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Industrial Policy in Japan: A Political Economy View

by

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1. Introduction

What I try to argue in this paper is twofold. First, I want to argue that, contrary to some perception outside Japan, Japanese industrial policy per se does not play critical roles today either in strategically restructuring the Japanese economy or in forming government-industry cartel to promote Japanese exports. Importance of contemporary industrial policy, if it exists, seems to lie in its role in coordinating the planning and managerial decisions of individual firms and in helping information dissemination.

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 shall argue that, historically, post-war Japanese industrial policy transformed itself toward the end of 1960's. Until then, major aim of the policy was to strategically promote several key industries (strategic policy) to take advantage of benefits accruable from international trade. Policy measures in this period tended to be direct regulation type (hard measures) that need a leverage endowed to the government, such as licensing power and authority to allocate foreign exchanges, to be effectively implemented. Since then, trend has changed and the main focus of the stated policy stance seems to have shifted toward policies to correct market failures (corrective policies), such as to promote private R&D efforts and to assist structural adjustment of the economy. Policy measures also changed to soft measures, such as assisiting relocation of workers (or factories) from depressed areas (or industry) to growing ones, and promoting research associations to help private firms to engage in cooperative R&D efforts.

Nonetheless, issues remain in that the market access to Japanese market seems to be heavily restricted and the export downpour, the phenomenon that

Japanese firms pour down their exports to a foreign market in a very short period harming the domestic producers, still seems to occur frequently. Second objective of this paper is to argue that these problems originate, not from the strategic nature of industrial policy, but from the way policy decisions are generally made and the manner policies are put into practice in Japan. In this sense, the problem is far broader than the industrial policy per se.

To put it concretely, policy decisions in Japan are made to reflect the interests of insiders (usually producers only and consumers are excluded). Moreover, decisions are made not on some abstract philosophical basis and/or clearly spelled out rules. Instead they are made on practical basis by negotiation among insiders so that whatever policy measures that are most easily implemented and that would cause least political conflicts tend to be adopted. This tendency of Japanese policy decision makings seems to create entry barriers as well as difficulty in market access, as allowing new entrants gives the most serious damage to the insiders.

The paper is organized as follows. In section 2, we shall define the concept of industrial policy and provide a brief survey of recent theoretical contributions about industrual policy. In section 3, a very brief historical account of Japanese industrial policy is presented. Sections 4 and 5 give accounts of major contemporary industrial policies in Japan; R&D assistance and dealings of trade conflicts. In section 6 we summarize the system of Japanese policy making from the viewpoint of the theory of political economy. In section 7, we give a brief account of Large Stores Law to support our view on how Japanese policies are practiced. Section 8 concludes the paper.

2. Industrial Policy: Its Scope and Limits

In economics, industrial policy is a relatively new concept and there is hardly any well-accepted definition. In this paper, I would like to use the following definition with which, I hope, many economists would agree.

> [industrial policy is a] policy that attempts to achieve the economic and noneconomic goals of a country by intervening in the resource allocation across industries or sectors, or in the (industrial) organization of an industry or sector (Itoh, et. al. [1988]).[1/]

Important characteristics of this definition are its emphasis on micro aspect of the economy and its focus on inter- and/or intra-industry resource allocation.

An alternative definition, which is often assumed implicitly in Japan, is that of Kaizuka [1973]:

> 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 the 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 are those policies to promote certain industries (sectors) for the benefit of domestic welfare, while corrective policies are the policies to improve economic efficiency by correcting market failures. These two policies are, however, not necessarily mutually exclusive.

Strategic Policies:

Recent theoretical contributions have identified two different causes where strategic policies may be effective; externality-based explanation and shifting of monopoly rent explanation.

First, some form of externality may create national level economies of scale and non-convexity in the economy. Traditional infant industry argument, which emphasizes external dynamic economies, is an example of this approach.[2/] Alternatively if Marshallian externality exits 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, often times these equilibria are Pareto ranked. Hence, if an economy is trapped in a Pareto-inferior equilibrium, policy intervention to reallocate inter-industry resources may shift the economy to a Pareto-superior equilibrium.[3/]

Question still remains in how Marshallian externality (or national level economies of scale) evolves. Ethier [1982] and Okuno-Fujiwara [1988] showed that Marshallian externality may indeed occur if several industries are interrelated, and monopolistic or oligopolistic competition prevails in a critical part of this nexus, such as parts suppliers for an industry which has a potential to draw 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' expectation about the future course of the economy changes (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.[4/]

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 of the Heckscher-Ohlin model. Instead, it may be determined by historical accidents and policy interventions. It also implies free trade is not necessarily 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.[5/] This type of strategic policy may be justified because it sometimes improves welfare of the country, and even that of the world by reducing the price of the industry's product substantially. Moreover, the benefit from such policy may be relatively large if the nexus of industries that become competitive draws a big share of resources.

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

Second line of explanations which justifies strategic policies relies upon the strategic behaviors in international oligopolistic rivalry. Originated by Brander and Spencer [1981] and [1983], it suggests that providing subsidy to domestic firms may benefit the country if these firms face oligopolistic competition with foreign rivals. The underlying logic is that subsidy makes domestic firms' behavior more aggressive and, more importatnly, this change in the firms' attitude becomes credible to their rivals because subsidy changes 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 product's price to fall.

