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Jerome B. Cohen

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Competitive Development of the Japanese Automobile Industry

Thomas M. Hout and William V. Rapp

The rise of the Japanese automobile industry during the 1960s radically changed the nature of world and particularly American auto competition. In ten years, Japan grew from a competitively weak, thoroughly protected sector producing less than 100,000 passenger cars annually to the second largest auto producer in the world. Total vehicle production increased by a factor of ten, passenger car output by 20, and passenger car exports by 100. This sudden burst into international prominence, which coincided with and in part caused the compact car boom in the United States, has redefined the nature of the auto business in terms of both product line and the economics of sourcing.

The auto industry’s development is perhaps the classic case in postwar Japan. It has all the ingredients of the Japanese pattern. A rapid and sustained growth in domestic demand preceded its impact on export markets. The industry was identified by the government early in the postwar period as a priority and received protection from foreign competition, both imports and investment. Technology was absorbed by purely domestic producers from abroad to assist the development. The government sought to rationalize the producers’ structure of the industry to ensure its international competitiveness, and while it largely failed among the major assemblers, the economic impact of consolidation programs on auto parts was critical. Finally, when the industry was strong and export penetration became painful in the United States, the government directed its favors away from the industry. This paper describes the historical development and competitive economics of this performance.

Industry Evolution

Prewar Origins of the Industry

Like the steel industry, the origins of the domestic automobile industry lie in the government’s response to the requirements for Japanese military strength and economic autonomy during the first four decades of the century. The major issues of the development period—the threatening presence of foreign capital, the competitive viability of domestic firms, the problem of foreign exchange, and the necessity of military vehicles—required close interaction of government
and producing firms. The government’s role in the industry’s history is a critical one.

Despite assembly of automobiles in Japan as early as 1902 and subsidized production of military trucks during the first world war, passenger car production was negligible into the early 1920s. Ironically, a natural disaster gave the first impetus to the auto business. Tokyo’s great earthquake of September 1923 crippled the city’s railway and tramcar system. In the absence of domestic substitutes, one thousand buses were shipped from Ford in the United States. Japan’s total automotive production in 1923 is estimated at less than 200 units.

Within two years, both Ford and General Motors established wholly-owned onshore assembly operations. Japan Ford Corporation as formed in Yokohama in late 1924, and Japan General Motors, headquartered in Osaka, followed in 1925. By 1929 the two companies combined produced nearly 30,000 automobiles. Parts and subassemblies were imported from the United States for domestic assembly. Each organized a finance company and introduced in Japan installment purchasing. Within five years of their coming, Ford and General Motors controlled 85 percent of the Japanese market with onshore production.

Until the 1930s, neither the government nor the zaibatsu groups showed serious interest in an auto industry. Auto production was regarded as speculative and lower in priority than steel, coal, and other heavy industry. Only small firms were attracted into the business and were inferior in scale, capital, and technology to the resident operations of GM and Ford. Domestic annual production never reached 500 units before 1930.

The 1930s brought a change of attitude on the part of government. Military ambitions in Asia necessitated support of truck producers, of course, but more long-term economic considerations dictated a national automobile development policy. It was apparent that onshore foreign capital, if permitted unlimited production levels, would continue to dominate the domestic market and hence preclude the development of Japanese producers. The domestic manufacturer faced an uncompetitive scale of operation, an inadequate assembly technology, an absence of onshore parts supply, and an inability to finance automobile purchasers at competitive terms. The high failure rate of small domestic producers and the continued unwillingness of the zaibatsu to compete, even at later invitation of the government, convinced planners that protection from foreign capital was the prerequisite of a domestic industry.

The fundamental conclusion was never later seriously questioned in Japanese government or industry. While there was postwar debate within government over the necessity of a domestic automobile industry, the first requirement of any development—protection from foreign capital—was uniformly confirmed. Similarly, the dialogue of 1969-70 within the Japanese economic policy community over capital liberalization of the industry was a debate over the domestic producers’ stage of completed development, not a questioning of the necessity of protection for development.
Another stimulus to the government’s reconsideration of autos was the foreign exchange problem. The international monetary crises and trade dislocations of the late 1920s and early 1930s dramatized Japan’s precarious import position. Lack of a domestic automobile industry meant importing either finished vehicles or parts for assembly by onshore foreign capital. Both require foreign exchange.

