the plant and the Sloan formula for coordinating the production chain as the recipe for competitive success."¹²

Market Success and Token Production in America

Cars built for the Japanese domestic market characteristically have been small and relatively low powered. There are several reasons for this. Japan is entirely dependent on imported petroleum, so cars must be fuel efficient. City streets are very narrow and congested, making large cars difficult to maneuver and park. The relatively poor condition of Japan's highway network militates against sustained high-speed travel.

Japanese penetration of the lucrative American market began in 1958, when 1,479 passenger cars and 40 light trucks were exported to the United States. Gaining a foothold proved difficult. The first Japanese passenger cars imported, the Datsun L210 (advertised as the Datsun 1000) and the Toyota Toyopet, were too underpowered for freeway driving. "The performance of the Datsun is best described as melancholy," *Road and Track* reported in December 1958. "Even though its gearing is well chosen, the engine is just too small to cope with the car's weight." The magazine went on to note, however, that "the car is really quite good, and with a few relatively simple changes it could go over. It is, even in its present form, better than most of the small British cars currently being sold in this country: not so fast, perhaps, but it should be more reliable and it has a nice solid feeling about it."

Up to the late 1960s the Japanese were a negligible factor in the U.S. market. They exported a mere 7,517 motor vehicles to the United States in 1963 and only 82,035 in 1967. The big breakthrough came in 1968, when American imports of Japanese cars more than doubled to 182,547 units.

The first Japanese passenger car adequate for American driving conditions was the 1965 Toyota Corona. Light, four-cylinder Datsun and Toyota trucks rapidly gained a reputation for ruggedness. And in 1969 the Datsun 240-Z sports car, the first of the distinguished Z line, was chosen Sports Car of the Year by *Road Test* magazine. In 1975 both Datsun and Toyota surpassed Volkswagen in U.S. sales to become the leading exporters of motor vehicles to the United States. Total American imports

of Japanese motor vehicles reached 1.37 million units in 1976, 2.4 million units in 1980.

By 1980 Japanese cars and light trucks had established a reputation as the best built in the world. Data gathered from its subscribers by *Consumer Reports* in 1979 rated the assembly quality of American-made cars versus imports on a 10-point scale: the imports had advantages of 7.9 to 6.4 for subcompacts, 7.7 to 6.2 for compacts, and 8.1 to 6.6 for midsize cars. Even more impressive, in 1980 *Ward's Auto World* reported the results of a survey in which U.S. automotive engineers were asked, "What country produces the best-quality cars today?" Forty-eight percent of the respondents selected Japan, 27 percent the United States, and 23 percent West Germany. A 1979 German survey of newly registered cars revealed that five of the six models with the lowest frequency of breakdowns were Japanese.

In the years 1974 and 1975, Maxcy notes, Japanese producers accounted for 70 percent of all motor vehicle imports into the United States, "at a cost to the American economy of almost \$8 billion, which represented one-third of the U.S. trade deficit with all countries. And it represented the loss of tens of thousands of jobs in the American motor industry. If protection was ruled out then the only solution to the excessive drain of dollars and jobs seemed to be the establishment of Japanese plants in the U.S. producing cars with a high local content." The Big Three and the UAW joined forces to seek protection from Japanese imports unless the Japanese began to manufacture motor vehicles in the United States.¹³

The first Japanese-owned automobile plant in the United States was the motorcycle plant opened in September 1979 at Marysville, Ohio, by Honda America Manufacturing. Production of the midsize Honda Accord began at the Marysville plant in November 1982. Honda adopted a policy of selling only American-built Accords east of the Mississippi River, only imported Accords in the western states, to avoid side-by-side comparisons. In 1984 some 133,000 domestic-built Accords were sold in the United States, versus 123,000 imported ones. The cars are of comparable quality. In 1986 Honda began turning out the subcompact Civic at Marysville as well, and it introduced a second line of Japanese-built cars under the name Acura.