Although this drew more attention than the first approach, there are limitations to the argument. First and most seriously, as long as rent-shifting between foreign and domestic firms are concerned, this policy is "Beggar-Thy-Neighbor" type and the country obtains benefit at the cost of foreign countries. This policy is likely to draw retaliation from other countries, and chain of retaliations might destroy the world trade. Second, its main argument relies on rent-shifting in one industry, whose size seems to be too small to justify policy intervention. Moreover, the argument depends upon the existence of entry barrier, for otherwise monopoly rent would dissipate.[6/]

To sum, strategic policies should not be denounced outright. Some strategic policies may benefit not only the home country but also the forein countries as well. On the other hand, there are policies that benefit the home country at the cost of the foreign countries. The difference between the two lies in that, in the former, policies help reducing the social production cost (i.e., the sum of production cost incurred by private firms and cost of government support) while, in the latter, policies help reduce private cost without changing social production cost.

Corrective Policies:

On the other hand, there are two branches of corrective policies that are relevant in the following discussions; policy to promote private R&D and policy to assist structural adjustments. R&D activity is one of the prime

examples of economic activities that are prone to market failures. Fruits of R&D activites being inappropriable to investors and easily spill over to other firms, it is often claimed that the incentive for this activity tends to be socially insufficient without government support. To correct this incentive, subsidizing private R&D and providing incentives in other forms have been popular policy measures in developed countries.

Theoretically speaking, however, there are other aspects of R&D activities that may make private efforts socially excessive. If R&D results are patentable, for example, socially excessive competition may be induced by pursual of economic rents accruable by resulting innovations.[7/] Even if there is uncertainty in the outcome, R&D activity creates negative externalities as higher level of the activity may reduce the probability that other firms can secure the same outcome. As the externalities affect an industry's firms indiscrimately, R&D activities may become socially excessive.[8/] Whether public support is justified or not should, therefore, depends upon the relative maginitude of these two effects and can only be determined empirically. Nonetheless, policy makers in many countries seem to take it a foregone conclusion that government support is required in this area, and Japan is no exception.[9/]

Another policy, which may be classified as a corrective policy, that has been extensively utilized in Japan is the policy to assist industries that are harmed by changes in external environments such as a rise in oil price and an unexpected change in exchange rates; structural adjustment policies. When a change in external environments occurs and a country's comparative advanatage 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 would result. Policy assistance is called for.[10/]

First best policy for structural adjustment is to eliminate the market failure that causes unemployment (for example wage rigidity in the above example). If the first best policy is not available, several possibilities exsit.[11/] As declining industry suffers from deteriorated export opportunities or increased competition from foreign imports, trade restriction provides reliefs. However, protection provides incentives for resources to stay within the decling industry, which is just the opposite of what structural adjustment is intended. To provide correct incentives and assist adjustments, it is critical that trade restricition (and other help to declining industries) is provided only temporarily and 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 subsidy is effective for improving employment just as trade restriction is, it shields consumers from changes in relative prices (terms of trade) caused by external shocks and, hence, 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 cartelizaion may enhance collusive behavior which harms consumers' welfare. Forcing exporting country to form a (voluntary) export cartel and to restrict the amount of exports works just the same in obstructing competition.

Helping growing industries to absorb new employment is called Positive Adjustment Policy (PAP), as opposed to the policies listed above which help declining industries to maintain their employment, i.e., Negative Adjustment Policy (NAP). PAP is often thought superior to NAP. However, the issue is more subtle. Even without PAP, economic incentive exists which directs resources from declining to growing industries. Question is whether or not facilitating this resource movement is beneficial to the country. If there is no additional market failure, it may be best not to intervene 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 wage is rigid and capital is industry specific in the short-run. If the declining industry is relatively more labor incentive than the growing industry, accelerating movement of labor from the former to the latter may increase unemployment, as the growing industry cannot absorb sufficient workers in the short-run.

3. Brief Hisotry of Industrial Policy in Japan

Though some time has past 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.," i.e., a nexus of private corporations and the Japanese government that effectively controls Japanese economy through conspiratory cartels and regulations. Some also believe that the policy is designed to protect domestic industries from foreign competitors using overt and covert measures. In this section, we try to argue that these beliefs are not well-founded from historical viewpoint.

Chronologically, industrial policy in post-war Japan may be divided into three different time periods; 1945-60, 1960-73 and 1973-. In this section, we shall provide brief historical account of each period.

1945-60:[12/]

This is the period when Japan tried to reconstruct its economy after the devastating defeat. 1946 production index was one-fifth of the pre-war peak and one-quarater of the national wealth had been lost during the war. In addition, international trade is severely restricted by the allied force. In order to sustain its economy and provide food for large population, which included 7.6 million discharged soldiers, government continued war-time regulation and control. This is typified by the so-called "Priority Production System (PPS)" of 1946-48. Designed by a Marxist economist H. Arisawa, PPS was architected 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 were bottleneck in increasing coal production: a lack of steel. With PPS, entire coal production was thrown into 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 eventually would 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 1950's, but with less emphasis on direct control toward the end. There were three factors that made government take this position. First, although the Korean war boom has boosted reconstruction, the Japanese

economy did not recover from the defeat until mid-50's. 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 leverages with which to adopt directly regulatory measures. The Temporary Commodities Demand and Supply Adjustment Law of 1946 gave government an extensive power to intervene private economic activities. Under this Law, government could ration any commodities (for consumption and production), prohibit or restrict usages of, and production or shipments of any commodity whose supply is limited. This law lost its effect in 1952, but many powers with which to regulate private sector remained in the hand of government until late 50's or early 60's. 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, family-held groups of companies that dominated the pre-war economy, were dissolved by the occupationary force, government's influence has relatively increased. Heavily influenced by the experience of war-time control, bureaucrats of this period seemed to have believed in governmental control and direct regulation of the economy.

