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Industrial Policy in Japan: A Political Economy View

Masahiro Okuno-Fujiwara

9.1 Introduction

In this paper, I argue first that, contrary to perceptions outside of Japan, Japanese industrial policy per se does not play a critical role either in strategically restructuring the Japanese economy or in forming government-industry cartels to promote Japanese exports. If contemporary industrial policy is important, it is because of its role in coordinating the planning and managerial decisions of individual firms and in helping in the dissemination of information.

In the first half of this paper, I try to support this view by providing a brief historical account of Japanese industrial policy. To be more precise, I argue that postwar Japanese industrial policy was transformed toward the end of the 1960s. Until then, its major aim was to promote several key industries in order to take advantage of the benefits of international trade. Policies tended to involve direct regulation requiring government involvement, such as licensing and granting the authority to allocate foreign exchange.

Since then, the trend has changed, and the main focus of policy seems to be correcting market failures, including promoting private research and development (R&D) efforts and assisting in the structural adjustment of the economy. Policies also have become *soft measures*, such as assisting in the relocation of workers (or factories) from depressed areas (or industries) to growing ones, and promoting research associations to help private firms engage in co-operative R&D efforts.

Nonetheless, access to the Japanese market seems to be heavily restricted.

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There is also an export downpour: that is, Japanese firms pour down their exports to foreign markets over very short periods, harming the domestic producers. This paper argues that these problems originate not from the strategic nature of industrial policy but from the way policy decisions generally are made and put into practice in Japan. In this sense, the problem is far broader than industrial policy per se.

To put it succinctly, policy decisions in Japan reflect the interests of insiders (usually only producers—consumers are excluded). Moreover, decisions are not made on some abstract philosophical basis, nor are they made according to clearly spelled-out rules. Instead, they are made on a practical basis by negotiation among insiders; the policies that are most easily implemented, and that cause the least political conflict, tend to be adopted.

The paper is organized as follows: section 9.2 defines the concept of industrial policy and briefly surveys recent theoretical contribution on industrial policy. In section 9.3, a very brief historical account of Japanese industrial policy is presented. Sections 9.4 and 9.5 describe major contemporary industrial policies in Japan: R&D assistance and dealings with trade conflicts. In section 9.6, the system of Japanese policy-making from the viewpoint of political economy theory is summarized. Section 9.7 briefly discusses the Large Stores Law to support our view on how Japanese policies are practiced. Section 9.8 concludes the paper.

9.2 Industrial Policy: Its Scope and Limits

In economics, industrial policy is a relatively new concept that lacks a well-accepted definition. In this paper, I use the following definition: Industrial policy is any “policy that attempts to achieve the economic and noneconomic goals of a country by intervening in resource allocation across industries or sectors, or in the (industrial) organization of an industry or sector” (Itoh et al. 1991).¹ This definition emphasizes microeconomic aspects of the economy and focuses on inter- and/or intraindustry resource allocation. An alternative definition, often assumed to be implicit in Japan, is that of Kaizuka (1973, p. 163): “With little sarcasm, I would define industrial policy to be the policy that MITI implements.” I shall follow this definition when I give historical accounts of Japanese industrial policy.

For the purpose of this paper, it is useful to classify industrial policies into two basic subcategories: *strategic policies* and *corrective policies*. Strategic policies promote certain industries (sectors) for the benefit of domestic welfare; corrective policies improve economic efficiency by correcting market failures. However, these two types of policies are not mutually exclusive.

1. For other related definitions, see Komiya, Okuno, and Suzumura (1988) and Suzumura and Okuno-Fujiwara (1987).

9.2.1 Strategic Policies

Recent theoretical contributions have identified two cases where strategic policies may be effective: where there are externalities and where monopoly rents may be shifted.

First, some form of externality may create economies of scale on a national level and nonconvexity in the economy. The traditional infant industry argument, which emphasizes external dynamic economies, is an example of this approach.² Alternatively, if Marshallian externality exists so that, as an industry's total output increases, the industry's average cost declines and its productivity improves, there may be multiple equilibria: one where the industry produces no output because average cost is too high compared with the demand price, and the other where positive production takes place using (industry-level) economies of scale. Moreover, these equilibria often are Pareto ranked. Hence, if an economy is trapped in a Pareto-inferior equilibrium, policy intervention to reallocate interindustry resources may shift the economy to a Pareto-superior equilibrium (see, e.g., Okuno-Fujiwara 1988).

Questions still remain as to how Marshallian externality (or national-level economies of scale) evolves. Ethier (1982) and Okuno-Fujiwara (1988) showed that Marshallian externality indeed may occur if several industries are interrelated and if monopolistic or oligopolistic competition prevails in a critical part of this nexus, for example with parts suppliers for an industry that has the potential to draw a large portion of laborers. The latter, further identified coordination failure among monopolistic firms may be the cause of this phenomenon. In other words, if these firms' expectations about the future course of the economy change (from one rational expectation to another rational expectation), a Pareto-superior equilibrium may be achieved. Thus, policies to coordinate firms' incentive or to change future expectations of economic agents may be effective in moving the economy away from the Pareto-inferior equilibrium.³

If one believes in this explanation, one of its inescapable conclusions is that the industrial structure of an economy may not be determined by tastes and resource endowments alone, as is the case with the Heckscher-Ohlin model. Instead, industrial structure may be determined by historical accidents and policy interventions. This implies that free trade may not be the best system, as an economy or the world may be trapped in an inferior equilibrium. Some sort of coordinated policy intervention or managed trade may be desirable.⁴ This type of strategic policy may be justified because it could improve the

2. For details of the infant industry protection argument, see Itoh et al. (1989), chap. 4; and Corden (1974).

3. For the explicit treatment of expectation in a dynamic model with multiple rational expectation equilibrium paths, see Matsuyama (1989).

4. For the detail of this argument, see Okuno-Fujiwara (1988) and Itoh et al. (1989), chaps. 5-6.

welfare of the country, and even of the world, by substantially reducing the price of the industry's product. Moreover, the benefit of such a policy may be relatively large if the nexus of industries that become competitive draws a big share of resources.

Critics of this approach emphasize that this type of strategic policy is justified on the grounds of externality. Externalities being difficult to identify and measure in practice, they argue that application of this approach is severely limited.

A second line of explanation for strategic policies relies on the strategic behaviors in international oligopolistic rivalry. Originated by Brander and Spencer (1981, 1983), it suggests that providing a subsidy to domestic firms may benefit the country if these firms face oligopolistic competition with foreign rivals. The underlying logic is that the subsidy makes domestic firms' behavior more aggressive and, more important, that this change in the firms' attitude becomes *credible* to their rivals because the subsidy changes the firms' own incentives. The resulting expansion in the firms' production occurs at the cost of foreign rivals, shifting monopoly rent from foreign firms to domestic firms. It also affects the consumer surplus in the market in which rivals compete, as more aggressive behavior may cause the price of the product to fall.

Although this explanation drew more attention than the first approach, there are limitations to the argument. First and most seriously, as far as rent shifting between foreign and domestic firms, this policy is of the "Beggars-Neighborhood" type: the country obtains benefits at the cost of foreign countries. This policy is likely to draw retaliation from other countries, and the chain of retaliations might destroy world trade. Second, its main argument relies on rent shifting in one industry, which may be too small to justify policy intervention. Moreover, the argument depends upon the existence of entry barriers, for otherwise monopoly rent would dissipate.⁵

To sum up, strategic policies should not be denounced outright. Some may benefit not only the home country but also the foreign countries. On the other hand, certain strategic policies benefit the home country at the cost of the foreign countries. The difference is that, in the former, the policies help to reduce the social production cost (that is, the sum of production costs incurred by private firms and the cost of government support) while, in the latter, policies help to reduce private cost without changing the social production cost.

9.2.2 Corrective Policies

Two branches of corrective policies are relevant in the following discussions: policies to promote private R&D and policies to assist structural adjustments. R&D is one of the prime examples of economic activities that are

5. For more extensive review of this theory, see, e.g., Brander (1986) and Grossman (1986).

prone to market failures. Fruits of R&D cannot be appropriated to investors, and they spill over easily to other firms, so it is often claimed that there is a socially insufficient incentive for R&D without government support. To correct this, subsidizing private R&D and providing incentives in other forms have become popular in developed countries.