The problem was not merely one of foreign exchange shortage, however, but more importantly, the cyclicality which import dependence forced on the Japanese economy. Japanese has a high dependence on imported basic material. Until the past few years the country experienced a chronic deficit on current account in her balance of international payments. Throughout Japan’s industrial history, this circumstance has meant a built-in macroeconomic instability: as income cyclically rose and combined basic material and manufactured imports rose in proportion, the resulting foreign exchange deficit required a deflationary countercyclical monetary policy. Japan’s modern economic history fully documents this pattern.

The implication for domestic industrial policy was that import-substitute manufacturing industries had to be developed. A domestic automobile assembly and parts industry substantially reduces the net imports per automobile. This reduction is compounded by the secondary effects of domestic auto production on the steel, machinery, and tire industries. These implications were not lost on Japan’s economic strategists, particularly as military production requirements rose.

The impact of the new government position on domestic automobile production was felt in the middle and late 1930s. It was felt most keenly by Ford and General Motors. In 1936 the government enacted the Automobile Manufacturing Enterprise Law, which literally and comprehensively aimed at closing down foreign producers onshore. The law’s restrictions on foreign producers were severe. Annual production ceilings were imposed. Tariff rates on imported parts were raised. In 1937 a provisional law eliminated the import of strategic commodities. Japan Ford and Japan General Motors were soon closed down.

Japan’s currently dominant producers, Toyota and Nissan, began producing during the prewar period. Neither was established at government initiative. Nissan was organized in 1933 under the name of Jidosha Seiyo Company and was an auto producer from the start. Toyota began producing automobiles in the middle 1930s as a diversification venture of Toyota, a leading manufacturer of textile weaving looms. By 1937 the two companies along with Isuzu dominated automotive production with an 80 percent combined market share. Production was nearly all trucks throughout the war, and over half the truck output was for the military. Passenger car output did not reach 2,000 units until 1938. In fact, despite the tremendous passenger car growth of the 1960s, annual car production did not surpass combined truck and bus output until 1969.
The years from the war’s end to 1958 form the critical period. During this decade, the government and auto producers first resolved whether the industry should be developed at all. They then determined the competitive environment and technological direction of its development. The achievements of this period are indeed substantial. Japanese manufacturers, largely destroyed during the war, were producing 7,500 military trucks annually at war’s end. Passenger car production levels and technology were negligible. By 1958 Japan was producing one-third of a million vehicles and was designing and building her own passenger cars.

_The Postwar Policy Question_

The immediate postwar condition of the auto industry was understandably weak and confused. The occupation established production limits on vehicles, rationed those available, and controlled prices. Looking ahead to normal economic conditions, the newly emerged Ministry of International Trade and Industry (MITI) recommended redevelopment of the industry, emphasizing passenger cars, using foreign technology, and government financial assistance. There was opposition to this within the government, however. The Bank of Japan, representing the nation’s financial priorities, argued that the scarcity of capital and massive reconstruction task required that Japan specialize her industry mix and import automobiles in the short run at least. Inviting wholly-owned foreign capital facilities into Japan was not an alternative.

The opposition of the Bank of Japan to auto development should not be construed as a complete denial of access to the banking system by domestic manufacturers. During the 1949-50 deflation, the bank rescued Japan’s largest automobile producer from impending bankruptcy as it did other large Japanese enterprises. In 1949 Toyota was near collapse from uncollected debts and unsold inventory. Toyota and its commercial bankers met with Bank of Japan officials to consider strategies for financial survival. The Bank of Japan responded by approving large credit extensions from Toyota’s major commercial banks, Mitsui and Tokai. Financial crisis was thus averted. There was during that period and remains today an important distinction between the government’s fundamental commitment to ensure the continuity of major Japanese corporations and the government’s deliberate policy of selecting specific economic sectors for rapid growth development.

