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**Policies for Industrial Development and Structural Reform:
Lessons from Japanese Industrialization and Rapid Economic Growth**

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Abstract

The purpose of this paper is threefold: to provide a general overview of Japanese industrial policy, to evaluate its results from both an economic and a political economy perspective, and to discuss the outlook for future industrial policy in light of the challenges that currently face Japan's economy and industry.

There are three main points with respect to the role of industrial policy in past economic development: 1)The key factors in Japanese economic development were quality of human capital, vigorous competition between companies, international openness and the resulting competitive pressures and acceptance of foreign technologies, and personal motivation for high growth. In other words, the basic factor was private-sector vitality, 2)Where government intervention has played an important role in economic development has been in policies for appropriate institutional reform and physical infrastructure creation —factors outside of "narrowly-defined industrial policy." Recent theoretical studies show the latent potential for industrial policy to be effective, but there is little evidence of empirical effectiveness. The role of narrowly-defined industrial policy in industrial promotion is secondary and has declined over time, 3)However, there are few cases in which industrial policy has actually proved harmful to Japan and it was not an impediment to growth. There were indeed some aspects of it that were effective, if only marginally so. Japanese industrial policy fit the economic system as a whole, and behind this can be seen the skill with which industrial policy was administered. The fact that the economy as a whole was achieving high growth also made it easy to prevent the negative aspects of industrial policy from surfacing.

There are also four points to be made concerning the future role of government action and industrial policy in Japan: 1)Institutional reform is essential to dealing with the challenges that Japan currently faces. This could be a reform period every bit the equal of the Meiji Restoration or the postwar reforms. The focus of industrial policy for the foreseeable future should be on these aspects, 2)Among narrowly-defined industrial policies, the handling of backwards-looking adjustments is likely to be of major importance. The experience of other countries indicates that backwards-looking industrial policies rarely function effectively. Japan has luckily had very few cases of such policies, but judging from its limited experience with them, it cannot be an exception, 3)Industrial policy has changed to keep pace with the times and will continue to do so. Much of this will be a process of trial and error and it is extremely important that failed policies be quickly curtailed. This in turn makes ex-post evaluation of industrial policy of critical importance, 4)The building of these new economic systems will require not only economic structural reform and administrative reform but also judicial reform and educational reform.

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Contents

1. Introduction	p. 1
2. Historical overview of policies for domestic industry promotion	p. 4
3. Theoretical rationale and ex post evaluation of industrial policy	p. 18
4. Current challenges facing the Japanese economy and future industrial policy	p. 31
5. Conclusions	p. 40
Notes	p. 42
References	p. 49
Tables and Figures	p. 55

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1. Introduction

The purpose of this paper is threefold: to provide a general overview of Japanese industrial policy, to evaluate its results from both an economic and a political economy perspective, and to discuss the outlook for future industrial policy in light of the challenges that currently face Japan's economy and industry.

The paper begins with an historical overview of the industrial policies that were instrumental in Japan's industrial development, taking as its starting point the Meiji Period (late nineteenth century) that marks the beginning of industrialization. From there it moves on to examine the theoretical rationale for industrial policy and its effectiveness. This is done in light of prior research findings and uses a "greatest common denominator" style of evaluation. Some personal opinions are also included. Finally, the paper briefly describes the challenges that currently facing the economy and industry of Japan and considers the role that future industrial policy will play.

One of the distinguishing features of this paper is that it makes a distinction among the policies associated with industrial development between "narrowly-defined industrial policy" and "broadly-defined industrial policy." This is done to underscore the fact that areas such as institutional reform and infrastructure that would not fall under narrowly-defined industrial policy were nonetheless of historical importance and will probably continue to be so. A second distinguishing feature is that it emphasizes the importance not just of the menu, or content, of industrial policy but the methods by which it is actually administered and its political economy aspects.

Economic analyses of "industrial policy" are generally concerned with market failure, which leads them to define "industrial policy" as a policy designed to have an impact on industrial activities. They therefore discuss the significance and effect of policies to promote specific industries, export promotion policies, technology promotion policies, adjustment assistance policies (for declining industries) based almost solely on the criteria of "efficiency." But this narrowly-defined industrial policy does not cover all of the policies that will have an influence on the rise and fall of industries. Indeed, the Ministry of International Trade and Industry and the government of Japan have in point of practice utilized a bit broader a range of policies to promote industrial growth and economic development. This paper therefore widens its perspective to include broadly-defined industrial policy and discuss its relationship to economic and industrial development. However, even with this widening of scope pure macroeconomic management (fiscal and

monetary policy) and the social security system are as a rule not considered.

The importance of the administrative aspects of industrial policy is one of the points that is given relatively strong emphasis in development economics. It is often pointed to in discussions of the factors in the "success" of Asian countries (World Bank [1993] is a typical example). Whether industrial policy functions properly—whether it has any detrimental side effects—will depend to a large extent on how it is administered (whether or not "government failure" can be minimized). The same policies to protect domestic industry with tariffs and quantitative restrictions on imports might in some cases be successful in setting up a domestic industry and in others prove to be an impediment to aggressive innovation. Adjustment assistance policies for declining industries might in some cases avert unemployment and facilitate a "soft landing" (reduce adjustment costs) and in other cases perpetuate protectionist policies with a consequent increase in adjustment costs. Obviously much of this will be a question of whether policies are suited to a particular country and the current domestic and international conditions in which its economy must function, but the experience of Japan and many other countries indicates that the skill with which policies are administered will also have an important impact.