Theoretically speaking, however, other aspects of R&D may make private efforts socially excessive. If the results of R&D can be patented, for example, then pursuing economic rents accruable to resulting innovations may induce socially excessive competition.⁶ Even if there is uncertainty in the outcome, R&D creates negative externalities, as it may reduce the probability that other firms can secure the same outcome. As the externalities affect an industry's firms indiscriminately, R&D again may become socially excessive (see Loury 1979; Lee and Wilde 1980). Whether public support is justified or not, therefore, should depend upon the relative magnitude of these two effects and can only be determined empirically. Nonetheless, policymakers in many countries seem to take it as a foregone conclusion that government support is required in this area, and Japan is no exception.⁷

Another policy—which may be classified as corrective—that has been utilized extensively in Japan is that of assisting industries that are harmed by changes in external environments, such as a rise in oil price or an unexpected change in exchange rates. These are called structural adjustment policies. When a change in external environments occurs and a country's comparative advantage changes, resources must move from one (declining) industry to another (growing) industry. Many resources are industry specific, however, and cannot move within a short period. If there is an additional market failure, such as wage rigidity, resources trapped in declining industries may suffer from unemployment, and inefficient resource allocation will result. Policy assistance is called for.⁸

The first-best policy for structural adjustment is eliminating the market failure that causes unemployment (e.g., wage rigidity in the earlier example). If the first-best policy is not available, several possibilities remain.⁹ As declining industry suffers from deteriorated export opportunities, or from increased competition from foreign imports, trade restriction provides relief. However, protection provides incentives for resources to stay within the declining industry, which is the opposite of what structural adjustment intends. To provide the correct incentives and to assist adjustment, it is critical that trade restric-

6. For the detail of this argument, see Barzel (1968).

7. For survey of theories of R&D incentives see, e.g., Itoh et al. (1989), Scherer (1980), Tirole (1989) and Kamien and Schwartz (1982).

8. Existence of industry-specific resources makes resource owners in the declining industries suffer from lower return, but this alone does not justify policy interventions. For, as long as there are no market failures, this is the unavoidable cost to the economy. See, e.g., Mussa (1982).

9. For details on this, see, e.g., Itoh and Negishi (1987) and Itoh et al. (1989).

tion (and other help for declining industries) is provided only temporarily. The time limit must be made explicit and credible.

If unemployment results because of external shocks, another possibility is to provide wage subsidies. Although this, like trade restriction, is effective for improving employment, it shields consumers from the changes in relative prices (terms of trade) that are caused by external shocks and, hence, is inferior to trade restriction.

Cartelization is another often-used policy measure. Declining industry is encouraged to form a cartel to limit the level of production or the extent of capacity utilization. By this, domestic price may be kept high and damage may be eliminated. However, allowing cartelization may enhance collusive behavior, which harms consumers' welfare. Forcing the exporting country to form a (voluntary) export cartel and to restrict the amount of exports works the same as obstructing competition.

Helping growing industries to absorb new equipment is called *positive adjustment policy* (PAP). The policies listed above to help declining industries maintain their employment are called *negative adjustment policy* (NAP). PAP is often thought to be superior to NAP. However, the issue is subtle. Even without PAP, economic incentives exist to direct resources from declining to growing industries. But is facilitating this resource movement beneficial to the country? If there is no additional market failure, it may be best not to intervene in the market mechanism, as was shown by Mussa (1982). Moreover, as Neary (1982) and others have shown, it might be better to slow the movement of resources. For example, suppose wages are rigid and capital is industry specific in the short run. If the declining industry is relatively more labor intensive than the growing industry, then accelerating the movement of labor from the former to the latter may increase unemployment, as the growing industry cannot absorb enough workers in the short run.

9.3 A Brief History of Industrial Policy in Japan

Though some time has passed since foreign interests in Japanese industrial policy evolved, some myths about the policy still seem to exist. There are strong opinions abroad that the policy is one of the main elements of the "Japan, Inc"; that is, a nexus of private corporations and the Japanese government that effectively controls the Japanese economy through conspiratorial cartels and regulations. Some also believe that the policy is designed to protect domestic industries from foreign competition through the use of overt and covert measures. In this section, I try to argue that these beliefs are not well founded from a historical viewpoint.

Chronologically, industrial policy in postwar Japan may be divided into three different time periods: 1945–60, 1960–73, and 1973 to the present. In this section, we shall provide brief historical account of each period.

9.3.1 1945–60¹⁰

This is the period when Japan tried to reconstruct its economy after devastating defeat. The 1946 production index was one-fifth of the prewar peak, and one-quarter of the national wealth had been lost during the war. In addition, international trade was severely restricted by the allied force. In order to sustain its economy and provide food for a large population, which included 7.6 million discharged soldiers, the government continued wartime regulation and control. This is typified by the so-called Priority Production System (PPS) of 1946–48. Designed by a Marxist economist, H. Arisawa, the PPS was intended to start reconstruction by concentrating domestic resources into two critical industries: steel and coal. The only available natural resource at the time was coal. But there was a bottleneck in increasing coal production: a lack of steel. With the PPS, the entire coal production effort was thrown into the steel industry. The entire steel production was then cast in coal production. By repeating this process, it was hoped that both steel and coal production would increase and would eventually make other industries revive. To help PPS, materials, workers, and funds were ordered to be concentrated in these two industries.

Direct governmental regulation of the economy typified by the PPS continued until late 1950s, but there was less emphasis on direct control toward the end. There were three factors that made government take this position. First, although the Korean War boom boosted reconstruction, the Japanese economy did not recover from defeat until mid-1950s. Some form of government intervention was necessary, for international trade was still restricted, and large disguised unemployment existed in agricultural sector.

Second, the government had many levers with which to adopt direct regulatory measures. The Temporary Commodities Demand and Supply Adjustment Law of 1946 gave the government extensive power to intervene in private economic activities. Under this law, the government could ration any commodity (for consumption and production), or prohibit or restrict usage of and production or shipment of any commodity whose supply was limited. This law lost its effect in 1952, but many powers with which to regulate the private sector remained with the government until the late 1950s or early 1960s. Access to foreign exchange was essential for firms that need foreign resources to construct new plants and to obtain technology licenses from technologically advanced foreign firms. But foreign exchange and foreign capital were controlled and rationed. The Enterprise Rationalization Promotion Law of 1952 provided special depreciation allowances and tariff exemption to key industries.

Third, after the *zaibatsu* (the family-held groups of companies that domi-

10. For more details, see Kosai (1986, 1988).

nated the prewar economy) were dissolved by the occupation force, the government's influence increased. Heavily influenced by the experience of wartime control, bureaucrats of this period seemed to have come to believe in governmental control and direct regulation of the economy.

To sum, industrial policy in this period aimed at directly regulating and controlling economic activities of the private sector. The philosophy behind such a policy stance reflected the training that bureaucrats received in the wartime, controlled economy. Toward the end of this period, the Japanese economy started to take off. Some believe that industrial policy was responsible for the relatively quick reconstruction and take-off. However, strong entrepreneurial spirits existed in the private sector, despite the bureaucratic attempts to contain them. Many economists believe these spirits were the major factor of the Japanese economy's performance in this period (see Kosai 1986, 1988).

9.3.2 1960–73¹¹

This is the famous “rapid growth” period of the Japanese economy. It is also considered the heyday of Japanese industrial policy. Between 1960 and 1970, Japan enjoyed an average growth rate of 11.6% in real terms. Industrial structure transformed dramatically from agriculture to manufacturing and from light industries (such as textiles) to heavy industries (such as steel, petrochemicals, and automobiles). This transformation was accelerated by the explosion of exports in heavy industry products.

In 1960, the government announced the Plan for Trade and Foreign Exchange Liberalization. Until then, many imports were restricted by the system of licenses and foreign exchange quotas. With the liberalization, however, the ratio of imports with the automatic approval system increased from 49% in 1960 to 92% in 1963 and eventually to 97% in 1967. In 1964, Japan became an Article 8 country of the IMF and obtained membership in the Organization for Economic Cooperation and Development (OECD).

Despite these developments, industrial policy in this period was characterized by an emphasis on strategic policies. The Ministry of International Trade and Industry (MITI) tried to promote several key industries by trade protection, tax advantages, and subsidies in various forms. Industries were selected, at least officially, according to three main criteria: productivity growth, income elasticity, and employment relatedness. Industries that appeared to (1) promise high productivity growth, (2) be characterized by large income elasticity of demand so that an increase in demand could be expected with the growth of the world economy, and (3) have many related industries whose growth would promote employment were assisted with various policy measures.