In 1951 the policy debate was resolved in favor of developing domestic passenger car production. The scarcity of automobiles in Japan during the period and the expectation of continuing foreign exchange constraints strengthened the argument for a domestic industry. MITI pointed out that the amount of foreign exchange drain from imported passenger cars over a short number of years could itself finance domestic production and marketing facilities and hence provide
self-sufficiency. The matter was finally settled by the Korean War since the automotive needs of the United Nations forces created a timely opportunity for Japanese producers.

A real development impetus emerged in the 1950s. Military exports and a small but rapidly growing domestic auto market provided the demand base. Production and price controls were removed. The financial stability of the manufacturers improved. In 1951 Prince entered as the fourth domestic manufacturer. Perhaps most critically, MITI in 1957 announced policies which consolidated a comprehensive and imposing structure of protection measures.

Protection from auto imports was accomplished in three ways: quota, tariff, and commodity tax structures. Foreign exchange quotas for automotive imports had been in effect since the war’s end to conserve foreign exchange. From the early 1950s, however, quotas were employed chiefly to protect domestic passenger car manufacturers. Japan’s tariff rate structure was both absolutely high and relatively geared toward domestic producer interests. Trucks and large cars, where Japanese producers were either fully competitive or not competing at all, had lower rates than small passenger cars where domestic interest lay. The commodity tax structure was again discriminatory against big (in effect, foreign) cars in an attempt to shift demand toward domestic models. All of these protection measures have since been partially or wholly eliminated. Quotas were removed in 1965. Tariff and commodity tax relief came later.

Entry of existing truck producers into passenger car manufacture was heavy during the early 1950s and was made possible through license of foreign technology. Four domestic firms negotiated agreements, mostly with European automakers. Only one, Nissan, had previously made cars. MITI selectively approved these applications to assemble knock-down imported components. Financially precarious firms were discouraged from competing. The role of foreign technology in the industry’s development should not be overestimated, however. Toyota and Prince have used domestic know-how exclusively. The four licensees—Nissan, Hino, Mitsubishi, and Isuzu—rapidly improved their own. Assembly of European knock-down cars was not long a factor. The Isuzu-Rothes agreement was the longest, running through 1964, but it produced less than $1 million in royalties over twelve years. By 1958 nearly every passenger car assembled in Japan was designed and manufactured domestically. This technical progress was facilitated by the stable number of producers—Toyota, Prince, Nissan, Isuzu, Hino, and Mitsubishi.

The implications of this autonomy were important for Japan. Decreasing its dependence on knock-down auto parts reduced the foreign exchange drain and the susceptibility to economic cycles through trade imbalance. Domestic production of auto parts advanced the development of the steel, machinery, and rubber industries. During the 1960s, they, along with autos, experienced unparalleled growth and achieved comparable international competitiveness. Design autonomy opened up the opportunity for automobile export in the next
decade. During that time Japan's export of necessity shifted from high-labor, low-technology goods toward low-labor, high-technology products. Finally, autonomy vindicated MITI's protection policy and established a significant strategy precedent.

In evaluating MITI's role through the late 1950s, one must say that its contributions were essential. The ministry identified automobiles as an industry critical to Japan's economic future. It defended the industry's position against the opposing strategy of the Bank of Japan. Its elaborate policy of protection was, of course, basic to the industry's development. Also necessary and highly effective was the ministry's admission of unassembled foreign cars in order to build domestic technology.

MITI, however, did not dominate the producers nor monopolize the initiative for development. Its financial assistance to producers, though highly useful, was not critical. MITI played little or no role in the investment policies or technological development activities of the producers. As the decade closed, MITI's role among auto producers waned. By 1958 the highly protected industry was profitably producing one-third of a million vehicles, including 50,000 passenger cars, and was reaching design autonomy.

The government's role was primarily in getting the industry started and in nurturing its development. The industry's competitive development, and the technological and economic success of particular firms, depended on their individual efforts and strategic acumen alone. This is important to recognize since these underlying success factors continued through the 1960s. They are likely to continue into the future despite capital and import liberalization, the emergence of other national priorities, and substantially reduced government support and influence.