Japan is today debating the need for reforms to the economic structure and a program of deregulation and institutional reform is gradually moving forward (for example, the "Hashimoto Vision"). Running in parallel to this are administrative and fiscal reforms. Industrial policy is also in a period of change and current and future Japanese industrial policy must be understood within the context of reforms to the economic structure as a whole. What is meant by an "appropriate industrial policy" will change according to the time and environment, as indeed Japan's industrial policy has changed in the past. The individual policies of a time are implemented within the framework of the basic institutions and systems of the period.²

A long-term view of the Japanese economy reveals several key turning points. Of particular interest to us are: 1) the "Meiji Restoration" that marked the beginning of modernization, and 2) the "postwar reforms" that triggered the high growth of the postwar years.³ As will be described in greater detail later in this paper, the Meiji government enacted several industrial policies (*shokusan-kogyo*) during industrialization. These policies had as their foundation the "opening" (trade liberalization) that took place at the end of the Edo Period, and the abolition of feudal institutions and their replacement with more modern institutions that took place at the beginning of the Meiji Period. Japan achieved strong economic growth after the war, and the role that industrial policy played in that process is often commented on. Here again, the preconditions were met by the occupation during the postwar reconstruction period, which wiped the slate clean of existing institutions and set about reform.

We are now in Japan's third period of institutional reform. If anything distinguishes

current reforms from those of the past it is that there has been no "doorway" in the form of dramatic and discontinuous institutional reforms. Though there have been some symbolic turning-points such as the end of the Cold War, the collapse of the "bubble", and the conclusion of the Liberal Democratic Party's long, uninterrupted rule, what has led up to the reforms has basically been a continuous series of changes: the fact that Japan has caught up to other countries, the aging of society and declining birth rate, the consequent decline in the economic growth rate and changes in people's values, and the institutional fatigue seen in existing systems. The need for changes in industrial policy as "catch up" came to a close has been emphasized repeatedly since the Industrial Structure Council issued its Vision for the Seventies [1971]. The policy authorities and mass media have tended to emphasize the "peculiarity" of the current situation, but many of the challenges that Japan now faces are in fact leftovers from the early seventies. Though much quieter, the current reforms in no way differ in magnitude from the two reform periods of the past, and like them, reform is urgent.

Section 2 provides an overview from a long-term perspective of the historical changes that have taken place in Japanese industrial policy. For purposes of convenience, the section is broken down into "prewar" and "postwar" periods. In Section 3 we consider the major narrowly-defined industrial policies, evaluating them from both the theoretical and empirical perspectives. We also examine the relationship between factors in Japanese economic development and government policies from a broader vantage point. Section 4 provides a brief introduction to the challenges that currently confront Japan's economy and industry and recent trends in industrial policy. Having done this, I go on to discuss a few personal insights into the role of industrial policy. Section 5 contains a summary of the major conclusions of the paper.

2. Historical overview of policies for domestic industry promotion

This section examines the historical changes that have occurred in Japanese industrial policy from the opening of the country to foreign trade at the end of the Edo Period (1859) to recent times (1990s).

Common practice in discussions of Japanese economic development and industrial policy is to focus on postwar reconstruction and rapid economic growth period, but for a true understanding of Japanese economic development it is necessary to go back to the modern period and consider the industrial policies that have been in place since the Meiji Restoration. Japan was already a fairly industrial country prior World War II, and developments since postwar reconstruction have to a large extent been a *re-emergence* out of the peculiar conditions of defeat. By the 1930s, Japanese industrial capacity ranked among the top three in the world in textiles, fifth in cement, second in sulfuric acid, sixth in steel, and third in shipbuilding. The experiences of postwar Japan alone are therefore not enough to understand the relationship between industrialization and industrial policy.

Of particular note in this regard is the issue of the "replicability"⁴ of industrial policy; this will differ depending upon the country involved but in many cases the lessons of postwar Japan are absolutely meaningless to other countries.⁵ As reference, **Table 1** compares, admittedly mechanically, the per capita GDP of present-day countries with past periods in Japanese history. Even Malaysia and Thailand are only at prewar Japanese levels. China and India are where Japan was in the early Meiji Period. Obviously there are problems with such blatantly mechanical comparisons, including the question of the exchange rates used in conversions, differences in countries' baskets of goods, and the issues of quality changes and new products. The table should be used only as a very rough approximation.

While the continuous data available for the pre- and post-war periods is by no means sufficiently accurate, from a macroeconomic perspective, real per capita GNP has grown by about 20-times during the 110 years or so from the beginning of modern economic growth, 1885, to the present. (See **Figure 1**.)

This economic development brought with it major changes in the industrial structure and trade pattern. The leading industry in the prewar period was textiles. The high growth of the postwar period occurred in parallel to a shift in the industrial structure towards heavy industry and chemicals. Throughout the high growth period it was steel that was the leading industry. After the oil crisis of the seventies the relative weight in the economy of basic materials industries declined and machinery industries (automobiles and electrical machinery) took over as the leading sectors. Today, these industries are in the process of being replaced by the information industry. (see **Figure 2**.)

Also running parallel to economic development was a jump in the number of Japanese

companies. The Meiji and Taisho Periods had several "entrepreneurial booms." The number of companies in Japan went from 1,492 in 1884 to 85,122 in 1939, an increase of more than fifty-fold. After the war, the number of (incorporated) domestic companies went from 207,910 (1949) to 2,561,830 (1993), a ten-fold increase. (see Table 2.) The high growth process produced many large, world-class companies as well.

In this section we examine the kinds of industrial policies that were operative during this process of development for the economy, industry, and companies of Japan.