MITI bureaucrats also attempted to control the level of private capacity investment. They believed that, in industries characterized by scale economies,

11. For more details, see Kosai (1986) and Tsuruta (1988a).

competition would create excessively many small firms with excessively large total capacity within the industry. The resulting "excessive competition" was believed, in turn, to jeopardize Japanese competitiveness in the world. In order to secure "orderly" competition, each firm was advised to specialize in production of certain goods so that they would not compete with each other. Public assistance was provided to renovate production facilities in order to take advantage of scale economies. Mergers were also encouraged to reduce excessive competition.

Partly in order to facilitate these measures and partly in order to meet the effects of trade and foreign capital liberalizations, MITI proposed the Law on Extraordinary Measures for the Promotion of Specified Manufacturing Industries in 1962. This law was to integrate and strengthen existing laws so that MITI would have wide-ranging effective power to apply direct regulatory measures. Moreover, the law proposed a new government-business relationship, called *kan-min kyochō hoshiki*. Based on public committees consisting of bureaucrats, business leaders, and academic experts, the proposed new relationship was expected to rechannel the principal determinant of resource allocation away from the market mechanism and into the artificial coordination of government and business sector. However, it met with strong opposition from the private sector, notably from the financial sector, and it was never enacted. This typified the new trend that, though government tried to keep its hand in managing the economy as in the previous period, the private sector started to resist public intervention in favor of free market mechanism.

Moreover, although many industries such as automobiles, electric appliances, and steel have succeeded in dramatically increasing their exports, this success should not be ascribed solely to government assistance. With trade and foreign capital liberalization, the government lost much of the leverage it needed in order to intervene in the private sector. Perhaps the most effective step in promoting exports in this period was the government's announcement of the liberalization schedule of various products. With this announcement each industry, knowing that foreign competitors would soon start their business in its domestic market, endeavored to improve its productivity, or the quality of its products, and renovate its facilities. Moreover, the government delayed trade liberalization of certain key industries as long as foreign pressures allowed, a move which provided sufficient time for these industries to take necessary actions. Many industries were thus ready for competition with foreign rivals not only in the domestic market but also in markets abroad by the time the actual liberalization took place.¹²

To sum up, this period may be characterized by the use of strategic policies. The mechanism behind strategic policy in this period seems to be close to the externality-based explanation of the previous section. It is doubtful, however, that in designing their policy MITI bureaucrats were conscious of such a

12. For theoretical analysis behind these facts, see Matsuyama and Itoh (1985).

mechanism. Their criteria for industry selection may have been simply cosmetic.¹³ In fact, Komiya (1988) suggests, "I believe that the government promoted exactly those industries that most Japanese felt the country had to have."

This period was also characterized by the strain between the government and the private sector. The government attempted to intervene in the market mechanism by applying direct regulation, but private corporations resisted all such attempts. The attempt to restructure the Japanese automobile industry in this period is another well-known example of this strain. In 1961, MITI announced a plan to reduce the number of automobile producers to, at most three, one each for mass-production of cars, specialty cars, and minicars. This proposal again met strong opposition and ten Japanese automobile manufacturers still remain today, nine of which produce mass-production cars.

Toward the end of this period, MITI officials reluctantly gave up the idea of direct regulation and shifted their policy emphasis from "hard" measures to "soft" measures. Namely, their main policy goals changed to helping coordination among private firms, suggesting desirable directions for the Japanese economy, and providing public assistance and/or incentives so that private firms will follow the suggested course. Prime examples of this kind include the announcement of various MITI "visions" and "plans," which suggest a consistent and desirable course that the Japanese economy might take in the next five or ten years. These visions and plans were drafted in governmental committees by members from various sectors of the economy. Some observers believe that these plans may have worked as a coordination device as well as functioning as a means of informational exchange among private firms (see Komiya 1975; Okuno-Fujiwara 1988).

9.3.3 1971 to the Present

This is the period when Japanese economy repeatedly suffered from external as well as internal drastic structural changes. In 1971, President Nixon announced the suspension of the dollar's convertibility to gold and the imposition of an import surcharge. With this announcement, the fixed exchange system of the postwar period ended. Between 1973 and 1974, the price of oil quadrupled by OPEC's initiative. With the mismanagement of domestic monetary policy, the inflation rate jumped to 30%, and the rate of the nominal wage increase to 50%. In 1974, the unemployment rate doubled and the country's real growth rate recorded the first negative number in the postwar era. Because of yen appreciation and increases in the price of oil, many (heavy) industries, which are very dependent on imported oil and export possibilities, started to have structural problems.

Shortly after the recovery from the first oil shock, there was steep yen ap-

13. In fact, MITI tried to promote almost all major industries, such as shipbuilding, steel, automobile, oil refinery, aircraft, airplane engines, petrochemical, etc.

preciation between 1977–78; the second oil shock hit the Japanese economy in 1979–80. The problems of troubled industries got aggravated and their needs for further public help were voiced loudly. With the level of accumulated public debts quickly becoming unbearably high, however, macro-oriented fiscal assistance was abandoned and microbased industrial adjustment policies were employed. After the recovery from this crisis, the yen remained relatively cheap until the Plaza agreement of 1985. The agreement, however, induced another sharp rise in the yen, but its effect was relatively mild, contrary to the expectation of many Japanese.

In spite of these developments, Japanese trade as well as current accounts have recorded increasingly large surpluses, except for the two oil shock sub-periods. Strong foreign criticisms were cast, first on the chronic trade surplus, then on the Japanese government's policy attitudes, and finally on the behavior of Japanese firms and the Japanese people in general. Meeting with these "trade conflicts" as well as "economic conflicts" became one of the most important objectives of industrial policy in this period. In section 9.5, I shall come back to a more detailed account of these conflicts.

Another trend of industrial policy existed in this period: decreasing emphasis on strategic policies. Partly because the Japanese economy had already grown sufficiently and few industries needed assistance for promotion, and partly because foreign criticisms against industrial targeting became too fervent to be ignored, the MITI tried to shift its policy emphasis from strategic policies to corrective policies. The MITI's position in international trade has gradually changed to support free trade. With continuous reduction of tariff rates, Japan became one of the countries whose overall tariff rate is lowest in the world (see Komiya and Itoh 1988). With visible trade barriers removed, the MITI's stance became, at least publicly, that of a protector and promoter of the free trade system in the world.

To sum up, there were three main objectives of industrial policy in this period: providing adjustment assistance to troubled industries suffering from the aforementioned structural changes, meeting with foreign criticisms and demands concerning Japan and trading problems, and encouraging R&D in the private sector. Assistance for R&D may be viewed to reflect the shift of the MITI's emphasis on corrective policies. Among policies that are of a corrective nature, however, R&D assistance seems to be most fitted to MITI, as it may work as strategic policy as well. Although the amount is negligible in nominal terms, various forms of policies to assist private R&D were attempted in this period. I shall discuss these policies somewhat extensively in the next section.

Adjustment assistance for domestic industries took several forms: assisting workers to relocate and to train themselves for new jobs, providing assistance for depressed areas, and so on. However, the major policy tools were the following two: the establishment of joint credit funds to purchase scrapped facilities with bank-loan guarantees (this was done to handle the disposition of

excessive facilities), and allowing a capacity-reduction cartel in designated industries. According to Sekiguchi and Horiuchi (1988) the first tool was apparently not too attractive for firms, as firms did not have much use for the guarantees. They are also doubtful about the effectiveness of allowing cartel formation, as there is no significant difference in the level of capacity reduction between designated and undesignated industries. Nonetheless, one cannot deny the possibility of undesignated industries tacitly colluding to form cartels. As Lawrence (1989) points out, Japanese adjustment assistance policies in general were not very transparent.

9.4 Industrial Policy for Private R&D

One of the focuses of Japanese industrial policy in the 1980s has been to assist private R&D efforts. Japanese R&D expenditure has been dominated by the private sector. For example, in 1987, more than 9 trillion yen (2.57% of GNP) was spent on R&D activities, of which only 19.9% was funded by the government. This ratio is substantially low when compared with other major developed countries (see table 9.1). Moreover, this ratio of government-funded R&D to total R&D expenditure has been steadily declining (except for the last few years). One might note, however, that this low ratio partially stems from the fact that in Japan the amount of defense-related government expenditure is negligible.