Before entering automobile manufacturing in 1962, Honda had become a distinguished marque in motorcycle design, production, and racing. Perhaps because of its late start in four-wheel automobile production, and consequently its weak position in the Japanese home market compared to Nissan and Toyota, Honda has been the most internationally minded and technologically oriented firm in the Japanese automobile industry.

It also has been the most progressive in its labor policies, having adopted the five-day week at all factories as early as 1972.

The Honda Compound Vortex Controlled Combustion (CVCC) engine, announced in 1971, became the first engine to comply with the 1975 amendments to the U.S. Clean Air Act. The CVCC engine utilizes a small auxiliary combustion chamber with a separate carburetor. The auxiliary chamber is supplied with a very rich (4:1 to 5:1) air-fuel mixture, while the main chamber is supplied with a very lean (18:1 to 20:1) mixture. This results in significant reductions of both nitrogen oxides and carbon monoxide, while improving fuel economy. An improved exhaust manifold system solves the problem of hydrocarbon emissions. The acceleration performance of the CVCC engine has been improved in the CVCC II system, and a catalytic converter has been added to control hydrocarbons. The CVCC engine was incorporated in the design of the Honda Civic, which began to be exported in 1972. The following year Honda signed licensing agreements with Ford, Chrysler, and Isuzu permitting them to use the CVCC technology.

The technological excellence of Honda cars, combined with American production not subject to import barriers, raised Honda's annual U.S. sales to over half a million units. Honda surpassed Nissan in 1984 and Toyota during the first three months of 1985 to become the leading foreign producer in the American market. Honda America also became in 1985 the fourth-largest domestic producer, selling nearly as many units as AMC and Volkswagen of America combined. American buyers have been willing to pay premiums over the suggested retail prices for Accords, Preludes, and Civics, which remain in short supply. With average sales of 100 cars more per year than Toyota dealers, the Honda dealer network in 1985 led the entire automobile industry in sales per outlet in the United States.

Following Honda's lead, in 1980 Nissan Motor Manufacturing, U.S.A., was incorporated in Delaware. In 1983 Nissan began building light trucks at the rate of 10,000 units a month at an 850-acre plant in Smyrna, Tennessee, near Nashville—a plant whose \$300-million cost makes it the largest investment to date by a Japanese company in the United States. The decision to begin production at Smyrna with light trucks rather than passenger cars was made because trucks are simpler to build and, lacking annual model changes, have a more stable market. The production of subcompact Sentra passenger cars was added at Smyrna in April 1985. Nissan plans to turn out 100,000 Sentras a year there by 1988.

General Motors and Toyota began in late 1985 to assemble the Nova—a Toyota-designed subcompact similar to the Corolla, with many Japanese components—at a reopened Chevrolet plant in Fremont, Cali-

fornia. GM contributed the plant and \$20 million, Toyota \$250 million, to form New United Motors, Incorporated, with Tatsuro Toyoda, grandson of the Toyota founder, as president. GM and Toyota each own 50 percent of New United Motors, which is the first U.S.-Japanese joint venture in the United States. Job categories, already reduced substantially in GM's other American plants, have been virtually eliminated at Fremont, where Japanese labor-management practices are being instituted. The Fremont plant is expected to produce about 50,000 cars a year. Toyota also has announced plans to build 200,000 cars at its own plant, site still unspecified, in the United States.

Despite having challenged the GM-Toyota joint venture in the federal courts on antitrust grounds, Chrysler in April 1985 announced its own plans for a joint venture with Mitsubishi. The plans call for a \$500-million factory, which will have produced 180,000 Mitsubishi-designed cars by late 1988, and for Chrysler's increasing its share of Mitsubishi stock to 24 percent. Chrysler previously had announced limits on its U.S. expansion as a result of the ending on March 31, 1985, of voluntary restrictions on Japanese motor vehicle exports to the United States. That event notwithstanding, explained Mitsubishi president Toyoo Tate to reporters, the decision to manufacture in the United States was based on the belief that "complete freedom of exporting to the American market will not occur in the foreseeable future." On the same assumption, Toyo Kogyo has formed the Mazda Motor Company, which will begin to produce cars at a new factory in Flat Rock, Michigan, in 1988. Initial production of 240,000 units is planned.