(1) Industrialization to World War II

In the late Edo-early Meiji Period, per capita GNP is estimated to have been only about 1/50 of what it is today. Even in 1885, the year in which modern economic growth is said to have started, per capita GNP was only ¥168,000 (in 1985 prices), which was a mere 1/20 of today's levels. At the time, Japan was a textbook undeveloped country, but later industrialization brought with it a steady rise in economic levels. During the fifty years or so between 1885 and the 1930s, GNP expanded to roughly 5-6-fold (a growth rate of about 3% a year), and per capita GNP more than tripled (annual growth of 2%).

The industrial structure of early Meiji saw more than 70% of the population working in agriculture. Manufacturing was little more than cottage industries in textiles and food processing (*sake* brewing, for example).⁶ In fact, food processing and traditional weaving accounted for about 2/3 of total manufacturing. Later, textiles would become Japan's leading industrial sector and the driving force behind economic expansion. By the turn of the century, Japan had a full-fledged cotton industry, though heavy industries and chemicals were still at the "infant" stage. In the early years of the twentieth century, shipbuilding became an important sector with forward and backward linkage effects. By the thirties, most heavy industrial and chemical sectors had become established to one extent or another. Heavy industry had surpassed light industry in terms of production value, though it had still not reached export industry status.

Initially, Japanese exports were primary goods or products very close to that stage: silk thread, tea, mineral resources (copper and silver), and fish. As the textiles industry developed, silk thread was joined by cotton thread, silk weaves, miscellaneous sundries, and other light industrial products as important exports (Japan made the transition to trade in processed goods). The share of silk weaves in this mix continued to grow, bringing greater added-value to Japanese exports. Between the 1890s and 1930s, textiles accounted for more than half of all Japanese exports.

The major factor in bringing about this economic development, reorientation towards processing in the industrial structure, and change in trading patterns was of course the efforts of private economic actors in competitive markets, but policy also played a role. The policies of this time can be categorized as 1) those to lay the foundations, and 2)

those to promote industrialization.⁷ The nature of policy changed to keep pace with economic development but at the roughest level can be divided into four periods: 1) from opening to the early Meiji years (-1885), 2) industrialization (1885-1914), 3) the interwar period (1914-1937), and 4) the wartime economy (1937-1945) (see Table 3). The content of policy itself was broad, but in this paper we will make a somewhat reckless attempt to limit our purview to those policies most closely relate to industrial development.

Laying the foundations for a market economy

The Meiji Period policies that were most important to Japanese industrialization were: 1) opening (trade liberalization), 2) abolition of feudal institutions, 3) erection of basic economic institutions, and 4) establishment of an education system. Each of these policies is explained in more detail below.

In 1859, the Edo government abandoned its centuries-old isolation policy (*sakoku*) and opened Japan's doors to the world (*kaikoku*), enabling the Japanese economy to enjoy the benefits of trade. When trade began, the price of exports relative to imports (the terms of trade) was 3.5-times, which was estimated to have raised the real incomes of people in Japan by about 65% (Huber[1971]). Exports of silk thread, in which Japan initially enjoyed a comparative advantage, grew rapidly. Towards the end of the nineteenth century, imports of raw foreign cotton began to expand rapidly, setting the stage for the development of a domestic cotton industry. Trade liberalization was one of the basic prerequisites to the "trade in processed goods" that characterized the Japanese trading structure during both the prewar and postwar periods.

Later, as the world economy as a whole enjoyed high growth, the exports and imports of Meiji and Taisho Japan expanded by a rate in excess of 10% a year. Trade (exports and imports) currently accounts for about 10% of Japan's GNP; in 1920, it accounted for nearly 20%.

The trade pacts Japan signed with Western countries at the time of opening were "unequal treaties." Japan did not even have the right to set its own tariff rates. The agreed-upon tariff rate was 5%, but inflation reduced this to an ultra-low 2% or so in real terms. Because of this, the country was unable to use tariffs to protect and to foster domestic industries. Ironically, it was these unequal treaties that forced Japan to be outwardly oriented. The dominant opinion is that they were positive for Japan because it could import capital goods cheaply but was subject to international competition that made it imperative to achieve greater efficiency (Teranishi [1992], Okazaki [1993], Hayami [1995]).⁸

The Meiji Restoration (*Meiji Ishin*) brought an end to feudal institutions. The period before and after 1870 saw the liberalization of merchandise sales, land sales, price

setting, and choice of jobs, all activities that had been restricted in the Edo period. Movement was also free and goods and people could be transported at will. These measures removed the negative legacies of feudalism and enabled vigorous competition between private companies according to market mechanisms. In that sense, these reforms were important in setting the tenor of the subsequent Japanese economy.⁹

The Meiji Period also erected the basic economic institutions (social infrastructure) that were needed for a market economy to function. Specific measures coming out of this era include: 1) a currency system (1871, the gold standard was established in 1897), 2) a banking system (1872), 3) a stock exchange (1878), 4) social institutions (1870), 5) ownership rights (agrarian reforms of 1873, civil code of 1896, mineral rights in 1873, and industrial property in the 1880s). All of these institutions were prerequisites to industrialization under the framework of a market economy. The establishment of a financial system—the mechanism for linking savings and investment—enabled large investments to be made and also increased the efficiency of investments. In abolishing feudalism and erecting these new institutions, the Meiji rulers defined a basic framework for the Japanese economy.