In the postwar era, two types of technology-related policies have been used to assist private firms: assistance for technology imports and assistance for R&D by domestic firms. Until the 1960s, the former policy played an impor-

Table 9.1

Country	Year	R&D Expenditure as % of GNP ^a	Government Funds		
			As % of Total R&D ^a	Without Defense- related R&D	As % of Total Private R&D ^a
Japan	1983	2.29	22.2		2.9 ^b
	1987	2.57	19.9	19.3	1.7
United States	1987	2.65	48.2	26.8	35.1
West Germany	1987	2.81	37.7	34.4	15.3
United Kingdom	1986	2.29	38.5	17.2	25.0
France	1986	2.29	43.7	28.9	22.8 ^c

^aSee *Indicators of Science and Technology*, 1989, Science and Technology Agency, Tokyo.

^bSee *Movements of Major Indicators of Research and Development in Japan*, 1985, Agency of Industrial and Science Technology, Tokyo.

^c1987 data.

tant role for Japanese firms trying to catch up with the international level; these firms had been left behind technologically due to the closure of the economy during the war. Today, technology import is still an important factor in some industries, such as the semiconductor industry and other high-tech industries. However, in general, the policy emphasis has shifted to promoting domestic R&D.

As is indicated in table 9.1, the amount of direct and indirect subsidies provided to promote domestic R&D in Japan is relatively small even among the most industrialized countries. This reflects in part MITI's current stance of not engaging in the "hard" policy measures and also reflects the small role played by the Japanese defense budget. However, government support, though small, has been concentrated in the areas that would help commercial production. MITI has been consciously aiming "at promoting commercially optimal technology," and this is in sharp contrast to the American policy whose major contractor (the Defense Department) "tends to emphasize the design of new and better components and systems rather than process refinement" (Okimoto, Sugano, and Weinstein 1984, pp. 182–83). To facilitate private efforts to improve production technology and cost-reduction know-how, MITI tried several devices to promote private R&D efforts by furnishing coordination incentives. Perhaps the best publicized such device is the organization of *technology research associations* (TRA).

The TRA is an association of several (from two to more than 50) private firms that is organized to conduct joint R&D effort with the help of government assistance, usually in the form of a subsidy. The idea of the TRA was imported from United Kingdom in 1961. Unlike the British research associations, however, the Japanese TRA is organized as needed to solve specific technological challenges (rather than organized as one group within each industry) and organized as a temporary organization, deemed to be dissolved after the designated period (rather than organized as a permanent entity) (see Wakasugi 1986).

The Technology Research Association for Very Large Scale Integrated Circuits (VLSI) is perhaps the best-known and most successful Japanese TRA.¹⁴ This TRA was organized with five Japanese computer producers (Fujitsu, Hitachi, Mitsubishi Electric, NEC, and Toshiba) for the period of 1976–79 with the aim of developing high-density high-speed semiconductors. These would be used for new domestically produced computers being developed to challenge the next-generation IBM mainframe computer (the future system). During this period, MITI provided a subsidy of ¥29 billion (about \$116 million at the concurrent exchange rate). With the fund provided by the member firms, the total budget for this project amounted to about ¥70 billion, which

14. See Okimoto, Sugano, and Weinstein (1984) for the details of this project and a background comparison of the semiconductor industry in Japan and the United States.

was about the half of the total R&D expenditure of the semiconductor industry.¹⁵

This TRA is considered to be successful because it produced more than 1,000 patent applications, some of which are thought to be world-leading technology. Many members of the TRA thought that, with the results of this TRA, the Japanese semiconductor industry caught up with IBM in the integrated-circuit (IC) production technology. Indeed, executives of IBM visited this TRA site several times during and after the operation (Sakakibara 1981). Although the VLSI project is considered to have been successful, not all the TRAs produced similar results. For example, Wakasugi (1986) computed research funds spent for each patent application. While the private-sector average during 1973–82 as ¥1.6 million, six chosen TRAs only scored ¥4.7 to ¥65.7 million.

Moreover, the mechanism of the TRA is not very well understood. Unless member firms have complementary roles, such as parts supplier versus assembler, their interests normally conflict with each other. In the case of VLSI, for example, all members were competitors in the commercial computer market, and so their interests were at best mixed; obtaining better technology is a plus, but the rival's acquisition of the same technology is a minus. Moreover, assuming that the results of their efforts would belong to all member firms, providing no effort should have been the dominant strategy as long as the effort level of the firm could not be observed by other members.

The case of VLSI is relatively unique in some respects, however. First, in the computer industry at the period, IBM was the clear leader, and the member companies could not have survived had they not made the technological breakthroughs that the TRA aimed at. In this sense, their interests were similar and cooperation incentives existed. Second, this project was a rare example in this period (and even today) in that it had its own research facility. Instead of bringing back the problem to each company, member firms sent research workers to the facility where the research was done jointly. This created competition among research workers as their results were observable by the fellow researchers. Third, the amount of the subsidy was relatively large. In fact, according to Wakasugi (1986) again, the average ratio of government subsidy to total R&D expenditure for the semiconductor industry was about 22% in 1976–79, while it was only 2.9% in the 1980–82 after the project ended. Fourth, the target of the project was not to develop a computer or an IC itself, the market in which member firms were harshly competing with each other, but mainly to develop new methods to produce better ICs. The interests of member firms, then, were not in deep conflict.

Nonetheless, the example of VLSI also illustrates the problem of R&D or industrial policy in Japan in general. First, as already explained, there is no clear logic as to why and how the TRA would work. A large amount of public

15. Estimated by Wakasugi (1986).

funds was poured into this industry, despite the fact that many experts were uncertain about the idea. Second, some may criticize it as a disguised strategic policy.¹⁶ Indeed, as we have seen, a relatively large amount was given to this industry, which is only a limited group of domestic firms. Although, MITI now attempts to open TRA memberships to foreign firms, many chosen research topics are in high-tech areas, which seem to reflect the policymaker's inclination to promote these types of industries. Moreover, outsiders could not have access to the results of the TRA for VLSI. Only after negotiations between the U.S. and Japanese governments, were all patents, held either solely by the government or jointly by the government and the member firms, made public and freely accessible to outsiders.

Third and most important, it is not clear why and how the five member firms were chosen. Clearly, becoming a member provides benefits either in terms of public funding or the resulting technological advancement. Compared with both domestic and foreign outsiders, member firms enjoyed these benefits during the project period; they also held a more advantageous position created by the elevation of their technological level after the project. However, there were many domestic semiconductor producers who ended not participating in the project. Even one major computer producer Oki Electric, who had a joint venture with an American maker, was excluded from the TRA.¹⁷ In sum, the VLSI project seems to be another example of a government policy that favors industry's insiders.

9.5 Trade Negotiations

Postwar trade between Japan and the United States has been riddled with numerous trade and economic disputes. Starting with the textile problem of 1960s, the number of disputed items has been constantly increasing, and the nature of the problems has been changing and becoming more and more complicated. Roughly speaking, the disputed area has shifted from "excessive Japanese exports" such as export downpour to the United States to "barriers to American exports into Japan," and from problems about "Japanese commodity exports" to "other activities of Japanese firms," such as dealings with intellectual properties, direct investments to the United States, and collusive behaviors of Japanese firms. In this section, we shall focus on those problems that are caused by Japanese commodity exports, especially in semiconductor industry.

Past trade disputes between Japan and the United States may be classified into two distinct groups. The first group is made up of those disputes that were

16. However, employing policy itself should not be denounced outright as I discussed in sec. 9.2.

17. Strictly speaking, however, the members are chosen on the grounds of voluntary application. I could not prove whether or not there was any government intervention in the choice of member firms.

processed in a legitimate manner according to the American legal system. The second is those brought up and solved politically with bilateral negotiations.

If an American industry believes that Japanese exports have injured the industry because of unanticipated developments, it can file a petition to the U.S. International Trade Commission (USITC) to restrict Japanese imports (this is based on the safeguard clause). Similarly, if it believes that Japanese products are being sold by unfair trade practices, such as dumping, it can file a petition to the Department of Commerce (DOC) and USITC (based on the antidumping and countervailing duty clause). The USITC (and/or DOC) will investigate the case and determine whether the industry is indeed injured and whether the injury is caused by unfair trade practices on the part of the Japanese. If the answer is yes, a discriminatory tariff may be imposed on the import from Japan. If the Japanese industry believes that the ruling does not reflect the true situation, it can in turn petition to the General Agreement on Tariffs and Trade (GATT). According to the current rule, GATT encourages reconciliation, but, if that fails, disputants can call together a panel of third-party representatives whose ruling may become "binding" if approved by the GATT council.