To sum, industrial policy in this period aimed at directly regulatimg and controlling economic activities of the private sector. Philosophy behind such policy stance reflected the training that bureaucrats received in the war-time controlled economy. Toward the end of this period, Japanese economy started to take off. Some believe that industrial policy was responsible for

relatively quick reconstruction and take-off. However, strong entrepreneurial sprits 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.[13/]

1960-73:[14/]

This is the famous "Rapid Growth" period of Japanese economy. It is also considered as the "heyday" of the Japanese industrial policy. Between 1960 and 1970, Japan enjoyed an average growth rate of 11.6% in real terms. Industrial structure has transformed dramatically from agriculture to manufacturing and from light industries (such as textiles) to heavy industries (such as steel, petrochemical and automobile). 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 automatic approval system had increased from 49% in 1960 to 92% in 1963 and eventually to 97% in 1967. In 1964, Japan moved to the Article 8 country of IMF and obtained the membership in OECD.

Despite these developments to open the economy, industrial policy in this period was characterized by an emphasis on strategic policies. 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 appear to promise high productivity growth, to be characterized by large income elasticity of

demand so that increase in demand is expected as the world economy grows, and to have many related industries whose growth would promote employment of the economy were assisted with various policy measures.

MITI bureaucrats also attempted to control the level of private capacity investment. They believed that, in industries that are characterized by scale economies, 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 the "orderly" competition, each firm is 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 proposed law was to integrate and strengthen existing laws so that it would have given MITI a set of wide-ranging effective leverages to apply direct regulatory measures. Moreover, it proposed a new government-business relationship, called Kan-min Kyocho Hoshiki. Based on public committees consisting of bureacrats, business leaders and academic experts, the proposed new relationship was expected to change the principal determinant of the resource allocation from the market mechanism to the artificial coordination of government and business sector. However, it met a strong opposition from private sector, notably from the financial sector, and eventually it failed to be enacted. This typified the new trend that, though government tried to keep its hand in managing the

economy as in the previous period, private sector started to resist public intervention in favor of free market mechanism.

Moreover, although many industries, such as automobile, electric appliances and steel, have succeeded in dramatically increasing their exports, this success should not be solely ascribable to government assistance. With trade and foreign capital liberalization, government has lost many levarages with which to intervene private sector. Perhaps the most effective in promoting exports in this period was the government's announcement of the liberalization schedule of various products. With this announcement, each industry, knowing foreign competitors would soon start their business in its domestic market, endeavored to improve its productivity or product's quality and renovate its facilities. Moreover, government delayed trade liberalization of key industries as long as foreign pressures allowed, providing sufficient time for these industries to take necessary actions. These developments made many industries ready for competition with foreign rivals not only in domestic market but also in markets abroad by the time actual liberalization took place.[15/]

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 much closer to the externality-based explanation of the previous section. It is doubtful, however, that in architecting their policy MITI bureaucrats were conscious of such mechanism. Their criteria for industry selection may have been just cosmetic[16/]. In fact, Komiya [1988] suggested "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. Government attempted to intervene market mechanism

by applying direct regulation, but private corporations resisted to such attempts. Attempt to restructure Japanese automobile industry in this period is another well-known example of this strain. In 1961, MITI announced the plan to reduce number of automobile producers to at most three in each of mass-production cars, specialty cars and minicars production. This proposal again met a strong opposition and ten Japanese automobile manufacturers still remain today, nine of which produce mas-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 have changed to helping coordination among private firms, suggesting desirable directions to which the Japanese economy is driven, and providing public assistence 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 Japanese economy might take in the next five or ten years. These visions and plans were drafted in governmental committees where members from various sectors of the economy discussed the consistency of the plan. Some observers believe that these plans may have worked as a coordination device as well as informational exchange among private firms.[17/]

1971-:

This is the period when Japanese economy repeatedly suffered from external as well as internal drastic structural changes. In 1971, President Nixon announced suspension of dollar's convertibility to gold and imposition of import surcharge. With this announcement, fixed exchange system of the post-war period ended. Between 1973 and 74, the price of oil quadrupled by

the OPEC's initiative. With the mismanagement of domestic monetary policy, inflation rate jumped to 30% and the rate of nominal wage increase to 50%. In 1974, unemployment rate doubled and the country's real growth rate recorded the first negative number in the post-war era. Because of yen appreciation and increase in the price of oil, many (heavy) industries, which are heavily dependent on imported oil and export possiblities, started to have structural problems.