Turning to human resources, Japan's education levels were higher in the Edo Period than most undeveloped countries. The Meiji government further raised them with the introduction of mandatory education in 1873. In those early Meiji years only about 30% of the population attended school but by the turn of the century in excess of 90% were enrolled. By the 1930s, more than 20% of the Japanese were receiving high-school educations. On the other hand, high-level engineers and technicians were for the most part educated overseas in these years. Later the founding of technology-oriented universities, university departments, and vocational high schools would strengthen Japan's training of high-level engineers. These human resources were instrumental in Japanese industrialization and the improvement of Japanese technology levels.

Industrialization policy (*shokusan kogyo*)

Running in parallel to this social infrastructure creation was the Meiji government's industrialization policy. There were initially three ministries responsible for industrial promotion policy; the Ministry of Industry, the Ministry of Home Affairs, and the Ministry of Finance. In 1881 the industrial promotion sections of all three were consolidated and the Ministry of Agriculture and Commerce was given the primary responsibility for industrial policy. In 1925, this ministry was split to form the Ministry of Agriculture and Forestry and the Ministry of Commerce and Industry. Though the Meiji industrialization policy was wide ranging, of particular interest to us are: 1) physical infrastructure investments, 2) the promotion of priority industries, and 3) promotion policies for industry as a whole.

Perhaps the most important of the Meiji industrial policies was the enhancement of physical infrastructure. Today we see public works as being something separate from industrial policy but in the initial stages of industrialization public works are industrial policy's most important component. It was during this time that Japan erected its: transportation network (rail in 1872, maritime shipping), telecommunications systems (post office in 1871, telegraph in 1873, and telephone in 1889), and electric power systems (1887). As an example, the total extension of Japanese railways grew by about 16-times between 1885 and 1905 (an annual growth rate of 15%). The number of post offices and telephone exchanges also soared. This infrastructure provided the basis for industrial activities. Though the ratio of investments (aggregate fixed asset formation) to GNP was not as high in the prewar as the postwar years, it nevertheless climbed from 12.3% in 1885 to 19.4% in 1935. The weight of government fixed asset formation to aggregate fixed asset formation was particularly high and rising during this period (19.9% in 1885, 27.2% in 1915, and 42.7% in 1935).

There were three programs for promoting priority industries: 1) establishment of government-run model factories, 2) provision of industrial subsidies, and 3) access to government finance.¹⁰

During the early Meiji years government-run factories were established in textiles (thread making and spinning) and glass and ceramics (cement and glass). Examples include the Tomioka Thread Factory and the Aichi Spinning Works. The government bore both the cost and risks of the initial investments. Heavy industry came a bit later. The famous government-run Yahata Steel Works opened in 1897 (and began production in 1901). After the 1880s many of these government factories were sold to the private sector. Though this was done mostly for fiscal reasons, it nonetheless had the effect of turning over these newly established industries to private-sector competition. Had the government continued to run these factories, it is doubtful that their efficiency would have improved. In the machinery sectors, military factories (run directly by the army and navy) had functions similar to government-run factories in other sectors.

In the 1880s the government of Japan began to pay subsidies to priority industries. These were initially limited to construction, maritime transportation, and shipbuilding, though subsidies for steelmaking and chemicals did come a bit later. Many of these subsidies were linked to laws for the promotion of priority industries, for example, the Maritime Navigation Promotion Law of 1896, the Shipbuilding Promotion Law of 1896, the Steelmaking Promotion Law of 1917, and the Dyes and Pharmaceuticals Promotion Law of 1915. An important point in this is that the subsidies were not paid to specific companies; all firms had equal access to them as long as they met certain criteria for size and the like. For example, the Shipbuilding Promotion Law subsidized about 5% of the cost of building any ship above 700 tons. (The Maritime Navigation Promotion Law was more demanding, however, requiring 1,000 tons and 10 nauts in order to qualify for subsidies.) The Steel-

making Promotion Law gave tax breaks to any steelmaker with the capacity for 5,200 tons or more. Subsidies were, however, of limited pecuniary value. Industrial subsidies accounted for 4-5% of total government spending in the 1880s, declining to a mere 1-2% in the 1890s. Subsidies for mining accounted for about 20% of total industrial subsidies from the 1890s to the 1920s.

On the financial side, the Bank of Japan provided strategic loans to core industries like thread making, spinning, mining, and railways. By the turn of the century (government-run) institutions specializing in industrial finance began to appear (the Nippon Kangyo Bank in 1897, the Noko Bank in 1898, and the Industrial Bank of Japan in 1902). These banks served as a complement to the private-sector financial institutions that had emerged after financial and capital markets had been put in place.

The most important of the policies for promoting industry as a whole were: 1) programs to import and diffuse technology and encourage research and development, 2) export promotion programs, and 3) demand creation programs.

Many policies and programs were designed to bring in and spread technology. Initially the government-run factories employed foreign technicians and promising students were sent abroad to study. Both enabled Japan to import technology. The model factories themselves did not succeed from a business perspective, but the fact that the costs were borne by the government allowed them to encourage the introduction and spread of new technologies. Among the programs for disseminating technology were the decision to participate in the World's Fair (1873) and the program to hold "Domestic Industrial Expos" (beginning in 1877). There were also "Joint Progress Meetings" (*kyoshinkai*) that were held actively around the country beginning about 1879. These were a kind of contest in which merchandise would be judged and prizes awarded. Some researchers have found that they had the effect of disseminating technology and encouraging technology levels to rise around the country (Kiyokawa[1995]). There were also "Merchandise Display Halls" built around the country (starting 1896) to display foreign goods. These programs contributed to both the transfer of technology and expertise and the standardization of products. After the turn of the century industrial testing laboratories were built in key locations as a means of improving technology levels and quality in dyeing and weaving.

