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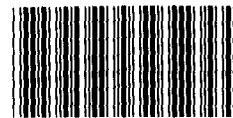
BEFORE THE
HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEES ON OVERSIGHT AND INVESTIGATIONS
AND
SCIENCE, RESEARCH AND TECHNOLOGY

ON

JAPANESE INDUSTRIAL POLICY

Mr. Chairmen and Members of the Subcommittees:

We are pleased to be here today to discuss with you our reports "Industrial Policy: Japan's Flexible Approach" (ID-82-32), and "Industrial Policy: Case Studies in the Japanese Experience" (GAO/ID-83-11). We would like to address several points in these reports which we believe are of interest to the Subcommittees. Our work traced the development of industrial policy in Japan since World War II and attempts to describe the changes in the goals adopted and tools used. In addition, we discussed how monetary and fiscal policies have contributed to achieving the goals of industrial policy.



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Numerous political, social, and economic factors contribute to the performance of the Japanese economy. For example, Japan undoubtedly benefits from its well-educated, highly-motivated workforce, and a homogeneous population. In the business sector, management in many firms has encouraged worker contribution to quality control and productivity and has a reputation for making decisions on the basis of their long-term impact rather than their short-term contribution to profits. Moreover, in the political arena, the uninterrupted rule of one party since World War II has contributed consistency to policy making. Because these and other factors must be taken into account, any assessment of the contribution of industrial policy to Japan's economic success is at best difficult, and was beyond the scope of our work.

JAPAN'S APPROACH TO FASHIONING INDUSTRIAL POLICY

In our studies, we found a high degree of integration and complementarity between macroeconomic monetary and fiscal policies and microeconomic industrial policies. Integration of macro and microeconomic policies has meant they mutually reinforce and complement each other in achieving overall national economic goals. We also found that formulation and implementation of Japanese industrial policy has been characterized by a high degree of flexibility. This flexibility is evident in the way the Government of Japan has changed goals and policy instruments in response to changing domestic and international economic and political circumstances.

The planning process in Japan begins with the setting of yearly macroeconomic goals and long-term objectives for the economy and society by the Economic Planning Agency (EPA). These goals receive official standing when they are endorsed by the Cabinet and form the basis of a national consensus on the direction in which the economy should move. In addition, EPA forecasts general macroeconomic conditions.

The Ministry of International Trade and Industry (MITI) and its Industrial Structure Council develop industry goals that are consistent with the macroeconomic goals. On the basis of these more specific goals, industrial policies are formulated and implemented. The Industrial Structure Council represents many diverse interests, e.g., business, labor, academia, and so on, and an effort is made to achieve broad support for the policy objectives. The goal-setting process both at the macro and microeconomic levels, is a major contributor to consensus-formation. Albeit difficult and time consuming, the government attempts through these efforts to gain broad support for the direction and nature of such goals and policies.

The widely accepted consensus in Japan from World War II through the early 1970s strongly supported government efforts to reconstruct the Japanese economy by rebuilding the nation's basic industries and by working to catch up with the technology of the United States and Western Europe. Following the economic turbulence of the early 1970s and the resultant increasing and often

conflicting demands placed on the government, consensus has become more difficult to achieve. Japan's recent goals have focused on adjusting to stable growth, encouraging resource conservation, improving the environment, and supporting the development of higher value added, technology-intensive production.

INDUSTRIAL POLICY INSTRUMENTS

Policy instruments in the post-war period

In the early postwar period, Japan marshalled a large array of industrial policy tools which enabled the government to strongly influence the rate and direction of economic growth. These tools included

- strict foreign exchange controls;
- commercial policies which gave incentives to exports and restricted imports; and
- controls over foreign investment and the acquisition of technology.

For example, foreign exchange controls were used to direct resources to targeted industries and to limit foreign competition in the domestic market. The Foreign Exchange and Foreign Trade Control Law operated through a system consisting of a foreign exchange budget and import controls. The foreign exchange budget set the amount of foreign currency available for the year and allocated it among sectors of the economy. This enabled the government to effectively allocate foreign exchange and, thereby, to direct raw material imports and the acquisition of foreign technology to targeted sectors such as steel and chemicals. During this period,

the government protected domestic industry by carefully restricting competition from imports and foreign industry through the use of import controls and controls over foreign investment in Japan.

Monetary and fiscal policies reinforced the effectiveness of these tools in a number of ways, primarily by

- keeping interest rates low, thereby lowering the cost of investment;
- maintaining a balanced budget and government spending at a modest share of gross national product; and
- administering a tax system which favored savings and investment.