The Takeoff of the 1960s

The 1960s decade was one of staggering production growth for the industry during which Japanese automakers rose from a fledgling group producing less than 100,000 passenger cars annually to the second largest auto producer in the world. Total vehicle output increased by a multiple of 10, passenger car output by 20 and passenger car exports by 100 over the ten years. The Japanese emerged from technological inferiority to Western producers to designing their own exemplary assembly plants and competitive automobiles. They now potentially threaten U.S. dominance in world auto production.

The notable competitive developments of the decade were early rapid expansion in the number of producers and subsequent fragmentation of market share, a continuing but largely unsuccessful effort by MITI to consolidate the industry into a small number of large producers, and the emergence of Nissan—and particularly Toyota—as world automaking powers.
From the introduction of foreign technology in 1952 until 1960, the number of conventional passenger car manufacturers had remained stable. By the end of 1962, three more firms—Mitsubishi, Fuji, and Toyo Kogyo—had entered. Four producers newly entered the truck business. While this was a natural outcome of the explosive growth which saw annual car output triple between 1959 and 1961, the impact on Toyota and Nissan market shares was abrupt. Their combined market share dropped from roughly 75 percent to less than 50 percent in less than two years.

Fragmentation of the industry began to concern MITI at this time. The ministry not only wanted to avoid in the short run the problem of small-scale inefficient producers—characteristic of many Japanese industries during this period—but also wanted to preserve a concentration of production which later would make Japanese autos internationally competitive. Liberalization of auto imports and eventually of foreign capital investment was inevitable. Japanese autos in the early 1960s were not yet competitive in quality and price.

The long-run export opportunity was also at stake. Japan was already exporting 50,000 vehicles in 1961, including over 11,500 passenger cars. MITI apparently appreciated the export barriers presented by the chronic nonstandardization of parts (which was already a serious problem among subcontractors in the 1950s), the fragmentation of capital-intensive production among several manufacturers, and the inability of small producers to undertake marketing risks abroad. Resisting imports was also important for developing the export opportunity. Japanese producers had to preempt all domestic market growth in order to gain sufficient production scale and experience to compete in American, and hopefully European, markets.

Consequently, Japan's opportunity to develop an internationally competitive auto business was time-limited. During the industry's takeoff stage, any combination of slow domestic growth or excessive production fragmentation or premature import liberalization could delay and hence prevent Japan's reaching competitive parity before Japan's market was opened.

By the middle 1960s, MITI's concern with structure was acute. The ministry's attempts, both in the form of proposed legislation and administrative guidance, to group the smaller producers into coordinated groups failed. The ministry's efforts were opposed both by significant political elements in Japan and by most of the industry. Consolidation of the auto industry was a major priority of the ministry during this period, but only partial success was achieved. Prince, Hino, and Diahatsu were absorbed into Nissan and Toyota. Three important producers—Isuzu, Mitsubishi, and Toyo Kogyo—remained independent and became MITI's Achilles heel in the foreign capital issue of 1969-70.

It is important to note that financial necessity rather than administrative guidance was the essential stimulant to the affiliations which did occur after 1965—Prince into Nissan and Hino and Diahatsu with Toyota. Total vehicle production rose from 1965 to 1969 at an annual compound growth rate of 26
percent. Production of passenger cars rose at over 30 percent. The total financial
and production capacity commitments necessary to merely maintain auto
market share were doubling every three years. The recession of 1965, on the
other hand, had severely interrupted the cash flow of auto producers. Hence, the
industry experienced a period of rapidly escalating capital requirements immedi-
ately following a year of severe operating cash-flow strain. The large, dominant
firms with superior earnings performance and greater access to the banks
increased their market shares during the period. Secondary producers found it
difficult to finance comparable growth.

This inability to finance market growth and the failure of the industry to
consolidate domestically accelerated the introduction of foreign capital into the
industry. Toyo Kogyo, Isuzu, and Mitsubishi’s auto division sought affiliation
with foreign capital to gain financial as well as marketing, technical, and product
strength. In effect, MITI’s failure to consolidate the industry had the result not
of exposing Japan’s secondary producers to the competition of the Big Three,
but of forcing them to align with the foreign producers in the Japanese market.