Shortlly after the recovery from the first oil shock, steep yen appreciation between 1977-78 and the second oil shock of 1979-80 hit the Japanese economy again. Problem of troubled industries got aggravated and 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 micro-based industrial adjustment policies were employed. After the recovery from this crisis, yen remained relatively cheap until the Plaza agreement of 1985. However, the agreement induced another sharp rise in yen, but its effect was relatively mild, contrary to the expectation of many Japanese.

Inspite of these developments, Japanese trade as well as current accounts have recorded increasingly large surpluses, except for two oil shock subperiods. Strong foreign criticisms were cast, first on chronic trade surplus, then on Japanese government's policy attitudes, and finally on the behavior of Japanese firms and people in general. Meeting with these "trade conflicts" as well as "economic conflicts" became one of the most important policy objectives of industrial policy of this period. In section 5, we shall come back to more detailed account of these conflicts.

Another trend of industrial policy existed in this period; decreasing emphasis on strategic policies. Partly because Japanese economy had already

grown sufficiently and few industries needed assistance for promotion, and partly because foreign criticisms against industrial targeting became too fervant to be ignored, MITI tried to shift its policy emphasis from strategic policies to corrective policies. 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[18/]. With visible trade barriers removed, MITI's stance became, at least publicly, a protector and promoter of free trade system in the world.

To sum up, there were three main policy objectives of industrial policy in this period; providing adjustment assistance to troubled industries suffering from the aforementioned structural changes, meeting with foreign criticisms against and demands to Japan about trade problems, and encouraging research and development in private sector. Assistence for R&D may be viewed to reflect the shift of MITI's emphasis on corrective policies. Among policies that are of 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. We shall discuss these policies somewhat extensively in the next section.

Adjustment assistence for domestic industries took several forms; assisting workers to relocate and to train themselves for new jobs, providing assistance for depressed areas, etc. However, the major policy tool was the following two; establishment of joint credit funds to purchase scrapped facilities with bank loan guarantee for the disposition of excessive facilities, and allowing capacity reduction cartel, both in the designated industries. According to Sekiguchi and Horiuchi [1988] the first tool was

apparently not too attractive for firms, as firms did not use much guarantee. 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, we 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.

4. Industrial Policy for Private R&D:

One of the focuses of Japanese industrial policy in 1980's has been to assist private R&D efforts. Japanese R&D expenditure has been dominated by 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 government. This ratio is substantially low compared with other major developed countries (see Table 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 defence-related government expenditure is negligible.

In the post-war era, two types of technology-related policies have been used to assist private firms; assistance for technolocy import and assitance for R&D by domestic firms. Until 1960's, the former policy played an important role for Japanese firms to catch up with the international level, who were technologically left behind due to the closure of the economy during the war. Today technology import is still an important factor in some industries such as semiconductor and other high-tech industries. However, in general, the policy emphasis has shifted to promoting domestic R&D.

The amount of direct and indirect subsidies to promote domestic R&D in Japan is relatively small even among the most industrialized countries as is indicated in Table 1. This partly reflects the MITI's current stance of not engaging in the "hard" policy measures, and partly reflects the small role played by the Japanese defence budget. However, government support, though small, has been concentrated to the area that would help commercial production. MITI has been consciously aiming "at promoting commercially optimal technology," and this is in a sharp contrast to the American policy whose major contractor (Defence Department) "tends to emphasize the design of new and better components and systems rather than process refinement."[19/] To facilitate private efforts to improve production technology and cost reduction kwow-hows, MITI tried several devices to promote private R&D efforts by furnishing coordination incentives. Perhaps the most well publicized such device is the organization of technology research associations (TRA).

TRA is an association of several (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 subsidy. The idea of TRA was imported from U.K. in 1961. Different from the British research associations, however, Japanese TRA is organized to solve specific techonological challenges (rather than organized as one in each industry) and organized as a temporary organization and deemed to be dissolved after the designated period (rather than organized as a permanent entity).[20/]

The Technology Research Association for Very Large Scale Integrated Circuits (VLSI) is perhaps the most well-known and successful Japanese TRA.[21/] 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 to be used for new domestically produced computer that was being developed to challenge the next generation IBM main frame computer (the future system). During this period, MITI provided subsidy of ¥29 billion (about $116 million at the concurrent exchange rate). With the fund provided by the member firms, total budget for this project amounted to about ¥70 billion which was about the half of the total R&D expenditure of the semiconductor industry.[22/]

This TRA is considered to be successful because it produced more than 1,000 patent applications, of which some are thought as the world leading technology. Many members of the TRA thought that, with the results of this TRA, Japanese semiconductor industry caught up with IBM in the IC production technology. Indeed, executives of IBM visited this TRA site several times during and after the operation.[23/] Although the VLSI project is considered to be successful, not all the TRAs produced similar results. For example, Wakasugi [1986] computed research funds spent for each patent application. While private sector average during 1973-82 was ¥1.6 milliion, six chosen TRAs only scored ¥4.7 to ¥65.7 million.