By restricting financial markets so that they did not become a major source of free capital the government was able to keep interest rates artificially low, and effectively control which industries had access to Japan's limited capital. Firms were largely dependent upon Japan's 13 major city banks for financing industrial development. The city banks, in turn, were dependent upon the Bank of Japan in order to expand their loanable funds. This interrelationship enabled monetary authorities to effectively ration credit through the city banks to targeted growth sectors. Non-targeted sectors were denied access to this credit.

Fiscal authorities also allocated budgetary funds to support targeted industries. Funding came from tax revenues and the proceeds of government bond issues. Because of a commitment to sound finance principles, the only government debt incurred prior to the early 1970s was for productive investment. These bond revenues

were primarily used to support the development of infrastructure. Household savings were also allocated by the government. These savings were primarily deposited in the nation's post offices, and were channeled by the Ministry of Finance to the Fiscal Investment and Loan Program (FILP). The funds were in turn allocated to local governments, government corporations and government financial institutions, such as the Japan Development Bank and Japan's Export-Import Bank, to implement government economic policy goals. Significant funds from the FILP were thus allocated to targeted industrial sectors to stimulate industrial development. The FILP account has been as large as 50 percent of Japan's national budget and thus has accounted for significant assistance to Japanese industry.

Recent policy instruments reflect changes
in domestic and international realities

As we noted, a key feature of Japanese industrial policy has been its flexibility in responding to changes in the domestic and international economies. Since the early 1970s, these changes have included the growth of a number of successful and internationally competitive industries, growth rates which are high relative to those in many other industrialized countries, increasing trade friction with developed nations, competition from newly industrializing countries, and economic difficulties resulting from the oil crises. Coupled with these changes, high government deficits and high consumer and energy prices have contributed to increasing difficulties in decisionmaking and in achieving consensus.

These changes as well as the loss of many of the post-war tools of industrial policy have altered the government's involvement with industry. A rising class of structurally depressed industries, a number of which are energy-intensive, has led to new legislation and increasing government involvement in easing the adjustment process. In the case of mature industries, the Japanese Government finds itself attempting to restrain competitive Japanese exports. At the same time, in the growth sectors, the government is supporting, through various measures, the development of leading-edge technologies. Another element of industrial policy important to the economy as a whole is the government's support for diffusion of technological advances.

Today, the Ministry of International Trade and Industry continues to influence government and industry views concerning the direction of industrial development through administrative guidance, incentives, and control. In the case of emerging industries government influence is based largely on incentives; whereas, the government has more direct influence over declining industries.

The Japanese government, through its industrial policies, reduces the risks inherent in high technology research and development and makes investment in this area more attractive to industry. The government, directly or through government banks (e.g., the Japan Development Bank), provides seed money for various industry research and development projects defined to be within

the parameters of national goals. Perhaps the most beneficial side effect of this support is that firms receiving such support are viewed as good credit risks by commercial institutions and their access to debt and equity is improved.

In addition to financial assistance, government support also comes in the form of waivers from the anti-monopoly law of Japan for approved joint activities. Under the 1971 and 1978 temporary laws promoting the electronics and machineries industries, MITI was given the authority to exempt certain activities from the anti-monopoly law. During the earlier period, MITI emphasized mergers. MITI for the most part, was unable to effect these mergers and turned its attention in the later period to encouraging joint activities. Consultations between MITI, the industry and the Japan Fair Trade Commission (which performs functions similar to the Department of Justice's Antitrust Division and the U.S. Federal Trade Commission) determine the nature, participation and duration of cooperative ventures. Such ventures permit companies to work cooperatively in R&D endeavors and avoid duplicative investment on the part of an industry. Again, risk associated with sophisticated R&D is substantially reduced through this mechanism.

Another form of assistance is the use of tax deductions, credits, and special depreciation allowances to reduce the cost of development and diffusion of high technology products. Tax credits of up to 10 percent of corporate taxes are available for

investment in new R&D facilities and equipment. Accelerated depreciation is allowed for facilities used to produce technologies approved by MITI. Other special depreciation allowances are available for certain machinery and equipment which embodies advanced technologies. Deductions from taxable income are permitted for income received from the export of technologies or technical services.

In addition to tax measures, the government also attempts to promote diffusion of high technology products through its creation and support of special leasing companies. These two measures assist both developers and potential users of more modern and technologically advanced products and processes. For producers, developmental risks are reduced because market development has been assisted; and for users, high-cost, sophisticated equipment becomes more affordable and product innovation more accessible.