Yet the absence of United States auto producers in postwar Japan until
recently still stands out. The lack of technology agreements is understandable.
Japan was reluctant to produce under license oversized cars of U.S. dimensions.
The Big Three were unwilling to trade technology for anything less than equity.
It is curious, however, that U.S. producers did not negotiate an equity position
of some form in Japan before 1971, despite foreign investment barriers. It is not
only alleged but probable that during the 1950s at least one U.S. producer was
informally invited to joint venture with domestic capital in auto production.
Japanese producers were weak technologically and competitively. Annual car
production in 1955 was a mere 20,000 units. It is reasonable to believe that the
Japanese government might have permitted, even welcomed, selected U.S.
capital participation under clearly defined constraints regarding share of equity,
earnings repatriation, and management prerogative. The basis of Japanese
objection to foreign capital is not that it is foreign, but that it is uncontrollable.

The Comparative Economics of U.S.
and Japanese Auto Competition

This section presents a brief comparative U.S.-Japan auto industry analysis
which seeks to relate the long-term competitive position of each using a
straightforward but instructive analytical tool called the experience curve. The
competitive development of two industries is complex, and no single approach
fully explains their comparative patterns. The domestic competitive environment
and the product mix of each is different. However, remarkable insight into their
relative price and cost positions through time can be gained by observing two
variables simultaneously. A long-run relationship has been observed in the
automobile and other industries in Japan and the United States between real
(constant dollar) price per unit and the total accumulated production experience
in the product to that point. The experience curve displays this empirical
relationship. Real price declines by a characteristic percentage each time
accumulated production experience doubles. The double logarithmic paper
displays this relationship as a straight line. All real prices are in 1958 dollars or
yen.

The implication of this analysis is that the emergence of Japanese auto
producers, particularly Toyota and Nissan, as a prominent, if not dominant,
factor into international auto competition was not sudden or unpredictable but
is rather the outcome of an observable set of circumstances including national
development priority, severe domestic competition, and explosive domestic
growth. The experience curve displays this development well.

The United States began passenger car production at the turn of the century.
Annual production was only about 4,000 vehicles in 1900. Initial costs were
high—around $6,000 in 1958 prices. Production and accumulated experience
grew quickly, with some drop in prices between 1900 and 1904. The real
industry shakeout, however, did not begin until 1908. After that time, there was
a fairly uniform decline in real (and current) prices until 1930, reflecting the
market dominance of Ford and the Model T. Accumulated experience doubled
about every two years until 1916. Between 1916 and 1929, doubling occurred
within three, four, and five-year periods successively. Figure 9-1 depicts this
development.

The Depression and, later, World War II produced a stagnation in production
growth in passenger cars. Despite the growth in the 1950s, accumulated volume
of automobiles doubled only twice between 1929 and 1960. More notable than
this slowed growth was the leveling of the price decline per unit. Since the war,
real average wholesale price per passenger car has remained stable. A number of
factors account for it. One is that the American car got bigger and more features
were added. The unit of accumulation changed. This is a matter of degree, of
course. Autos changed before 1930 when U.S. real prices declined with
accumulated volume. Another critical factor was the dominance of General
Motors after 1930. After this point, the United States had one clearly dominant
and lower cost producer. Comparative financial statements of GM, Ford, and
Chrysler bear this out. GM’s competitive policies were and remain constrained
by U.S. legislation. The U.S. auto business is not fully price competitive, and has
not been over the period covered by the horizontal real price line. This leveling
of the real price decline parallels a deterioration in the relative competitive
position of the United States in world auto market share.

Japanese passenger car production, as already noted, was not significant until
the middle 1950s. As late as 1952, only 16,000 passenger cars had been
produced. Average current wholesale price for a standard 1000 cc car at that
time was about $2900 as compared with $1500 at the time for a U.S. car.
Figure 9.1. U.S. Passenger Car Production Price-Experience Effect: 1900-69.
Subsequently, the Japanese competitive position improved dramatically as real prices proceeded down an experience curve. Real prices declined 12 percent per doubling of accumulated volume—a rate very similar to the United States (Figure 9-1) up until 1930—after the middle 1950s. Japanese real prices before that time actually rose. Passenger car production was small scale and static in technology and design. Prices began to fall when unit costs began to fall. The implicit economics of an experience curve—cost reduction through economies of scale, better organization of production and marketing process, replacement of relatively expensive factors of production, labor, and staff learning—begin to take effect as growth materializes, competitive markets develop, and management begins to relate cost control with competitive position. The Japanese price per unit has continued to decline at this characteristic rate through 1970 despite changes in the product mix and extraordinarily rapid increases in the price of labor. Figure 9-2 is the aggregate (all model) Japanese auto experience curve. Figure 9-3 compares U.S. and Japanese actual (current $) and real (constant $) prices through time.