Full-scale technology development had to wait for the twentieth century. The Science Laboratories were built in 1917, the Fuel Laboratories in 1921, the University of Tokyo Aeronautics Research Center in 1921, the Tohoku University Metallurgy Research Center in 1922. Eventually, these laboratories and research institutes came to conduct self-directed R&D activities.

Nor should we forget that industrial property rights were established relatively early on. The Monopolistic Patent Ordinance dates from 1885, the Industrial Design Ordinance from 1888. In 1899 Japan joined the Paris Convention on industrial property rights, which paved the way for the importation of foreign technology.

Promoting the export of industrial products did not become a matter of policy until the 1890s. In the early Meiji years most products were subject to export duties, but they were abolished for silk thread in 1894 and then for all exports in 1899. In the early twentieth century export promotion-like programs were introduced, for example, a tax rebate for raw materials imports (1906) and the bonded factories system (1927), but these were not really "promotion" programs so much as attempts to remove conditions that disadvantaged exports.

Export promotion itself was accomplished by relatively soft means: 1) studies and pioneering of overseas markets, 2) quality gains for export products, and 3) export financing.¹¹ These were funded from the "trade expansion account" that became part of the budget in 1896. The study and pioneering of foreign markets took the form of sending fact-finding missions, creating lists of export products, and sending products to trade fairs.

To improve export quality (or more accurately, to prevent the market from being flooded with shoddy goods), large numbers of export industry unions were formed. The government subsidized the construction of joint facilities for these unions and provided them with low-interest financing for their business activities as a means of improving and standardizing the products of smaller companies. Other programs to ensure the quality of exported silk thread and miscellaneous sundries (soap, matches, pencils, toys, etc.) included a quality testing program and punishments for the export of shoddy goods.

On the financial side, it was the Bank of Japan that was responsible for export financing. A kind of export insurance system was also established (under the Export Compensation Law of 1929).

The government also fostered industry from the demand side by intentionally working to create demand for domestic products. Government demand (government procurement) was important from a fairly early stage. At the time, railways and telecommunications were government enterprises (run by the Ministry of Railways and Ministry of Communications, respectively). Domestic goods were also given priority in military demand. These programs provided valuable initial demand for infant industries. During the First World War, a committee called the "Domestic Goods Promotion Council" was established as a joint government-private sector campaign to encourage the substitution of domestic goods for imported pharmaceuticals, chemicals, steel, machinery, glass, paper, and wool weaves. In 1930 the Ministry of Commerce and Industry set up a "Committee on Favored Use of Domestic Goods." While it is uncertain just how much real impact these committees had, it is clear that government demand was extremely important for specific industrial sectors, steel being the most prominent. The government bought 2/3 of the sheet steel produced at the Yahata Steel Works in 1903, 1/2 in 1921, and 1/4 in 1925.

Quantitative comparisons are difficult, but there is a general consensus that early investment of physical infrastructure and programs to diffuse technology contributed to industry development. Though there were subsidy and government finance programs in addition

to the physical infrastructure creation, the moneys available were limited. Most of the non-infrastructure programs were of the "soft" variety: information gathering and provision.¹²

(2) Postwar reconstruction to high growth period

After World War II Japan went through a period of reconstruction before embarking on high growth. By the late fifties both GNP and per capita GNP had exceeded prewar trends. Between 1955 and 1973 real GNP grew at an annual rate of 8.6%. Per capita real GNP went from ¥256,000 in 1946 to ¥3,359,000 in 1993, a gain of about 13-fold, or 5.6% per year. In 1993 Japan had the highest per capita GNP of any OECD country.

Throughout the high growth period the weight of manufacturing increased. The economy became more oriented towards heavy industry and chemicals, which by 1960 accounted for more than half of all manufacturing production value. After the oil embargoes of the seventies there was a prominent shift towards machine sectors (automobiles, consumer electronics, machine tools), which began to account for an increasingly large proportion of total manufacturing. However, the share of the manufacturing as a whole began to decline after the oil embargo as services rose to take its place.

The changes in the pattern of trade became even more marked at this time. In the seventies heavy industry and chemicals accounted for more than 70% of exports. Today, about 3/4 of Japan's exports are machinery, and the country is now a net importer of textiles.

Common practice is to see five divisions in postwar industrial policy: 1) postwar reconstruction (1945-1952), 2) independence (1952-1960), 3) high growth (1960 - early seventies), 4) diversification (early seventies to around 1985), and 5) adjustment (1985 and beyond) (see **Table 4**). Like the prewar period, the content and methods of postwar industrial policy were a function of the times and subject to dramatic change. This makes it desirable in some sense to discuss industrial policy within the periodization framework outlined above. However, in this paper we will ignore periodization to concentrate on those policies of the reconstruction and high growth periods that contributed to industrial development, providing a brief introduction to what they entailed. This will involve five broad categories: 1) postwar reforms and the industrial policy of the reconstruction period, 2) policies to foster specific industries, 3) trade liberalization and policies to encourage heavy industries and chemicals, 4) export promotion policies, and 5) technology development policies.¹³ We would also note that after the seventies the policies of the Ministry of International Trade and Industry lost their focus on industrial and export promotion, diversifying out into antipollution measures, consumer protection, energy security, adjustment assistance, alleviation of trade friction, and import expansion.