A large number of disputes have been solved through this legitimate process. For example, between May 1986 and March 1989, the USITC gave final rulings on 23 items, 13 of which were ruled as caused by dumping and other Japanese unfair practices, 9 were found not guilty, and the ruling for the last item was mixed.¹⁸ One may note, however, that despite all these petitions filed by American firms and all these guilty rulings given by the USITC (and DOC), neither the Japanese firms nor the Japanese government ever formally protested these rulings by petitioning GATT.

A significant number of disputes, however, took a different course. Either before or after they file a petition alleging Japanese dumping, many American industries, such as those producing steel, automobiles, machinery, and semi-conductors, have applied political pressures to the U.S. administration as well as to Congress in order to obtain protection from Japanese imports. The typical consequence is that the Japanese industries, with the support of the Japanese government, voluntarily restrain their exports to the U.S. market.¹⁹ From the U.S. perspective, the reason for the choice of voluntary restraint is clear. Unlike imposing protective duties, which is explicitly prohibited by GATT, asking the Japanese government to help create voluntary export cartels does not infringe on GATT clauses, though it is clearly contrary to the GATT philosophy.

The semiconductor industry provides a major example of this type of case. Let me briefly outline the history of this dispute.²⁰ The integrated circuit (IC)

18. MITI, *White Paper on International Trade*, various issues.

19. For an explicit account of these experiences, see, e.g., Destler and Sato (1982).

20. For a more detailed account, see Okimoto, Sugano, and Weinstein (1984) and Pugel (1987).

was invented and first marketed by U.S. firms in the early 1960s. Helped by industrial policy, however, Japanese firms started to capture a significant share of the U.S. IC market in the late 1970s. The Japanese share in the U.S. market increased rapidly in the early 1980s with little penetration into the Japanese market by U.S. competitors. This alarmed the U.S. firms, which started lobbying in the Congress. In February 1985, market-oriented, sector-selective (MOSS) talks between the Japanese and U.S. governments started for all electronics industries, including semiconductors. In June of the same year, the U.S. Semiconductor Industry Association (SIA) filed a petition with the U.S. government alleging that the Japanese semiconductor industry (according to the petition) denies U.S. firms access to the Japanese market and helps dump products in the U.S. market, thus violating Article 301 of the Trade Act of 1974. This was followed by dumping petitions from individual American producers on 64K DRAMs (dynamic access random memory) and EPROMs (erasable-programmable read-only memory). In December 1985, the U.S. government itself filed a dumping suit against Japanese producers of 256K DRAMs, an unusual step in the history of trade disputes.

In May 1986, the USITC issued a final ruling on 64K DRAMs, finding the Japanese producers guilty of dumping, anti-dumping duties started to be imposed. Two months later, the Japanese government, fearing the application of Article 301 that would have triggered retaliatory tariffs on IC as well as non-IC products, made an agreement with U.S. government. With this agreement, the Japanese government established a cost-price monitoring system on IC products so that Japanese firms will not export these products to the U.S. market at prices lower than their "fair market value" (FMV). The Japanese government also agreed to (1) monitor export price in general so that Japanese exports to the U.S. through third countries will not injure American competitors and (2) take proper actions to facilitate sales of American IC products in the Japanese market.

In April 1987, however, the U.S. government imposed a 100% retaliatory tariff on personal computers, electric machinery, and color TVs on the basis of the Japanese government's alleged violation of the agreement on items 1 and 2 above. On the other hand, the European Community (EC) filed a petition to GATT that item 1 was in violation of the GATT agreement. In March 1988, the GATT panel found item 1 in violation of GATT Article 11.

How should we assess these consequences of the IC trade conflict? There are two broad issues, one concerning the validity of the legal system and the other concerning U.S. demands and Japanese responses.

Let me start with the problem about issues concerning the American legal process with the particular focus on the IC case. First, the legal process in the American system states that protection in the form of a protective tariff is given if the practice under scrutiny is found to be injuring the American producer. Thus the American consumer's interest is not reflected in the legal process. Indeed, much past research has shown that voluntary export restraint

(VER) arrangements and other protective measures for the steel and automobile industries have seriously damaged the American consumers and users.²¹ In figure 9.1, the movements of the world IC dollar prices (in logarithmic terms) is shown before and after the trade disputes. The secular downward trends typical of this industry until 1984 were clearly disrupted after 1986.

Second, the unfair trade practice that is most often cited in cases against Japanese products is "dumping." The antidumping law in the United States defines dumping as pricing below fair market value. Oftentimes, the sum of "constructed value" and a certain profit margin is used as the fair market value. Constructed value (excluding the profit margin) is the sum of direct production cost and indirect costs (which equals at least 10% of the direct production cost). This definition may particularly harm Japanese producers, as they tend to be producers of diverse products. For example, NEC, one of the major IC producers in Japan, also produces personal computers (PCs), telecommunication equipment, and other home electrical appliances. In short, many Japanese producers may be enjoying economies of scope due to the existence of large overhead costs. The normal accounting procedure of calculating the "fully distributed cost" may be quite artificial and cause unnecessary burden on producers who enjoy economies of scope.

Third, IC production has special technological properties. Its yield is known to improve as experience in production accumulates, and production cost diminishes as accumulated production increases. As is well known, the marginal cost of production with such a learning effect is the marginal cost of accumulated production when the learning effect ceases to exist.²² That is, even if enough learning has not taken effect, and the current production cost is high, rational pricing behavior should take account of the long-run marginal cost that is the marginal production cost after sufficient learning will have occurred. Hence, the use of constructive value, which only reflects the current production cost and does not reflect the economically relevant production cost, is likely to impose a handicap on firms who expect to capture a large market share.

Finally, a major reason that the Japanese government accepted the agreement was the threat of Article 301. Procedurally speaking, there is good reason to believe that the article itself is in violation of GATT. Unlike escape clauses and antidumping laws, Article 301 does not have GATT approval, and its application is based only on the U.S. government's unilateral judgment.²³

21. For example, Tarr (1987) estimated the costs of the steel agreement of 1985. According to his estimation, if terms of trade effect is not counted, costs to American consumers exceed \$1 billion annually, and costs to the entire economy between \$0.8 billion and \$1 billion annually. These costs may be reduced by up to \$73 million if the terms of trade effect is accounted for. Crandall (1984) estimated that the automobile export restraint between 1981-83 cost American consumers \$4.5 billion annually. See Feenstra (1984) for the effect of quality and other general equilibrium effects in automobile case.

22. For theoretical analysis, see, e.g., Spence (1981).

23. This judgment is based on Matsuhita (1988).

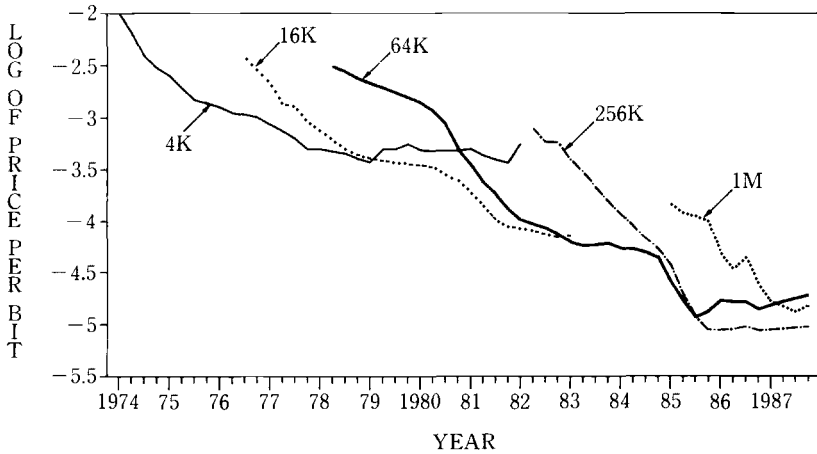


Fig. 9.1
Source: Dataquest.

Moreover, this article permits the U.S. government to impose retaliatory tariffs on products that are completely different from the product that allegedly is involved in unfair practices. It seems a dangerous tool in the international trade system in that it may trigger a retaliatory war.

All of these points make one wonder why the Japanese government accepted the IC agreement of 1986 or the other VER agreements in general. Indeed, many Japanese suggested their government bring the case to the GATT panel before the agreement was settled. The reason that the government did not take this action seems to be the familiar one; in spite of their public stance to promote free trade, they do not make policy decisions on a philosophical basis because doing so might induce strong objections from disputants. As long as no strong opposition exists, they tend to ignore the stated stance.²⁴ Instead, the government tends to make decisions on a pragmatic basis, which results in less confrontation among the disputants, especially when the resulting decision favors the domestic members of the dispute. Accordingly, they chose the solution that benefited Japanese producers as well as U.S. producers by forming the de facto government-supported producers' cartel.