Moreover, the mechanism of TRA is not very well understood. Unless member firms have complementary roles, such as parts supplier vs assembler, their interests normally conflict with each other. In the case of VLSI, for example, all members are competitors of commercial computer market, and their interests are at best mixed; obtaining better technology is plus but the rival's acquisition of the same technology is minus. Moreover, assuming that the results of their efforts belong to all member firms, providing no effort is the dominant strategy as long as the effort level of the firm is not observable 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 all the member companies could not have survived had they not made technological breakthroughs that the TRA aimed at. In this sense, their interests are 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 and research was done jointly. This created competition among research workers as their results are observable by the fellow researchers. Third, the amount of subsidy is 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 1980-82 after the project ended. Fourth, the target of the project was not to develop computer or IC itself, the market in which member firms are harshly competeing each other, but mainly to develop new methods to produce better ICs. The interests of member firms were not in deep conflicts.

Nonetheless, the example of VLSI also illustrates the problem of R&D or industrial policy in Japan, in general. First, as we already explained, there is no clear logic why and how TRA would work. A large amount of public fund was poured into this industry, despite the fact that many experts hesitated with the idea. Second, some may criticize it as a disguised strategic policy[24/]. Indeed, as we have seen, a relatively large amount was given to this industry and only to a limited group of domestic firms. Although, MITI now attempt to open memberships of TRA to foreign firms, many chosen research topics are in high-tech areas, which seem to reflect the policy maker's inclination to promote these industries. Moreover, outsiders

could not have access to the results of the TRA for VLSI. Only after a negotiation between U.S. and Japanese governments, all patents held either solely by government or jointly by government and member firms were made public and freely accessible by outsiders.

Third and most importantly, it is not clear why and how the five member firms were chosen. Clearly, becoming a member provides benefits either in terms of public fund or of the resulting technological advancement. Compared with both domestic and foreign outsiders, member firms enjoyed these benefits during the project period as well as more advantageous position created by the differences in technological level after the project. However, there were many other domestic semiconductor producers who ended not participating in the project. Even one major computer producer Oki Electric, who had joint venture with an American maker, was left out from the TRA[25/]. In sum, the VLSI project seems to be another example of government policy that favors industry's insiders.

5. Trade Negotiations

Post-war trade between Japan and the U.S. has been riddled with numerous trade and economic disputes. Starting with the textile problem of 1960's, the number of disputed items has been constantly increasing and the nature of problems has been changing and become more and more complicated. Roughly speaking, the disputed area has shifted from 'excessive Japanese exports' such as export downpour to the U.S. to 'barriers to American exports into Japan', and from problems about 'Japanese commodity exports' to 'other activities of Japanese firms' such as dealings of intellectual properties, direct investments to the U.S. 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 U.S. may be classified into two distinct groups. The first group is those disputes which were 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 import (based on the safeguard clause). Similarly, if it believes that Japanese products are sold by unfair trade practices, such as dumping, it can file a petition to the Department of Commerce (DOC) and USITC (based on anti-dumping and countervailing duty clause). USITC (and/or DOC) will investigate the case and determine whether the industry is indeed injured and whether the injury is caused by Japanese unfair trade practices. If the answer is yes, discriminatory tariff may be imposed on the import from Japan as a penalty. If Japanese industry believes that the ruling does not reflect the reality, it can in turn petition to the General Agreement on Tariffs and Trade (GATT). According to the current rule, GATT encourages reconcilation but, if it 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, 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.[26] One may note, however, that despite all these petitions filed by American firms, and all these guilty rulings given by USITC (and DOC), neither Japanese firms nor government ever formally complained 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 steel, automobile, machinery and semiconductor, have applied political pressures to American administration as well as to congress in order to obtain protection from Japanese imports. Typical consequence is that the Japanese industries, with the support of Japanese government, voluntarily restrain their exports to the U.S. market.[27] From the American perspectives, reason for the choice of voluntary restraint is clear. Different from imposing protective duties, which is explicitly prohibited by GATT, asking for Japanese government to help create voluntary export cartel does not infringe on GATT clauses, though it is clearly against the GATT philosophy.

The semiconductor was one of the major examples of this case. Let me briefly outline the history of this dispute.[28] The Integrated Circuit (IC) was invented and first marketed by U.S. firms in the early 1960's. Helped by industrial policy, however, Japanese firms started to capture a significant share of the U.S. IC market in the late 70's. The Japanese share in the U.S. increased rapidly in the early 80's with little penetration into Japanese market by American competitors, which alarmed the latter. U.S. firms started lobbying in the congress and in February of 1985, Market-oriented, sector-selective (MOSS) talks between Japanese and American governments started for electronics industries, including semiconductors. In June of the same year, the U.S. Semiconductor Industry Association (SIA) filed a petition to the

U.S. government alleging that the Japanese practices of this industry, which (according to the petition) deny U.S. firms to have market access to Japanese market and help dumping in the U.S. market, are violating Article 301 of the Trade Act of 1974. It was followed by dumping petitions from individual American producers on 64K DRAMs and EPROMs. In December 1985, U.S. government itself filed a dumping suit against Japanese producers of 256K DRAMs, a rare case in the history.

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

In April, 1987, however, U.S. governemnt imposed 100% retaliatory tariff on personal computers, electric machineries and color TV on the basis of Japanese government's alleged violation of the agreement on items (1) and (2) above. On the other hand, EC filed a petition to GATT that the item (1) is violating GATT agreement. In March, 1988, 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 the 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, legal process in the American system states that protection in the form of protective tariff is given if the practice is found to be injuring the American producer. Thus the American consumer's interest is not reflected in the legal process. Indeed many past research have shown that VER arrangements and other protective measures for steel and automobile industries have seriously damaged the American consumers and users.[29/] In Figure 1, the movements of the world IC dollar prices (in logarithmic terms) is shown before and after the trade disputes. The cyclic movements typical of this industry until 1984 was clearly disrupted after 1986.