Should all of the plans of Japanese manufacturers announced by mid-1985 materialize, the plant capacity for producing Japanese-designed motor vehicles in the United States will reach some 1.36 million units by 1988, about 10 percent of the anticipated American production. It is expected that by then Japanese makes may account for as much as 44 percent of new-car sales in the United States.

The Japanese Challenge and Our Mounting Trade Deficit

Under intense pressure from the Reagan administration, in 1981 the Japanese government established "voluntary" restrictions limiting exports of motor vehicles, first to 1.68 million, then to 1.85 million units a year. The intention was to give U.S. auto manufacturers a respite from Japanese competition while they retooled to produce small, fuel-efficient cars.

Following reports of record profits by the Big Three in 1984, on March 1, 1985, President Reagan announced that he would heed a Cabinet

Council recommendation and not ask the Japanese government to continue the voluntary restraints when the quota program expired on March 31. Urging “free and fair trade” in return, the president hoped to gain other trade concessions in protected Japanese markets for electronic equipment and agricultural products. While making no trade concessions to the United States, the Japanese government announced its intention to increase motor vehicle exports to the United States by 24.3 percent—to 2.3 million units annually. This voluntary 2.3-million annual quota has since been extended to 1987 by the Japanese government, to the consternation of Japanese automobile manufacturers, who wish all restrictions ended.

Ford chairman of the board Donald E. Petersen lamented that the Reagan decision would “create jobs in Japan at the expense of jobs for American workers.” “This is a sad day for America—for American workers and American jobs,” said Chrysler chairman Lee Iacocca. He later announced plans to curtail U.S. expansion of small-car production and increase Chrysler imports of Mitsubishi Colts from 87,500 annually to 287,500. UAW president Owen Bieber claimed that “no less than our middle-class standard of living is at stake as America’s best jobs are allowed to shift overseas. . . . We have to question the competence of negotiators who are willing to add \$5 billion to \$7 billion [annually] to an already frightening trade deficit without securing an agreement from Japan to purchase more goods and services in return.” In response to news of the Reagan Cabinet Council recommendation to end the quotas, the UAW earlier had claimed that 150,000 jobs in the American automobile industry would be lost, causing “devastation of a number of automobile communities around the country,” and that the transition of the American automobile industry “to efficient production of new kinds of high-quality, fuel-efficient cars” would be aborted.¹⁴

In opposition to the responses of Ford, Chrysler, and the UAW, General Motors issued a statement that praised President Reagan for acting “responsibly” in recognition that “the time has come to return to free trade.” The raising of the Japanese export quotas permitted GM to implement plans to import annually some 300,000 small cars from Isuzu and Suzuki, to be sold as Chevrolet Sprints and Chevrolet Spectrums.

Consumer advocates, too, praised the lifting of the restraints. It was estimated by the Federal Trade Commission that the import restrictions had saved 44,000 jobs, but at the cost of raising the average price of a Japanese-made car sold in the U.S. by \$1,300 and the average price of an American-made car by \$600.