The combination of maintaining a consistent rate of price decline through accumulated experience and rapid growth in annual production caused Japanese prices to decline very rapidly through time and relative to U.S. prices. Despite a higher rate of inflation in Japan than in the United States (Table 9-1) from the mid-1950s to the mid-1960s, the Japanese were able to lower average current dollar wholesale prices to roughly $1,250 by 1970 from $2,000 in 1958. United States current prices increased over the period.

When industry price data are broken out according to engine size, the downward price patterns are similar or even more pronounced. Figure 9-4 shows the real wholesale price of individual models dropping sharply over time in correspondence with a rapid accumulation of production experience. The 1001-1500 cc engine size is the most popular size car; a large majority of production is in this range. Table 9-2 further points out that the initial cost point for each new model was lower in real and current terms than for the previous model, a smaller and less expensive car.

The competitive interaction between the U.S. and Japanese auto industries parallels their respective price-experience developments. In 1952 current wholesale prices were widely different ($2,900 for a Japanese 1001 cc car versus $1,500 for the average U.S. car), and there was little or no export from Japan. By 1958-60, however, the gap had closed to roughly $1,900 for the average U.S. car and $2,100 for Japanese 1001-1500 cc cars. Nissan was then exporting some 11,000 vehicles (mostly light four-wheel trucks) and Toyota 5,500 vehicles. Still, 86 percent of Nissan’s and 84 percent of Toyota’s exports were going to less developed countries, mostly in Southeast Asia and Latin America (Table 9-3).

In 1961 current wholesale prices for the two countries were comparable ($1,750 for Japan and $1,850 for the U.S.) although the American cars were of better quality and greater size. By 1964 Japanese current wholesale prices were

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8All Japanese figures in paragraph refer to standard 1001-1500 cc models although as already noted price trends were similar for all car sizes.
Figure 9-4. Real Prices vs. Accumulated Volume of Production by Model: 1957-70 (under 360 cc)

Rapid reductions in costs and prices may have forced prices down in the late 1950s. The dotted line may reflect more accurately later price movements.
Table 9-1
Competitive Comparison of the Automobile Industry, 1954-1970

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>Japan</th>
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<tbody>
<tr>
<td></td>
<td>1954-70</td>
<td>1965-70</td>
</tr>
<tr>
<td>Annual production growth</td>
<td>1.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Annual experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>accumulation rate</td>
<td>4.3</td>
<td>3.9</td>
</tr>
<tr>
<td>Annual decline in constant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dollars or yen (88%</td>
<td>-.8</td>
<td>-.7</td>
</tr>
<tr>
<td>experience curve)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation rate</td>
<td>2.6</td>
<td>4.1</td>
</tr>
<tr>
<td>Annual change in cost in</td>
<td>1.8</td>
<td>3.4</td>
</tr>
<tr>
<td>current dollars and yen</td>
<td></td>
<td></td>
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<tr>
<td>Competitor’s cost advantage</td>
<td>5.7</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Notes: Exchange rate fixed at 360 = $1.00</td>
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<tr>
<td>Source: Calculated from historical data available from MITI and U.S. Census Bureau.</td>
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Table 9-2
Average Japanese Initial Factory Prices by Model and for Selected Years: 1957-70* (in Dollars)