Second, unfair trade practices that are most often filed against Japanese products are "dumping." The anti-dumpling law in the U.S. defines dumping as a pricing below fair market value. Often times, the sum of "constructed value" and 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, the NEC, one of the major IC producers in Japan, also produces PCs, telecommunication equipments and other home electric 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 property. Its yield is known to improve as experience in production accumulates, and production cost diminishes as accumulated production increases. As is well-known, marginal cost of production with such learning effect is the marginal cost of accumulated production when learning effect ceases to exist.[30/] That is, even if enough learning has not taken effect and 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 occured. Hence, the use of constructive value, which only reflects the current production cost and does not reflect economically relevant production cost, is likely to impose handicap on firms who expect to capture large market share.

Finally, a major reason that the Japanese government accepted the agreement was the threat of the Article 301. Procedurally speaking, there is a good reason to believe that the Article itself is in violation of GATT. Different from escape clause and anti-dumping laws, Article 301 does not have GATT permission, and its application is based only on the American government's unilateral judgement.[31/] Moreover, this article permits U.S. government to impose retaliatory tariffs on products that are completely different from the product which allegedly uses unfair practices. It seems a dangerous tool in international trade system in that it may trigger a retaliatory war.

All of these seem to make one wonder why Japanese government accepted the IC agreement of 1986, or other VER agreements in general. Indeed, many Japanese suggested their government to 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; inspite of their public

stance to promote free trade, they do not make policy decisions on 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.[32/] Instead, they tend to make decisions on pragmatic basis, which make 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 American producers by practically forming the government supported producers' cartel.

This method of solving the 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 non-repetitive. However, this cartel solution creates rents to those industries (stockholders, managers and workers) who eventually obtain cartel agreement. Thus, more and more American industries start lobbying to obtain protection, sometimes on dubious grounds.

6. Japanese Policy Making

According to the theory of rent-seeking (and 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 affect more, in per capita terms, the group of people who are directly affected by the policy (such as producers whose products are protected by a quota imposition), and less the group whose benefits and

losses are diluted by large number of people in the group (such as consumers in the case of trade protection). It follows that political decision tends to favor those whose interests are directly connected to the policy decision itself.[33/]

In view of this theory, many trade conflicts between Japan and U.S. were induced by American producers (and sometimes labor unions) who seek for economic rents that would be realized by artificially raising the domestic price, at the sacrifice of American consumers and users. Despite the fact that aggregate loss incurred by consumers (and users) may exceed the gain accrued to the producers, loss is diluted by the large number of losers. Since political decisions in U.S. are strongly influenced by lobbying activity, these rent-seeking activities tend to influence heavily in the international negotiations, often times against the total American 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 Japanese policy decision makings. 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, party decision binds 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, current Japanese political system is a intricate nexus of vested interests, shared by political groups, major

party politicians and government bureaucrats. This system made the political cost to change existing policies extremely high. Except rare occasions (such as the recent tax revision), only those pressures applied by strong foreign governments seemed to be effetive 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; PRAC) consists of comittees pararell to each ministries so as to cover different industries, such as manufacturing, agriculture, finance, telecommunication, etc. Each ministry being supposed to be responsible in ovreseeing "sound development" of the industry, industry-specific interests tend to be reflected in the closed decision making process within bureaucracy and/or the major party. This renders industry-specific interests more politically effective and consumer interests less effective.

Moreover, final political decision is made, as we explained above, within the level of the major party and bureaucracy. Thus, if there is a conflict among several industry-specific interests, it tends to be solved by closed negotiations among ministries and legistlators from various comittees of PRAC. In a sense, through this negotiation process, producers of different industries play a cooperative game seeking for a mutually efficient agreement. This seems to be in a sharp contrast to the American system where these conflicts tend to be solved in the congress by an open discussion. There, each congressman being not bound by the party vote, voting decision is independent of party decisions. American system may be characterised as a non-cooperative game where each player pursues the outcome which is best-suited for his/her industry.

Compared with non-cooperative process, negotiation-based solution tends to favor status quo. If some player finds the proposed agreement to be worse

off than the status quo, he/she can simply deny the proposal, i.e., negotiation allows veto power. There are further contrast between negotiation and non-cooperative decision-making processes.

Following Bulow, et al. [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 non-cooperative outcome. Hence, if industries play a political game to achieve their desired outcome, cooperative games tend to choose less aggressive outcomes while non-cooperative games tend to select more aggressive ones.[34/] 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 non-cooperative outcome. Clearly, the cooperative outcome is better than the non-cooperative outcome for negotiating parties. Morevoer, if more aggressive behavior of negotiating party harms third parties, the cooperative outcome Pareto dominates the non-cooperative outcome.

Third, Japanese as people prefer agreements through compromise to direct confrontations. Government is no exception. Whenever there is a conflict, solution is sought to satisfy all the disputants in a backdoor closed negotiation. This tendency, with the lack of open and public decision making process, makes the process of policy decisionmaking 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 voice little in politics.