Government assistance to declining industries is similar. Loans or loan guarantees are offered to companies to encourage scrapping or mothballing of equipment. Exemptions from the anti-monopoly law are granted by MITI and the Japan Fair Trade Commission to facilitate capacity reductions and other industry rationalization measures through joint agreements. Finally, tax breaks are given to companies which upgrade and modernize plant and equipment to improve productivity. The Japanese response to declining industries is a coordinated approach involving contractual obligations between industry, government, and labor, concerning shifts of resources and tying of industrial adjustment to

worker and community adjustment. Equally important in this response is the conscious effort of the government to integrate incentives to growth sectors with policies for adjustment in depressed industries and regions. These policies include assistance for worker retraining and relocation of industry and workers.

INDUSTRIAL POLICY: CONTRIBUTIONS
TO SPECIFIC INDUSTRIES

To illustrate our discussion on the mechanics of industrial policy in growth industries, we studied computers, aircraft, and robotics. Segments of each of these industries meet criteria enumerated in the government's overall economic goals, that is, they embody high value added or contribute to productivity or quality improvements in the Japanese economy or society as a whole. Industrial policy for these industries is implemented within a framework of temporary laws which promote electronics and machinery industries. These laws have allowed MITI to direct certain activities under exemptions from Japan's anti-monopoly law. A loosely constructed administrative framework composed of numerous government and industry groups provides coordination for policy implementation. As we noted earlier, the major policy tools in use today are joint industry-government programs for research and development of indigenous technology, and tax and other measures for the development and diffusion of technology. The importance of government sponsored R&D projects varies in significance for these three industries, as discussed below.

The computer industry

Government involvement in the computer industry began in the very early stages of its development in the 1950s and has varied in type of assistance and in importance over time.

Government supported actions have:

- Established an institutional structure and legal framework for developing and implementing policies.
- Guaranteed a market for Japanese producers through commercial policies that limited imports and foreign investment and emphasized "buy Japanese" policies.
- Funded a leasing organization which ensured that Japanese manufacturers would be domestically competitive with International Business Machines, Inc. (IBM).
- Provided tax benefits.
- Provided success conditional loans for development and production of directly applicable commercial technologies. And,
- Fully subsidized R&D projects for basic and leading edge technologies.

The underlying approach to the computer industry today was set out in a 1981 report of the Industrial Structure Council's Information Industry Committee. The report outlined the importance of the computer industry. First, the industry itself represents a high value-added and low resource and energy use industry. Second, the computer industry and related information

processing industries form the basis of Japan's drive toward a "creative, knowledge intensive industrial structure of the 1980s."

Historically, the changing nature of government assistance to the computer industry reflects the flexibility of Japan's approach to industrial policies. Early manufacturers faced formidable and established competitors and lacked production facilities and access to existing technologies. Government assistance concentrated on loans to manufacturers to support investments in plant and equipment for commercial production, support for licensing agreements between Japanese and U.S. firms to gain access to technology, and commercial policies to protect domestic manufacturers from foreign competition.

As Japanese firms began exporting and international pressures forced Japan to limit its protective commercial policies, government assistance began to focus on aligning domestic manufacturers in R&D efforts and providing funds for the development of commercial products. As manufacturers have approached technological parity with international competitors, a further shift has occurred in government policy. The government currently provides full grant funding for a number of projects in which private companies participate to develop state-of-the-art technology.

These policies were developed and implemented by the government in consultation with various advisory councils and specialized industry associations representing a wide range of producers and users.

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Civil aircraft industry

This industry fits the profile of industries the government believes are necessary for the future health of the Japanese economy; it is a high value-added industry, and advances in sophisticated technologies have potential application in other industries. Several industry associations, MITI's aircraft bureau, and the Industrial Structure Council's Aircraft Subcommittee coordinate policies and advise the government on projects to be undertaken in the field of civil aircraft.

Infant industry development techniques which employ protective commercial policies could not be used for the civil aircraft industry because the domestic market is too small to provide sufficient demand needed to achieve economies of scale.

Initial efforts to rebuild Japan's aircraft industry began with government support for maintenance, repair and the licensed production of military aircraft. Military production still accounts for the bulk of Japan's aircraft production and has provided important spin-offs for Japan's civil aircraft programs.

The government entered the civilian aircraft production field in 1958 with the creation of a 50-50 public-private joint venture manufacturing corporation to manufacture the YS-11 civil transport aircraft. The plane was a technological success but a commercial failure. As a result, the government's initial approach to supporting civil aircraft was significantly revised

and it was decided that sales, marketing, and commercial production of aircraft should be handled by the companies alone. However, the government continued to believe that research and development in this field was too large an undertaking for private companies individually or even in cooperative joint ventures.

Government support for the industry now focuses on assisting the industry's participation in the R&D phase of international joint ventures. Two major projects to date have been a joint venture with Rolls Royce to develop an aircraft engine and a joint venture with Boeing for the 767 aircraft. Tentative planning is underway to participate in the development of a 150-seat jet transport aircraft. Government funding for these projects takes the form of success-conditional loans; i.e. the companies are required to repay loans only when the projects are commercially successful.