Institutional reform and the priority production system

After defeat in World War II, Japan was occupied by the United States and it was under the occupation that institutional reforms went forward. These reforms wiped the slate clean of the negative legacies of the wartime years. The enshrining of a new constitution brought major changes to politics and society. There were three great economic reforms taken during this period: 1) economic democratization, 2) agrarian reform (confiscation of the land of large landholders and creation of small family farms), and 3) labor reform (establishment of labor unions and improvement of working conditions). The most important of these from the standpoint of industrial policy is economic democratization, which involved the dissolution of the *zaibatsu*, enactment of an Antimonopoly Law, and formulation of "anti-concentration" policies. The Antimonopoly Law of 1947 became one of the founding principles of the postwar Japanese economy. The dissolution of the *zaibatsu* and the break-up of large companies had the effect of decreasing concentration in the market, which brought about changes in industrial organizations. There were also changes in how companies were managed as the old managers were purged to make way for younger managers, and as ownership and management were separated. These reforms established a basis for competition between companies, and this intense corporate competition was a large factor in postwar Japanese economic development (Odagiri [1992]). Most specialists in economic history see the anti-concentration policies as reducing the degree of concentration in major industries, with the resulting competition contributing to economic development (Kosai[1981], Tsuruta[1982], and Nakamura[1993], among others).¹⁴

It is common to highlight the "priority production system" (1946-1948) as one of the hallmarks of reconstruction period industrial policy. But this was in reality a transitional policy limited only to the reconstruction phase for it assumed that wartime economic controls would be held over and endeavored to rebuild such core industries as coal mining and steelmaking within that context. While it is a fact that the policy did contribute to the restoration of production, it also increased the money supply and therefore touched off inflation. This in turn set the stage for the "Dodge Line" (1949), which brought on a sudden contraction in the name of economic stabilization. Under the Dodge Line the government was obligated to rigorously balance its finances, reduce goods and price controls, and reduce or eliminate the administrative institutions for economic control. Though forced upon Japan by the occupation, the quick elimination of the command economy was the correct approach to take. The Dodge Line is also important for setting a uniform exchange rate (at ¥360 to the dollar). This fixed exchange rate became one of the basic assumptions of economic activities and industrial policy throughout the high growth period. At roughly the same period, Japan accepted the recommendations of the Shoup Mission and overhauled its tax system. The Ministry of International Trade and Industry (MITI) was organized in 1949 and it has been the central force in industrial policy ever since.

A bit later Japan recovered its independence as the San Francisco Peace Treaty took effect, and in the fifties joined the IMF (1952) and GATT (1955). This put in place another of the basic assumptions of postwar industrial policy, that the economy would be managed in accordance with the international rules laid out by the IMF and GATT. The phased-in reduction of trade restrictions demanded by these international frameworks made a large contribution to industrial activity.

Policies to foster specific industries, protectionist trade policies

The fifties saw the beginning of industrial rationalization policies and policies to promote specific industries. Rationalization was carried out under the "Industrial Rationalization Promotion Law" of 1952. Among the leading measures to promote specific industries were the Machinery Industry Promotion Temporary Measures Law of 1956 and the Electronic Industry Promotion Temporary Measures Law of 1957. Other industries had similar laws, including chemical fertilizer and aircraft. The purpose of these laws was to designate specific industries for development and productivity improvement.¹ This designation opened the door to special depreciation and deduction treatment in taxation, subsidized loans from the Japan Development Bank (JDB), and priority access to foreign exchange. As a generalization, the basic aim of these policies was to develop major industries by giving them incentives to expand their production and investment in new facilities and equipment.

While these policies were supposed to designate and promote specific industries, in point of fact a large number of industries achieved designation. Obviously, however, what the policies did not do was to designate specific companies for subsidization; government assistance was open to all who could meet certain technology requirements. Thus, on the whole, these were not targeting policies so much as they were policies to encourage capital investment in a broad swath of (heavy) industries. From a macroeconomic perspective, this period marks the beginning of an extremely high ratio of investment to GNP.

However, in terms of the actual money spent, the assistance provided by these incentives (as converted to subsidies) was extremely small. Researchers estimate that only about 1-2% of total capital investment during the high growth period was induced by tax breaks and government financing (Ogura and Yoshino[1985, 1987]).¹⁵ The results show that capital investment was extraordinarily active and the production efficiency and capacity targeted by the rationalization policies and promotion laws were fully achieved, but it is uncertain whether this was because of policy or whether it happened regardless of policy.¹⁶ In terms of sectors, the largest gains were seen by electrical machinery, industrial machinery, and automobiles, but we should also note sectors like aircraft and aluminum smelting that did not do all that well in spite of all of the policy support.

Upgrading the industrial structure and liberalizing trade

Overall the policies to develop and promote individual industries had the effect of encouraging a shift in the industrial structure towards heavy industry and chemicals. It

was not until the sixties however that "upgrading the industrial structure" or "heavy and chemical industrialization" became explicit policy objectives. The rationale for moving towards heavy industries and chemicals were "high income elasticity" and "high productivity growth." Luckily, there were at this time industries that were able to meet both criteria. The *Vision for the Sixties* published by the Industrial Structure Council in 1963 advocated that Japan move forward with heavy and chemical industries, but the basic policy tools were holdovers from the fifties. Legislation was introduced that would have encouraged corporate mergers and concentrations, but it did not in fact become policy.¹⁷ It is possible that here too tariff escalation (higher rates for higher degrees of processing) contributed more to the development of heavy and chemical industries than monetary subsidies. In the seventies the Industrial Structure Council encouraged moves into "knowledge-intensive industries" [1971], but there were few policy tools with which to make this happen. This resulted in a new-found emphasis on the significance of the "vision" itself as a policy tool. In reality, however, it was probably the oil crises that gave impetus to the establishment of knowledge-intensive industries.