7. The Case of 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.[35/] The stated purpose of this law is to control retail activities by large stores in order to (1) secure business opportunities of local retailers, and (2) provide sound development of retail trade industry, (3) without hampering consumers' benefit. The law is applied to establishing and extending buildings for retail business whose size exceed 500 squared meters. In principle, it allows large stores to start their business only with notifications to MITI (in case its size exceeds 1,500 squared meters, and to the prefectural governor otherwise) with the following restrictions.

It requires MITI to review each notification. If MITI found sufficient reasons 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, who sets up the Council to Accomodate Commerce Activities (CRCA) in order to accomodate differences in local interests. CRCAs are supposed to consist of members from the following three groups; local commercial business, consumers and neutral members.

The law explicitly restricts the review process as follows. Two notifications are required to be filed. Article 3 notification must be filed first by the builder of the building and any large store (building, to be more precise) may not start its business until seven months pass after the notice. Article 5 notification requires that retailers who intends to do business in this building to notify, among other things, the date to start

its business and the total shop space in the building. The review is made and advice must be done only within four months from this notification. The discussion by CRCA is also restricted within three weeks. Hence, as long as notifications are filed properly, any store should be able to start its business after seven months from the Article 3 notification.

However, a procedure that is completely different from the sprit 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 local Chamber of Commerce (before Article 5 notification is allowed) and, for that purpose, to hold what is called the "prior CRCA" to accomodate interests of local retailers. This process, which is not written in the law, became authorized by MITI as a part of the formal process. Prior CRCA being only an informal institution, however, there is no time limit for handing its conclusion to MITI, nor the name of its members disclosed. Consequently, many years are wasted until prior CRCA gives its opinion and until large store can eventually open its building. For example, in one case it took five and half years between the Article 3 and Article 5 notifications and took eight and half years between its announcement of and actual opening. In another case, more than ten years has past since the announcement of its intention when the store actually opens.[36/]

MITI gave a directive (Gyosei Shido) in 1979 that the actual opening must be made within 13 months from the Article 3 notificaiton. 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 agreement of local stores; the so-called "prior prior CRCA." This again is an informal institution and opponents can block any conclusion to be reached indefinitely. There are also many similar regulations laid

down by local governments, some of which regulate practically all establishments and expansion of retail buildings.

Because of these procedures, not only large stores cannot open their new store, but also overt and covert forms of pecuniary transfer became prevalent. In one case, in order to obtain consent from local stores, one third of the building space was allocated for local retailers at the rent which is only one third of the rent for other spaces. In other cases, bribes are alleged to be paid to members of prior CRCA in order to secure prompt and more advantageous rulings. Members of prior CRCA being non-public officials, these acts are not necessarily illegal.

Inspite of these procedures that impose large entry costs to new entrants, large domestic distributors have not voiced against this system publicly until the system became criticised openly by the U.S. government. Of course, part of the reason for such behavior is the political cost to lobby for the change. However, having such system of entry cost may work to benefit those stores who intend to enter. For example, suppose this system creates entry cost of $3 million which is not necessary if the system is abolished. 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 who announces its intention to open can obtain $2 million after payment of entry cost because there is no incentive for further entry. However, if the system is eliminated, three stores will enter and it can receive only $1 million.

The system of Large Stores Law is a system for insiders, where not only local stores and large stores, who have already entered, but also large stores who are temporarily blockaded their entry may benefit from the

system. Consumers are the real losers but there is no place where they can file their complaints.

8. Concluding Remarks

In this paper, we have given accounts of Japanese industrial policy both from historical perspective as well as that of political economy. Japanese industrial policy has put increasingly 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 measures 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 particular market and investment in particular country. I believe serious theoretical as well as empirical analyses on these and other behaviors that are typical in Japanese firms need 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 feelings of foreigners that Japanese society is not "fair". I believe, however, that it is not the question of fairness but the system of public decision makings that is at the core of most issues in conflicts between Japan and other countries.

We should also emphasize foreign demands to Japan, especially American demands, tend to reflect similar political biases. Their demands often reflect industry specific interests and may work against consumers' interests of the own country. In international relations, it is most important to

underswtand each other and to rationalylly 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 both from Japan and U.S. destroy economic relations which are beneficial for both countries.

Footnotes

1/ For other related definitions, see Komiya, et al. [1988] and Suzumura and Okuno-Fujiwara [1987].

2/ For the detail of infant industry protection argument, see Itoh, et al. [1989] Ch.4 and Corden [1974].

3/ See, for example, Okuno-Fujiwara [1988] and

4/ For the explicit treatment of expectation in dynamic model with multiple rational expectation equlibrium paths, see Matsuyama [1989].

5/ For the detail of this argument, see Okuno-Fujiwara [1988] and Itoh, et al. [1989] Chs.5-6.

6/ For more extensive review of this theory, see, e.g., Brander [1986] and Grossman [1986].

7/ For the detail of this argument, see Barzel [1968].

8/ See Loury [1979] and Lee and Wilde [1980].

9/ For survey of theories of R&D incentives see, e.g., Itoh, et al. [1989], Sherer [1980], Tirole [1989] and Kamien and Schwartz [1982].