<table>
<thead>
<tr>
<th></th>
<th>1957</th>
<th>1959</th>
<th>1965</th>
<th>1970</th>
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<tbody>
<tr>
<td>Under 360 cc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg. real price</td>
<td>867</td>
<td>939</td>
<td>708</td>
<td>508</td>
</tr>
<tr>
<td>Actual price</td>
<td>878</td>
<td>964</td>
<td>972</td>
<td>875</td>
</tr>
<tr>
<td>360-1000 cc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg. real price</td>
<td>1,575</td>
<td>1,506</td>
<td>800</td>
<td>628</td>
</tr>
<tr>
<td>Actual price</td>
<td>1,597</td>
<td>1,547</td>
<td>1,100</td>
<td>1,078</td>
</tr>
<tr>
<td>1001-1500 cc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg. real price</td>
<td>2,250</td>
<td>2,094</td>
<td>956</td>
<td>703</td>
</tr>
<tr>
<td>Actual price</td>
<td>2,281</td>
<td>2,150</td>
<td>1,313</td>
<td>1,210</td>
</tr>
<tr>
<td>1501-2000 cc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg. real price</td>
<td></td>
<td>2,291</td>
<td>1,428</td>
<td>925</td>
</tr>
<tr>
<td>Actual price</td>
<td></td>
<td>2,353</td>
<td>1,961</td>
<td>1,592</td>
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<tr>
<td>2001 and over</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Avg. real price</td>
<td></td>
<td></td>
<td>2,300</td>
<td>1,044</td>
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<tr>
<td>Actual price</td>
<td></td>
<td></td>
<td>3,160</td>
<td>1,797</td>
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Note: Exchange Rate 360 = $1.00
Real Prices in 1958 prices
*Price not available by model except for standard 1001 cc car before 1957.
Source: MITI, Machinery Yearbook.
Table 9-3
Country Direction of Japanese Automobile Exports: 1957-70

<table>
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<tbody>
<tr>
<td>Exports (units)</td>
<td>410</td>
<td>7,013</td>
<td>38,040</td>
<td>153,090</td>
<td>560,431</td>
<td>725,586</td>
</tr>
<tr>
<td>Share to less developed countries</td>
<td>93.0%</td>
<td>79.3%</td>
<td>67.8%</td>
<td>36.0%</td>
<td>28.3%</td>
<td>22.7%</td>
</tr>
<tr>
<td>Share to advanced countries</td>
<td>7.0%</td>
<td>20.7%</td>
<td>32.2%</td>
<td>64.0%</td>
<td>71.7%</td>
<td>77.3%</td>
</tr>
</tbody>
</table>

Compound Growth in Exports 1957-70: 78.0%
Source: Ministry of Finance, Export Statistics.

well below U.S. prices ($1,400 versus $1,900). Most of Japan’s exports were still to less developed countries (91 percent for Toyota and 85 percent for Nissan); Toyota and Nissan exported to the United States only 2,000 and 10,000 cars respectively in that year. By 1970 the price gap was substantial ($1,210 for Japan versus $2,215 for the United States), and Japanese exports to the United States had become significant. In that year Toyota sold 196,350 units and Nissan 155,000 units in the U.S. out of total exports of 389 and 325 thousand respectively.

Following the usual pattern, exports first to LDCs and then to the U.S. market, provided the demand stimulus required to accelerate lower costs for the Japanese industry. As can be seen in Table 9-4, passenger car exports grew from 11.6 percent of production in 1964 to 22.8 percent in 1969. Exports to the United States now and in recent years represent the largest portion of this growth. In fact, by 1970 approximately 50 percent (by value) of Japanese passenger car exports were to the United States ($456 million). Toyota and Nissan wisely did not dilute their Japanese experience base by building manufacturing plants in the U.S. Instead they put their efforts into developing large car carriers which reduced transportation costs to a fraction of previous levels. They thereby improved export effectiveness and added to growth in experience and export volume. The net result has been a significant and continued loss in world market share by U.S. producers (Table 9-5).