During this period Japan also experienced pressure from other countries to liberalize its trade. In 1960 it decided on a "Trade and Foreign Exchange Liberalization Program" that included a deadline for trade liberalization (read, the elimination of import quotas). Depending on their "international competitiveness," industries were categorized into those with grace periods to trade liberalization of 1) less than one year, 2) two to three years, 3) something longer, or 4) liberalization not possible at this item. Tariffs were used to protect industries after quantitative restrictions had been removed, but during the Kennedy Round and Tokyo Round of multilateral trade negotiations these tariffs were also phased down.¹⁸ The tariff escalation structure of the high growth period was reformed as processing and assembly industries improved their "international competitiveness." Today Japan has a "reverse tariff escalation." The tariffs on machinery are almost zero but there are still a few tariffs remaining on materials.

My personal opinion is that the policies that were most instrumental in developing individual industries and upgrading the industrial structure were the allocations of foreign reserves, the import quotas, and the import tariffs. The actual levels of assistance afforded by import tariffs were far greater than those from tax breaks and subsidized financing.¹⁹ Japan was able to set up its infant heavy and chemical industries by isolating them from international competition for a time. However, unlike taxation, it is possible for companies to grow complacent with the rents that protectionist tariffs provide; they are at the very least low on incentives to improve production efficiency. The damage from import quotas is even greater. The trade liberalization program contributed to the establishment of these industries in a short period of time because it put them under the pressure of a clear deadline for liberalization (Ito and Kiyono [1984]). It was thus the timing of liberalization that was the key. The phasing out of tariffs that

came later gave industries large incentives to further improve their productivity.

Export promotion policies

From the fifties and on through the high growth period Japan enacted numerous policies to promote exports. Among the most important were: 1) economic incentives for exports (the export promotion tax system that began in 1953, subsidized lending by the Export-Import Bank of Japan (EIBJ) that began in 1950, the export insurance that began in 1950, and export cartels formed under the Export Import Transactions Law beginning in 1952), 2) efforts to raise public awareness of the importance of exports (system to recognize companies that had contributed to exports and state honors for persons who were instrumental in export promotion), and 3) efforts to lay the foundations for exports (building of port facilities, studies of overseas markets by JETRO, export inspection system). There were also cases of foreign exchange allocations being proportional to export performance (allocations to reward exports). Maintaining its balance of payments equilibrium was a large challenge for Japan under the fixed exchange rate of the reconstruction and high growth periods. Obtaining foreign exchange was essential to relieving the bottlenecks that stood in the way of sustained growth, and export promotion policies were carried out under these pressing conditions.

Here again the monetary scale of export promotion policies was not large. Even the export promotion-oriented tax system, which was the most important of all the export promotion policies, was no more than about a 1% reduction in the tax on the price of the export (Ito and Kiyono[1984]).

Important from the institutional perspective is the fact that these policies did not designate specific industries or companies. The economic benefits were available to any industry or company that was a good export performer. This was particularly the case for tax breaks, which were meaningless unless corporate profits rose. This gave an incentive for well-managed companies to expand their exports.

Technology policies

Postwar technology policy employed a broad range of methods, including basic research and development by the government itself (at national research institutes), assistance for private-sector research and development (subsidies, tax breaks, government financing), promotion of joint research and development, and the patent system.

It was only after the sixties that a full-fledged push was given to technology development. Later, a host of core technology policies were introduced, among the most important being the institutionalization of Mining and Manufacturing Technology Research Associations (1961), Research Contracts on Large-scale Industrial Technology (1966), Subsidies for Research and Development in Important Mining and Manufacturing Technology (1968), Tax Deductions for Experimental Research Expenditures (1967), and Subsidies for Technological Improvements at Smaller Businesses (1967). Prior to this was a full overhaul

of the Patent Law in 1959.

After the oil crises, there has been a tendency to enhance technology policy in order to encourage self-directed technology development. Intellectual property right protections have also been reinforced.

(3) The role of industrial policy in Japanese industrial development

In this section we have reviewed many different industrial policies that aimed for industrial growth, export expansion, and technological advances. We have also seen how the nature of industrial policy has changed to keep pace with the times.²⁰ Space constraints prevent us from going into detail on the differences that were also seen between industries themselves. Once an industry is established, policies to foster that industry have no role to play. The trend therefore has been for the role of industrial promotion policies to recede.

Many of the industrial policies taken by MITI were directed towards manufacturing sectors. One of the reasons for this is that many non-manufacturing sectors are in fact outside the Ministry's jurisdiction. The essential reason, however, is that policy-makers were acutely aware of the need to boost the international competitiveness of export industries in order to improve Japan's balance of payments position. This resulted in there being few cases of intentional promotion of non-manufacturing sectors.²¹

Both the prewar and postwar periods began with the destruction of the old systems. In the prewar period, it was the institutional base formed in the first half of the Meiji Period (or the destroyed feudal institutions) that underlie policy. In the postwar period, policy has been underpinned by the existence of an established competition framework, and the international trading rules of the IMF-GATT system. The history of the conflict between industrial policy and the Antimonopoly Law in the high growth period is marked by differences in degree within the context of competition policy. The policies to shift into heavy and chemical industries, which were themselves based on the assumption of trade liberalization, were an effort made within the constraints of international trading rules.