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

11/ For its details, see, e.g., Itoh and Negishi [1987] and Itoh, et al. [1989].

12/ For more details, see Kosai [1986] and Kosai [1988].

13/ See the literature cited in the previous footnote.

14/ For more details, see Kosai [1986] and Tsuruta [1988].

15/ For theoretical analysis behind these facts, see Matsuyama and Itoh [1985].

16/ In fact, MITI tried to promote almost all major industries, such as shipbuilding, steel, automobile, oil refinery, aerocraft, aeroengine, petrochemical, etc.

17/ See, Komiya [1975] and Okuno-Fujiwara [1988].

18/ See, Komiya and Itoh [1988].

19/ Okimoto, et al. [1984], pp.182-3.

20/ See Wakasugi [1986].

21/ See Okimoto, et al. [1984] for the detail of this project and background comparison of the semiconductor industry in Japan and U.S.

22/ Estimated by Wakasugi [1986].

23/ Sakakibara [1981].

24/ However, employig strategtic policy itself should not be denounced outright as we discussed in section 2.

25/ Strictly speaking, however, the members are chosen on the ground of voluntary application. The author could not prove whether or not there was any government intervention in the choice of member firms.

26/ MITI, White Paper on International Trade, varioius issues.

27/ For explicit account of these experiences, see, e.g., Desler and Sato [1982].

28/ For more detailed account, see Okimoto [1984] and Pugel [1987]

29/ For example, Tarr [1988] 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, costs to the entire economy between $0.8 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 costed American consumers $4.5 billion annualy. See Feestra [1984] for the effect of quality and other general equilibrium effects in automobile case.

30/ For theoretical analysis, see for example Spence [1981].

31/ This judgement is based on Matsuhita [1988].

32/ Another example is MITI's promotion of Voluntary Export Restraint by Korean knitt producers for export to Japan in 1989.

33/ See, for example, Downs [1957], Stigler [1971], Krueger [1974], Ordeshook [1986] and Peltzman [1989].

34/ For example, Okuno-Fujiwara and Ueda [1989] 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 non-cooperative game than that when the possibility of negotiation is added.

35/ Much of what is written below depends upon Tsuruta [1988].

36/ 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 super markets.

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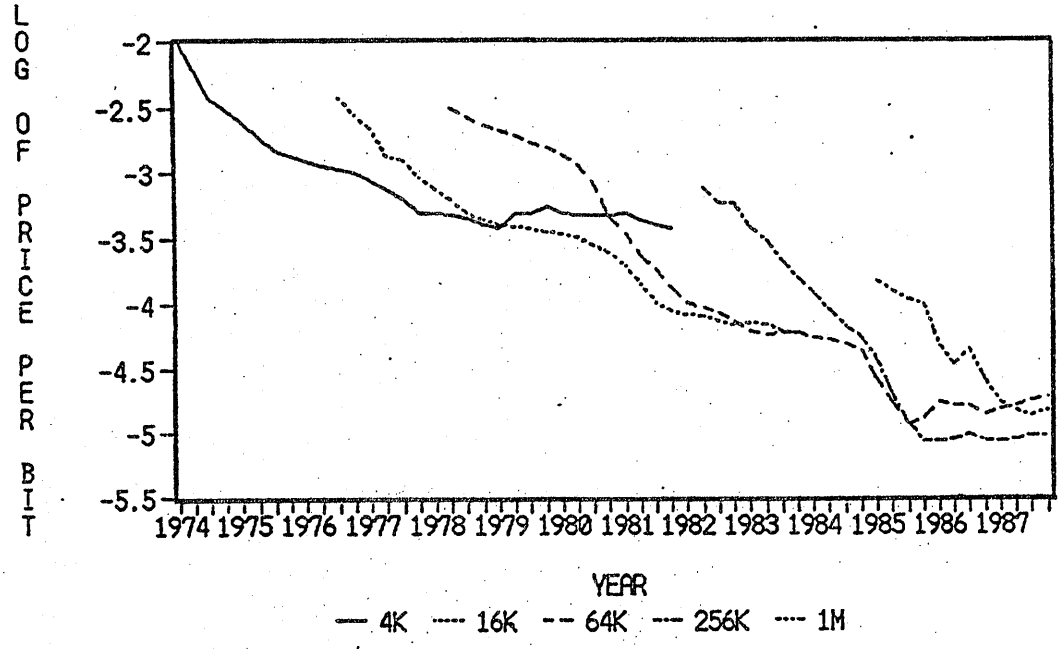
Country	Year	R&D expenditure as % of GNP (1)	Government funds as % of total R&D (1)	Except Defence related R&D	Government funds as % of total private R&D (1)
Japan	1983	2.29	22.2		2.9 (2)
	1987	2.57	19.9	19.3	1.7
U.S.A.	1987	2.65	48.2	26.8	35.1
W.Germany	1987	2.81	37.7	34.4	15.3
U.K.	1986	2.29	38.5	17.2	25.0
France	1986	2.29	43.7	28.9	22.8 (3)

Source: (1) Indicators of Science and Techonology (1989), Science and Technology Agency. (2) Movements of Major Indicators of Research and Developments in Japan (1985), Agency of Industrial and Science Technology. (3) 1987 data.

Figure 1



Source: Dataquest