This method of solving trade disputes has been popular in Japanese bureaucracy. It is practical and conforms to their experience. They can solve the disputes easily by this method as long as the dispute is nonrepetitive. However, this cartel solution creates rents to those industries (stockholders, managers, and workers) who eventually obtain cartel agreement. Thus, more and

24. Another example is the MITI's promotion of the Voluntary Export Restraint by Korean knit producers for export in Japan in 1989.

more U.S. industries start lobbying to obtain protection, sometimes on dubious grounds.

9.6 Japanese Policy-making

According to the theory of rent seeking (and the theory of economic regulation), political decision making suffers from the political bias. Democratic decision making is heavily influenced by political activities such as lobbying by pressure groups, which takes up private resources. Only those who expect to obtain more benefit from the activities than the associated political cost will engage in these activities. But policy decisions tend to mean more, in per capita terms, to the group of people who are directly affected by the policy (such as producers whose products are protected by a quota imposition), and mean less to the group whose benefits and losses are diluted by the group's large numbers (such as consumers in the case of trade protection). It follows that political decision making tends to favor those whose interests are directly connected to the policy decision itself (see, e.g., Downs 1957; Stigler 1971; Krueger 1974; Ordeshook 1986; and Peltzman 1989).

In view of this theory, many trade conflicts between Japan and the United States were induced by U.S. producers (and sometimes labor unions) who were seeking economic rents that would be realized by artificially raising the domestic price at the expense of American consumers and users. Despite the fact that aggregate loss incurred by consumers (and users) may exceed the gain accrued to the producers, the loss is diluted by the large number of losers. Since political decisions in the United States are strongly influenced by lobbying activity, these rent-seekers tend to influence heavily international negotiations, with results that are oftentimes against total U.S. interests.

On the other hand, according to this theory there seem to be at least three reasons why the tendency to favor insiders' interests exists in the decision-making policies of the Japanese government. First, for more than 30 years, the Liberal Democratic party (LDP) has controlled the Japanese Diet without any disruption. Moreover, the Japanese Diet system follows British parliamentary democracy, in which party decisions bind the voting behavior of all the party legislators, making the LDP decision practically the final Diet decision. This contributed to the economic growth of the country by providing continuous and consistent economic policies.

However, since there was no changeover of political power, it was practically impossible to demolish vested interests from whoever had obtained political rents. In other words, the current Japanese political system is an intricate nexus of vested interests, shared by political groups, major party politicians, and government bureaucrats. This system made the political cost of changing existing policies extremely high. Except on rare occasions (such as the recent tax revision), only those pressures applied by strong foreign governments seemed to be effective in making drastic policy changes.

Second, Japanese bureaucracy is divided into many independent ministries, and the policy research division of the LDP (the Policy Research Affairs Council, or PRAC) consists of committees parallel to each ministry so as to cover different industries, such as manufacturing, agriculture, finance, telecommunication, and so on. Each ministry is supposed to be responsible for overseeing "sound development" of the industry, so industry-specific interests tend to be reflected in the closed decision-making process within the bureaucracy and/or the major party. This renders industry-specific interests more politically effective and consumer interests less effective.

Moreover, the final political decision is made, as I explained above, within the level of the major party and its bureaucracy. Thus, if there is a conflict among several industry-specific interests, it tends to be solved by closed negotiations among ministries and legislators from various committees of the PRAC. In a sense, through this negotiation process, producers of different industries play a cooperative game in seeking a mutually efficient agreement. This seems to be in sharp contrast to the U.S. system, where these conflicts tend to be solved in the Congress through open discussion. There, Congressmen are not bound by the party vote, thus voting decisions may be made independent of party decisions. The U.S. system may be characterized as a noncooperative game in which each player pursues the outcome that is best suited for his or her industry.

Compared with the noncooperative process, the negotiation-based solution tends to favor the status quo. If some player finds the proposed agreement to be worse than the status quo, he or she can simply deny the proposal; that is, negotiation allows veto power. There are further contrasts between negotiation and the noncooperative decision-making process.

Following Bulow, Geanakoplos, and Klemperer (1985), let us call an action of a player (an endorsement of a policy by an industry, in our context) *aggressive* if the action (the policy) harms the other players (industries). It is straightforward that the negotiated outcome, which tends to be mutually efficient among the players, is less aggressive than the noncooperative outcome. Hence, if industries play a political game to achieve their desired outcome, cooperative games tend to choose less aggressive outcomes, while noncooperative games tend to select more aggressive ones.²⁵ This seems to be another reason why vested interests are apt to be preserved in Japanese policy decisions.

However, this does not necessarily imply that the cooperative outcome is worse than the noncooperative outcome. Clearly, the cooperative outcome is better than the noncooperative outcome for the negotiating parties. Moreover, if the more aggressive behavior of the negotiating party harms third par-

25. For example, Kiyono, Okuno-Fujiwara, and Ueda (1991) showed that, if the extent of trade protection is politically determined in a small country with two import-competing industries pursuing their industry-specific interests, the resulting protection level is higher in the noncooperative game than that which occurs when the possibility of negotiation is added.

ties, then the cooperative outcome Pareto dominates the noncooperative outcome.

Third, the Japanese as a people prefer agreements through compromise to direct confrontations. Government is no exception. Whenever there is a conflict, a solution is sought to satisfy all the disputants in a backdoor closed negotiation. This tendency, with the lack of an open and public decision-making process, makes the process of policy decision-making, as well as the implication of the chosen policy, opaque and less transparent. Consequently, costs to organize the opposition are high. All of these factors contribute to the fact that Japanese consumers as a group have little voice in politics.

9.7 The Case of the Large Stores Law

Perhaps the tendency in Japanese policy-making is best illustrated by the way the Law concerning the Adjustment of Retail Activities by Large-Scale Retail Stores (Large Stores Law) has been put into practice.²⁶ The stated purpose of this law is to control retail activities by large stores in order to (1) secure the business opportunities of local retailers and (2) provide sound development of the retail trade industry, and at the same time (3) avoid hampering consumers' benefit. The law is applied to establishing and extending buildings for retail business whose size exceeds 500 square meters. In principle, it allows large stores to start their business only with notifications to the MITI (in case the size of the enterprise exceeds 1,500 square meters, and to the prefectural governor otherwise) with the following restrictions.

It requires MITI to review each notification. If MITI finds sufficient reason to believe that the activity of the large store may damage local small retailers, MITI is allowed, after consulting with the (governmental) Large Stores Council, to advise the entrant to postpone opening and to reduce its business space. The Large Stores Council, in turn, must consult the opinion of the local Chamber of Commerce, which sets up the Council to Accommodate Commerce Activities (CRCA) in order to accommodate differences in local interests. The CRCA is supposed to consist of owners of local commercial business, consumers, and neutral members.

The law explicitly restricts the review process as follows. Two notifications are required to be filed. An Article 3 notification must be filed first by the builder of the building, and large stores (or buildings, to be more precise) may not start their business until seven months following this notice. The Article 5 notification requires that retailers who intend to do business in this building to declare, among other things, the starting date of the business and the total shop space in the building. The review is made and advice must be given within four months from this notification. The discussion by the CRCA is also restricted to a three-week period. Hence, as long as notifications are filed

26. Much of what is written below depends upon Tsuruta (1988b).

properly, any store should be able to start its business seven months after the Article 3 notification.

However, a procedure that is completely different from the spirit of this law has been widely utilized. After the Article 3 notification is made to MITI, it has become a custom to obtain an advance opinion of the local Chamber of Commerce (before the Article 5 notification is allowed) and, for that purpose, to hold what is called the "prior CRCA" to accommodate interests of local retailers. This process, which is not written into the law, became authorized by MITI as a part of the formal process. Because the prior CRCA is only an informal institution, however, there is no time limit for handing its conclusion to MITI, nor are the names of its members disclosed. Consequently, many years are wasted until prior CRCA gives its opinion and until a large store can eventually open its building. For example, in one case it took five and a half years between the Article 3 and Article 5 notifications, which resulted in eight and a half years between the store's announcement and its actual opening. In another case, more than 10 years elapsed between the announcement of the store and the store's actual opening.²⁷

MITI gave a directive (*gyosei shido*) in 1979 that the actual opening must be made within 13 months from the Article 3 notification. After this directive, however, prior explanation by the large store to local people, which was supposed to be made before the Article 3 notification, became a forum to obtain the agreement of local stores; this is the "prior prior CRCA." This again is an informal institution, and opponents can block any conclusion indefinitely. There are also many similar regulations laid down by local governments, some of which regulate practically all establishment and expansion of retail buildings.