Despite the restraints, from 1981 to 1985 the Japanese auto makers actually increased their American profits—from \$8.2 billion in 1980 to \$12.4 billion in 1984 on 150,000 fewer units. The reason was that the Japa-

nese upgraded their model mixes for U.S. export to include more of their larger cars loaded with more luxury extras. Henry V. “Gene” Leonard, Jr., GM’s top Japanese representative, explained: “When your unit volume is limited, you’d be a fool not to switch to a richer mix. . . . As long as the export restraints continue, then the Japanese companies will continue to push their larger cars, loaded with the maximum possible number of options in order to maximize their unit revenues.” An unidentified Japanese auto executive quipped, “Quotas are the mother of invention.”¹⁵

Despite the restraints, too, in 1984 the United States accumulated a record \$36.8-billion trade deficit with Japan and a \$123.3-billion trade deficit worldwide. Half of the trade deficit with Japan was accounted for by automobile imports, and the International Trade Commission estimated that without the restraints the deficit would have been \$4 billion higher. Consequently, on March 29, 1985, the United States Senate unanimously approved a resolution urging the Reagan administration to take steps within ninety days to curb Japanese auto imports if Japan failed to buy more American products.

The resolution proved of little consequence. On July 30, 1985, Prime Minister Yasuhiro Nakasone announced a three-year “action program” intended to “make the Japanese market the most open in the world” and thereby “totally exterminate opinions that Japan is unfair”; no real trade concessions to the United States were contained in the program, however. The Reagan administration expressed disappointment that the action fell short of what was needed to stave off growing protectionist sentiment in Congress, but no retaliation was undertaken. The United States trade deficit with Japan shot up to a new record of \$49.7 billion in 1985 and has continued to widen.

In addition to adapting to changing market conditions, perfecting the *kanban-jidoka* system, and exploiting their great labor productivity/labor cost advantages, the Japanese have begun to outpace Europe and the United States as well in innovation in automotive technology. The traditional technological dependence of Japanese automobile manufacturers on the U.S. and Europe has now become a myth. As an indication of this, Japan increased its total share of worldwide automobile patenting from only 11.9 percent in 1970–1971 to 34.5 percent in 1980–1981, while Japan’s total share of automotive patenting by final assemblers increased from 15.5 percent to an astounding 56.4 percent over the decade. Europe declined over the same period from 56.3 percent to 36.8 percent in total patenting and from 30.6 percent to 19.7 percent in patenting by final assemblers; the U.S. declined from 31.8 percent to 28.7 percent in total

patenting and from 53.9 percent to 23.9 percent in patenting by final assemblers.

The huge profits gained from automotive exports to the United States have been used wisely by the Japanese to establish an independent base in automotive technology. Cost advantages in large part attributable to government labor and trade policies thus ultimately translate into a formidable Japanese challenge to the long-standing technological lead of American and European automobile manufacturers. Whether Japan will soon become number one in automotive technology as well as in production remains to be seen.

New Frontiers

18

With the rebuilding of plant facilities following the massive destruction of World War II, American mass-production methods rapidly came to be institutionalized in European automobile factories. As Jean-Pierre Bardou points out, “technical and organizational readjustment in the industry (in the United States from the 1930s onward and in Europe from the end of the war to the 1960s) was paralleled by a profound change in the composition of the labor force, resulting in a massive hiring of rural and immigrant workers, a heterogeneous group without training.” By 1970 blacks constituted 44 percent of Detroit’s population and accounted for more than 60 percent of the workers on some Detroit assembly lines. White migrants from Appalachia and recent Arab immigrants also were prominent in Detroit’s automobile factories. Assembly lines in Western Europe came to be manned by “interior migrants” from economically backward regions—Bretons in France, Calabrians and Sicilians in Italy—and foreign immigrants from less developed countries. “Most of these workers come from the Mediterranean basin as far as the West European auto industry is concerned. The majority of this group found in each country—North Africans in France, West Indians in England, and the like—indicates the relationship between the source of these workers and the former colonial system.”¹

Unlike the native-born skilled workers who had predominated in European automobile factories before the war, unskilled workers from colonial and rural backgrounds tended to form attitudes toward the workplace either of apathy or of revolt. Unlike the newly arrived immigrants and black migrants who had manned Detroit’s prewar assembly lines, second-generation Poles and urban blacks, educated into