Table 9-4
Japanese Passenger Car Exports: 1964-70

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</tr>
</thead>
<tbody>
<tr>
<td>Passenger car exports (thousand units)</td>
<td>67</td>
<td>101</td>
<td>153</td>
<td>223</td>
<td>406</td>
<td>560</td>
<td>726</td>
</tr>
<tr>
<td>Percentage of total production</td>
<td>11.6</td>
<td>14.5</td>
<td>17.4</td>
<td>16.2</td>
<td>19.8</td>
<td>21.5</td>
<td>22.8</td>
</tr>
<tr>
<td>Exports to U.S. market as a percentage of total exports</td>
<td>15.3</td>
<td>26.2</td>
<td>33.0</td>
<td>29.7</td>
<td>41.9</td>
<td>46.9</td>
<td>44.6</td>
</tr>
</tbody>
</table>

Source: Ministry of Finance, Export Statistics; and MITI.
Table 9-5
Changes in World Market Share: 1953-70

<table>
<thead>
<tr>
<th></th>
<th>1953</th>
<th>1969</th>
<th>1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>World production (thousand units)</td>
<td>8,130</td>
<td>23,124</td>
<td>22,747</td>
</tr>
<tr>
<td>U.S. share</td>
<td>75.2%</td>
<td>36.2%</td>
<td>28.8%</td>
</tr>
<tr>
<td>Japanese share</td>
<td>0.1%</td>
<td>11.5%</td>
<td>14.0%</td>
</tr>
</tbody>
</table>

Source: Automobile Facts and Figures

The Future of Japan's Auto Industry

The future of the Japanese auto producers is difficult to contemplate because, to a greater degree than other major industries, there exists a strong possibility of a fundamental discontinuity between its short and long-run futures. A number of potentially unstable factors—auto technology, Japan's desired mix of industries, and access to export markets—face the industry, and each is so critical and so unresolved that it is very difficult to address the long-run nature of the business.

In the short run, the forces which underlay the dramatic rise of the 1960s will continue to play themselves out. Although domestic demand has leveled off, access to export markets is still sufficient to ensure faster growth than American and European competitors. At the same time, auto technology through 1975 is fundamentally determined. Consequently, Japanese producers will at least maintain competitive position with extensions of current product line, moderate further revaluation notwithstanding. The present number of producers of passenger cars—11—will be reduced as the export emphasis and high cost of emissions reduction narrows the opportunities for marginal producers to survive. This consolidation has been underway since 1965 although its progress has been slow. Finally, some specialization of product mix should occur as General Motors, Chrysler, and eventually Ford source product from their new affiliates in Japan. Nissan and Toyota will strengthen their dominant position in the conventional size segment.

The long-run future, on the other hand, shows the auto industry facing questions as fundamental as that of survival. It is not inconceivable that future national economic policy might call for a gradual phaseout of the auto industry as it is known today in Japan. While this would be heretical and improbable in the U.S., there might be a strong case for it in Japan. The auto sector accounts for only six percent of GNP in Japan (and is now falling steadily) compared with nine percent in the U.S. More importantly, the Japanese commitment to well-managed and well-compensated phaseout is demonstrated today in the textile industry which exceeds the auto industry in both employment and political constituency. In 1972 the Japanese government will spend more on
textile dislocation and renovation assistance than the industry will export to the United States.

In addition to having the capacity to execute orderly withdrawal, Japan also has some incentive. The urban density and proximity of major cities to each other are well suited to public, continuous forms of transportation. Existing auto propulsion systems require petroleum fuels, where a reduction is highly desirable in view of Japan's severe environmental problem and her dependence on the politically unstable and potentially confiscatory Middle East. The leading producers—Toyota and Nissan—are strong companies with large cash flows which could be diverted to new major businesses much like the Toyota auto division was started in the 1930s from the earnings of the Toyoda textile loom business. The rate of change over the last fifteen years in both the volume and quality of Japanese industrial output has been staggering, and Japanese policy-makers have made it clear that resource allocation priorities will continue to change.

A great deal may depend on the development of the electric car, one of MITI's currently two largest national research programs. An economical electric car (or suitable alternative) would make a stronger case for reinvestment in the auto business. Socially it is more tolerable than conventional engines. Its probable export life would be longer than that of existing automobiles, which in the coming years may very well face a complex array of nontariff barriers in the developed world. Significant propulsion innovations, then, would prolong the auto industry's prosperity. Regardless of technology, however, the industry will continue to decline relatively in the Japanese economy.