Because of these procedures, not only are large stores prevented from opening their new establishments, but also overt and covert forms of pecuniary transfer are prevalent. In one case, in order to obtain consent from local stores, one-third of the building space in a new establishment was allocated to local retailers at a rate one-third the rental cost of the other spaces. In other cases, bribes are allegedly paid to members of prior CRCA in order to secure prompt and more advantageous rulings. Because members of prior CRCA are nonpublic officials, these acts are not necessarily illegal.

In spite of these procedures that impose large entry costs to new entrants, large domestic distributors did not voice their opposition to this system publicly until it became criticized openly by the U.S. government. Of course, part of the reason for such behavior is the political cost to the lobby that pursues the change. However, having such a system of entry cost may work to benefit those stores who intend to enter. For example, suppose this system creates an entry cost of \$3 million, which is not necessary if the system is abolished.

27. The former is the case of JUSCO, which opened in Kamisato-cho in 1987, and the latter of NICHII in Honjo in 1989. Both are shopping malls with large supermarkets.

Suppose the market provides \$5 million if there is only one large store, \$2 million each if there are two such stores, \$1 million each if there are three. The first large store that announces its intention to open can obtain \$2 million after payment of the entry cost because there is no incentive for further entry. However, if the system is eliminated, three stores will enter and each can receive only \$1 million.

The system of the Large Stores Law is a system for insiders, where not only local stores and large stores who have already entered, but also large stores whose entry is temporarily blockaded may benefit from the system. Consumers are the real losers, but there is no place where they can file their complaints.

9.8 Concluding Remarks

In this paper, I have given accounts of Japanese industrial policy both from the historical perspective as well as from the political economy perspective. Japanese industrial policy has increasingly put more emphasis on soft policy measures, such as coordinating private incentives and disseminating information. Although no formal analysis has been seriously attempted, this kind of policy measure might be contributing to the Japanese export (or investment) downpour. For, by the very nature of these measures, private firms are forced to coordinate their timing in increasing exports to a particular market and investment in a particular country. I believe serious theoretical as well as empirical analyses on these and other behaviors, which are typical in Japanese firms, needs to be carried out in the future.

On the other hand, policy decisions in Japan are formed by negotiation of insiders and *not* made on clearly spelled-out rules. Outsiders who are harmed by the decision have little opportunity to get compensation, as hardly any formal grievance process exists in Japan. This system seems to aggravate foreigners' feelings that Japanese society is not "fair." I believe, however, that it is not a question of fairness but the system of public decision making that is at the core of most conflicts between Japan and other countries.

I should also emphasize that foreign demands to Japan, especially U.S. demands, tend to reflect similar political biases. These demands often reflect industry-specific interests and may work against consumers' interests of the objecting country. In international relations, it is most important to understand each other and to rationally solve conflicts without becoming excessively emotional. The issue of Japanese industrial policies, and other issues currently brought into question, should be solved quickly before political pressures and national emotions from both Japan and the United States destroy economic relations that are beneficial for both countries.

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Comment Laura D'Andrea Tyson

There are three major propositions about Japanese industrial policy offered in the paper by Masahiro Okuno-Fujiwara: first, the objective of Japanese industrial policy has changed from what he calls a strategic objective of industrial restructuring or the targeting and promoting of key industries to something he calls a corrective objective of addressing market failures; second, the means of Japanese industrial policy have changed from so-called hard measures, such as preferential allocation of foreign exchange and capital and other direct control and subsidy measures, to soft measures, such as structural adjustment assistance and R&D support; and third, to understand Japanese industrial policy and the difficulties that outsiders have in breaking into the Japanese market, one must understand the "insider," cooperative-game nature of Japanese policy-making. I agree with the second two propositions but I strongly disagree with the first.

Okuno-Fujiwara characterizes strategic industrial policy as "industrial targeting"—choosing certain industries for promotion because of their special features, including their productivity growth, their growth potential, and their technological potential. In his opinion, this kind of industrial policy was characteristic of Japan through the early 1970s, but then gave way—in part in response to private-sector resistance to government intervention and private-sector support for the free market—to so-called corrective industrial policy.

In contrast to strategic industrial policy, corrective industrial policy responds to market failures, particularly failures that arise in the R&D process and failures in moving resources out of declining industries. According to Okuno-Fujiwara, the three main objectives of corrective industrial policy are to provide adjustment assistance to troubled industries, to encourage R&D in the private sector, and to address foreign criticisms of Japan's foreign trade behavior.

In my opinion, there has been no dramatic change in Japan's industrial policy objectives. Instead, I would argue, there has been continuity in two ways: continuity in the basic approach of targeting leading industries, activities, and even firms for promotion (although the forms of promotion have changed), and continuity in the objective of industrial policy—to encourage competitiveness in targeted industries because of the special economic benefits they are expected to generate for the entire economy.

True, as Okuno-Fujiwara argues, there has been more emphasis on adjustment, especially in the 1970s when higher energy costs made industrial restructuring critical. There has also been a change in the tools of industrial policy toward more reliance on cooperative R&D funding. But industrial policy objectives remain strategic.

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If the objectives were merely corrective, and if market forces were accorded the dominant role they are accorded in the United States, then corrective policy in high technology would be as neutral across industries as possible. Imagine the United States with a corrective industrial policy. What would it look like? The government would not directly choose which technologies, industries, or players benefited from these policies. The government's selective or targeting role would be limited to choices among technologies for defense purposes. There would be no targeting—no picking of winners and losers—for commercial purposes.

Now look at the case in Japan. Japanese high-technology R&D support is targeted selectively, by activity, by industry, and often by firm. And the goal of such support is commercial, not military. The idea driving Japan's programs is that government can and should play a role in picking high-tech winners and promoting them.

A partial list of current and recent R&D projects funded by MITI, either directly or through its Agency for Industrial Science and Technology (AIST), gives a flavor of the "selective" Japanese approach to "corrective" R&D support (see tables 9C.1 and 9C.2).

All of these projects, like the VLSI project and earlier projects that went before them, have several distinctive features. First, all of the projects focus on a so-called precompetitive or generic technology problem, the solution of which will benefit a large number of companies. The fact that the problem is a common one and that the solution will have benefits that cannot be appropriated by a single firm does not mean, however, that the project involved does not have an industry focus. The VLSI project was designed to solve technical problems for the semiconductor industry; the SIGMA project is designed to solve technical problems for the software industry. To say that R&D support is "generic" is not the same thing as saying it is neutral. Generic R&D support of the Japanese variety most assuredly picks industrial winners.

Second, the government provides direct funding as well as a variety of tax incentives to support its R&D projects. Third, the targeting of a particular technology by the government acts as a signaling device to the business community and encourages a bandwagon effect, as individual companies commit resources to compete with one another. And, fourth, the projects are cooperatively funded by business and government. The government acts to facilitate cooperation among individual firms, both directly by bringing together a selected group of them to design and implement projects, and indirectly by providing an antitrust environment conducive to such cooperation. Cooperation among individual companies encourages them to share technological information, to adopt common standards, and to create personal networks of scientists and engineers for future collaboration.

All of these features of Japanese industrial policy were ingredients of MITI's optoelectronics project, which began in 1979 and was extended through 1987. Fourteen companies, chosen by MITI, worked together to de-

Table 9C.1 Ongoing AIST National Technology Projects

Project	Purpose
Manganese nodule mining system, 1981–91, 20 billion yen	To develop a hydraulic mining system for harvesting large quantities of manganese nodules from the deep-ocean floor
High-speed computer, 1981–89, 23 billion yen	To develop high-speed computer systems for scientific applications
Automated sewing system, 1982–90, 10 billion yen	To develop an automated continuous sewing system for the textile industry
Advanced robot technology 1983–90, 20 billion yen	To develop advanced robot technology to replace humans in dangerous work
Observation system for the ERS-1, 1984–90, 23 billion yen	To develop, with the STA, an observation system for the earth resources satellite ERS-1
Water treatment system, 1985–90, 11.8 billion yen	To develop a bioreactor to process and purify waste water
Interoperable data base, 1985–91, 15 billion yen	To enable data bases with different operating systems to exchange information
Advanced material processing, 1986–93, 15 billion yen	To develop advanced material processing equipment, such as high-power excimer lasers and high-performance machine tools
Advanced high-power chemical products, 1988–96, 15 billion yen	To produce advanced chemical products such as dyes and insulating materials using marine-life resources

Source: AIST (total budget figures have been estimated), as cited in Steven K. Vogel, "Japanese High Technology, Politics, and Power," BRIE Research Paper no. 2, Berkeley Roundtable on the International Economy, University of California, Berkeley, March 1989.

velop optical measurement and control systems. About one-third of the total funding for the project was provided directly by MITI, with company funds making up the remainder. MITI orchestrated the organization of the project into smaller groups to work on complementary questions for specific optoelectronics devices. A special cooperative R&D laboratory was established by MITI and the business participants for the project.