In addition to financial and administrative support for prototype development, the government provides funds for basic research in new technologies. Such projects include the use of optical fibers in avionic systems and aerodynamic studies to improve fuel efficiency. Part of MITI's major project to develop technologies needed for the next generation of industries will be the development of new composite materials which have important ramifications for the development of new aircraft.

The emerging steel-collar
work force: robots

Growth of the Japanese robotics industry began in the mid-1970s and was spurred by the prospect of labor shortages. This industry developed with little or no government assistance until the late 1970s, when the government officially recognized the industrial robot as a means of boosting productivity, lowering labor and material costs, and improving product quality. Government involvement in this industry has been directed mainly toward expanding the use of robots in small- and medium-sized enterprises. There has also been some support for basic research and development.

Robotics represents an interesting departure from earlier industries receiving government assistance because it is a new industry worldwide. New technologies are being developed and new markets created. Japan is not faced with catching up to an existing mature technology or in gaining sales by increasing its share of already established world markets.

Research and development in the robotics industry is conducted by (1) universities, (2) public research institutions, and (3) private companies. Public research has concentrated on basic research and theoretical problems such as vision and sensory perceptions. The government's attempt to set up a national, long-term research effort was postponed repeatedly because of budgetary constraints. It now appears that it will be funded at about \$70 million with the goal of developing an intelligent robot by 1990.

Private research in Japan has been by far the more extensive, and has focused on research and development most closely linked to applications. Three types of companies have become involved in robotics, spurred in large part by the same concerns of costs, quality, and productivity. The first type consists of a number of large corporations, including Kawasaki, Mitsubishi, and Hitachi, in which robotics comprise a very small part of corporate production and sales. Producers of numerically controlled machine tools or large manufacturing systems, such as Fujitsu Fanuc, make up the second type; and companies that originally produced special purpose robots for their own use comprise the third type.

To encourage the diffusion of robots, the Japanese Government supported the establishment of a leasing company (the Japan Robot Leasing Company--JAROL) in April 1980 to lease robots to small- and medium-sized firms. The initial capital was provided by 24 robot producers, 7 general leasing companies, two of Japan's private long-term lenders, various city banks, and low interest loans from the Japan Development Bank. JAROL is now attempting to expand its operations to begin leasing robots to foreign customers.

Tax incentives and government credit are also used to promote diffusion of robots. These have taken the form of low-interest loans provided by government banks, loans from local governments, and special depreciation allowances. The Small

Business Finance Corporation and the People's Public Finance Corporation are providing low-interest, long-term loans to small- and medium-sized enterprises for the installation of robots to enhance occupational safety. Similarly, central and regional governments have set up a fund for these firms to purchase or lease robots for modernization. Finally, manufacturers who install robots are eligible for special depreciation allowances provided by the government in addition to ordinary depreciation allowances. According to our information, a user could depreciate as much as 52.5 percent of the initial purchase price in the first year.

EFFECTS OF INDUSTRIAL POLICY ON GROWTH:
SOME OBSERVATIONS

One facet of industrial policy has been Japan's ability to tailor different policies to different industries at different points in time. This has been accompanied by changes in the government's influence over the direction of growth. Early government tools such as control over foreign exchange allocations, have been replaced by programs which most often rely on incentives. Within this context, government support for individual industries has been tailored to meet the specific needs and objectives of a given industry.

In the computer industry, as new technologies become increasingly important for competitiveness, and company access to capital improves, manufacturers conduct more of their own research and development. Most of the companies participating in MITI's highspeed scientific computer project, for example, have

separate, similar projects underway. On the other hand, in the aircraft industry, where research and development is a very costly undertaking and the domestic market is too small to provide sufficient demand for new products, the government supported international collaboration in research and development. In robotics, government involvement trailed industry development, and diffusion of technology to small and medium-sized firms has been the most important form of government assistance.

A significant aspect of Japan's industrial policy toward emerging industries lies in government support for the development of leading-edge technologies as well as support for the diffusion of advanced technology throughout the economy. The industries receiving support, therefore, are important not only in and of themselves but also for improving the performance and productivity of the economy as a whole. Direct subsidies to joint industry government R&D projects and tax credits for research and development help to provide the resources to develop new technology. Recognizing that the contribution of new technology depends on how quickly and widely it spreads throughout the economy, the Japanese Government has also used preferential tax treatment, credit, and government supported leasing companies to encourage the diffusion of new technology.

Mr. Chairman, that concludes our statement. We would be happy to answer any questions.