The optoelectronics project is widely regarded both inside and outside of Japan as a success. Largely as a result of this project, within six years Japanese companies went from positions of inferiority to virtual domination in the optoelectronics area. Their success in this area bolstered their competitiveness in a wide range of commercial products, including video discs, optical fibers, laser beam printers, medical lasers, and fax machines. The same Japanese companies who cooperated in the joint R&D project on optoelectronics now

Table 9C.2 Other Major MITI Projects

Project	Purpose
Sunshine project 1974–	To develop coal liquefaction and gasification, solar power generation, and geothermal and hydrogen energy
Moonlight project 1978–	To develop energy conservation technology such as magnetohydrodynamic (MHD) power generators, high-efficiency gas turbines, chemical heat pumps
Basic technologies for future industries 1981–	To stimulate R&D for next-generation technology and to promote cooperation between companies, universities, and the government in research on new materials, biotechnology, and new devices
Fifth generation computer 1982–	To develop advanced computers that will use artificial intelligence to make them easier to run
SIGMA (software industrialized generator and maintenance aids) 1985–89	To develop an automated system for producing software

Source: AIST, as cited in Steven K. Vogel, "Japanese High Technology, Politics, and Power," BRIE Research Paper no. 2, Berkeley Roundtable on the International Economy, University of California, Berkeley, March 1989.

compete with one another for global leadership in these and other products embodying optoelectronic technology.

Not all cooperative R&D projects are as successful as the VLSI project or the optoelectronics project. There have been well-known difficulties in the fifth-generation computer project to develop artificial intelligence and in the SIGMA project to develop automated systems to produce software. But it would be premature to write off these projects as failures. Some of the machines developed under the fifth-generation project are now being successfully tested in Japan and abroad. And the VLSI project, which was terminated in response to U.S. pressure, was technically a failure since it did not perfect x-ray lithography. But the project is widely credited as a critical factor behind the success of Japanese companies in DRAMs. As these examples indicate, one needs to be careful about the definition of success and the time frame used in judging the success of cooperative R&D projects in Japan.

What are the consequences of Japan's continued commitment to a strategic industrial policy in several high-technology industries for its pattern of foreign trade? First, Japan's successful infant-industry promotion has been an important factor in its export successes in a variety of technology-intensive industries, particularly those in the electronics sector. Second, Japan's targeting has had a significant effect on the competitive strategies of both domestic and foreign companies. The Japanese companies favored by targeting have been encouraged to invest aggressively to dominate the Japanese market, while for-

foreign competitors have been discouraged from undertaking the investment necessary to break into that market.

Third, the R&D programs that have become the backbone of industrial targeting have been yet another factor in the Japanese environment that encourages cooperation among Japanese firms to the disadvantage of outsiders. These programs have reinforced the patterns of specialization, distribution, cooperation, and trust that were fostered by the long period of formal protection and that are still encouraged by the *keiretsu* system. As a result of these patterns, Japanese companies continue to prefer to buy from one another rather than from an outsider, even when that outsider is a new Japanese entrant and especially when that outsider is a foreign company.

There is no doubt that overt trade and investment barriers to the Japanese market have been largely eliminated. But government R&D subsidies continue to target activities and industries for promotion, and these subsidies continue to advantage Japanese producers in both domestic and global competition. In addition, structural barriers continue to persist in a variety of forms, including standards, testing, and certification procedures, procurement and bidding practices, and the pattern of cooperative business relationships that Japan's strategic industrial policy continues to foster. To many foreign producers, especially those competing with Japanese companies in activities that have been accorded strategic significance by the Japanese government, the Japanese market, while formally open, is effectively closed.¹

Comment Edward M. Graham

Masahiro Okuno-Fujiwara gives us a succinct, balanced, and useful analysis of Japan's post-World War II industrial policy. Even so, this analysis is unlikely to please many Americans who have made a career of commenting upon Japan.

For example, there are those Americans who see Japan's success in international trade as the result of MITI "targeting" of specific industries and granting of subsidies to favored firms in these industries. These firms, it is claimed, then "dump" their output in international markets (e.g., the United States), sowing havoc among non-Japanese competitors (e.g., U.S. rival firms). In the extreme, it is alleged that U.S. rivals of the chosen Japanese firms are deliberately slated for annihilation by Japan's warlike government/industrial alli-

1. For more detail on the continued closure of the Japanese market see Laura D'Andrea Tyson and John Zysman, "Developmental Strategy and Production Innovation in Japan" in *Politics and Productivity: The Real Story of Why Japan Works*, ed. Chalmers Johnson, Laura D'Andrea Tyson, and John Zysman (Cambridge, Mass.: Ballinger Press, 1989).

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ance. My depiction here may sound like a caricature, but having changed my residence to Washington, D.C., barely six months ago [1989], I hear depictions such as these frequently articulated, most recently by a person quite senior in the Executive Office of the President of the United States.

Okuno-Fujiwara's analysis suggests that the model implicit in this depiction better describes Japan before the first oil crisis than Japan of today. But even in the heyday of MITI activism, the model is somewhat simplistic; today, it just is not descriptive of what really goes on in Japan. Indeed, one of the major contributions Okuno-Fujiwara makes is to remind us that Japan's industrial policy has been anything but invariant during the past 40 or so years. Rather, it has evolved and undergone quite significant changes, so that generalizations about this policy that might have been valid in 1965 can be completely off the mark in 1991.

But, at the other extreme, there are Americans who assert that Japan's economic success is simply the result of good macroeconomic management combined with high rates of domestic savings and capital formation. Apart from differences that are readily explained via the Economics 101 textbook, they claim, Japan is really no different from any other advanced market-based economy.

Okuno-Fujiwara, although clearly more sympathetic to this view than to the former, disabuses the more extreme proponents of the "Japan is no different" school. Japan's political system is, he admits, stacked very heavily in favor of the interests of the established, large producers. To be sure, the same could probably be said of all of the large industrial democracies (and even more so of certain of the rapidly industrializing nations, e.g., Korea). But the degree to which producers' interests are favored by government policies over consumer interests is significantly greater in Japan than in the United States, Canada, or the nations of Western Europe.

Many readers doubtlessly will be disappointed by Okuno-Fujiwara's failure to attempt to assess the extent to which Japan's success as an economic power has been the result of deliberate industrial policy versus the extent to which other explanations are more powerful. My own feeling here is that the author is prudent in his unwillingness to take on this assessment. Japan's success is doubtlessly due to many interrelated factors, for example, high saving and investment rates (but why are these so much higher in Japan than in north America or Western Europe?), priority given to building an excellent education system (with the result that Japan easily has the most literate and numerate work force of all the advanced nations), cultural factors (leading to extraordinary ability of organizations to innovate and to adapt to changing circumstances?), effective macromanagement of the economy, low priority accorded to the military (but isn't Japan a "free rider" on the United States with respect to national defense?), intense rivalry among the major *keiretsu* groups, lifelong employment practices of major firms (enabling managers to take a "long-run" perspective on their functions?), and, yes, an industrial policy that

without question is more activist than anything in the United States (although perhaps today not as activist as that of France).

Which of these factors explain Japan's success? I suspect that they all do to some degree, and I do not claim that my little list is exhaustive by any means. I further suspect that any effort to assign weights to any of these factors is doomed to failure. Any model to calculate such weights will likely be highly overspecified, and the explanatory variables highly collinear.

Alas, the implication of my remarks is that the debate between those who see Japan as "different" and those who see Japan as "no different" will never be resolved. This is unfortunate if for no other reason than that some of us would like to see extremists at either end of this debate silenced once and for all. But, given the unlikelihood that this will ever happen, the best we can hope for is analysis of the sort Okuno-Fujiwara gives us. This analysis is descriptive and historical, and he is wise not to attempt to use his considerable talents as a mathematician or econometrician in this domain. He cannot resolve our debate, but he can help ensure that our models of how Japan works, implicit and explicit, are consistent with the complex reality of that nation's economy.

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