Both the sectors covered by Japanese industrial policy and the nature and methods of policy have differed according to domestic and international environments. Industrial policy is "situation-dependent." As is the case with all policy, industrial policy is a "two-tiered" structure. The lower levels contain the basic institutional framework, the higher levels incentives, promotions and supplements. (See Figure 3.)

In both the prewar and postwar periods the initial institutional reforms were important in determining the tenor of subsequent economic policy. Economic development can

not take place unless there is adequate social and physical infrastructure. Industrial policy on itself accomplishes very little. A major prerequisite to the functioning of narrowly-defined industrial policy is that there be basic economic systems, motivations for private economic actors (companies and workers), and a conducive international and domestic environment. Policies that are out of synchronization with basic economic framework often fail. The bills for "temporary measures to promote specific industries" seen in the early sixties attempted to introduce a form of control that did not conform with the economic system. The idea of developing large groups within the automotive industry, a frequently cited example of failed industrial policy, was out of step with the competitive motivations of companies. The failure to establish an aluminum smelting industry stems from the fact that policy-makers were trying to set up an industry in which Japan did not enjoy a comparative advantage, in this case because of its factor endowment of energy.

3. Theoretical rationale and ex post evaluation of industrial policy

This section considers economic evaluations of industrial policy. There are many different views on the role played by industrial policy in the context of Japanese economic development and it continues to be a controversial topic. World Bank[1993] is a report that has stirred new waves in this debate. In recent years theory has made it clear that the kinds of industrial policy intervention practiced by Japan could have some latent effect.²² From an empirical perspective, the idea that industrial policy was super-effective—for instance, the "Japan Inc." view that was briefly popular—has been largely abandoned. It is, however, only a minority opinion that industrial policy is always ineffective or damaging. Most concur that it can in some instances be effective, though there will be gaps in the degree of effectiveness that different commentators are willing to recognize. Evaluations of industrial policy will also differ according to analytical methods, the time period studied and the specific policies studied.

We do not even need to limit our purview to Japan. An examination of industrial policy in Europe, North America, the developing countries will turn up very little evidence that it is actually effective, at least that is the conclusion that is reached by "greatest common denominator" style evaluations at the current point in time. If anything, there is a considerable body of research that indicates that industrial policy is damaging.

Japan, we should point out, had some advantages. Its industrial policy was administered comparatively skillfully and the fiscal costs were extremely small.

Even still, industrial policy may not necessarily occupy that high a position amidst all the other factors that contributed to Japanese economic development.

(1) Narrowly-defined industrial policy and its theoretical rationale

Conceptually, industrial policy is something to remedy "market failures" or "market limitations," but from a concrete point of view the question is what kind of "failures" exist and how it is possible for government intervention to remedy them. Because of space constraints we will focus in this paper on the theoretical rationale for five examples: 1) policies to promote specific industries, 2) policies to upgrade the industrial structure, 3) export promotion policies, 4) technology promotion policies, and 5) adjustment assistance policies.

Specific industry promotion

The most traditional argument used to justify specific industry promotion is "infant industry protection." The argument goes that, for a limited period of time, protecting and

developing with tariffs and subsidies an infant industry that has the potential to expand in the future might be desirable from the standpoint of economic efficiency (Itoh et al. [1988]). This could be the case for industries that have economies of scale or learning effects, but were the capital markets perfect it should be possible to set up those industries with outside funding rather than government intervention. Therefore, the justification of government intervention depends on an additional factor, the imperfection of the capital markets. Ultimately policies to promote an industry are justified when the industry has a dynamic external economy, but even here protection is only justified when the social benefits from industrial development, including the external economic effects, outweigh the costs of protection and fostering. On the other hand, one could also argue that government subsidies lure large numbers of companies into the industry and therefore actually impair efficiency because none is sufficiently large. Another argument is that raising the funds to foster an industry (ie, taxation) produces new distortions within the economy.

Another argument for promoting specific industries is that of "information asymmetry." If, for example, there is an asymmetry in the information that the lenders of funds and the borrowers of funds have regarding a project's profitability or risks, the financial and capital markets may invest too little in it (Stiglitz and Weiss[1981], Flam and Staiger[1991]). It could therefore be possible to justify government meddling because risky infant industries would otherwise be unable to tap sufficient funding. The "cow bell," or information production, effect of government financing focuses on the research abilities of financial institutions but it is used in this context to justify intervention. One could, however, argue that information asymmetries might also lead to excess investment (de Meza and Webb[1987]), so from a theoretical perspective assistance policies are not always desirable. It is difficult for governments to make an *a priori* judgement as to whether a particular market is over or under invested.

Yet another argument looks at the barriers to new corporate entry stemming from information asymmetries not in the financial markets but among consumers. Here too it can be shown that the protection of infant industries will not necessarily have a desirable effect (Grossman and Horn[1988]).

A different argument looks at the monopolistic rents enjoyed by foreign companies. If protectionist tariffs are used to transfer those monopolistic rents to one's own country then the economic welfare of the country can be improved (Brander and Spencer[1981]). In oligopolistic industries where there are economies of scale, import protection policies might actually function as export promotion policies (Krugman[1984]). These arguments, however, contain several problems that are best discussed in the overview of export promotion policies.

Upgrading the industrial structure

The primary argument used to justify industrial policy from the standpoint of

upgrading the industrial structure is "development of marginal export industries," an idea that is based on the Ricardian model (Ito and Kiyono[1987]). According to this theory an expansion in a country's "menu" of export goods will have the effect of increasing its economic welfare. However, like arguments about optimal tariff rates, this theory rests on the degree to which the terms of trade can be improved and is unlikely in reality to have that much impact on them.

Another argument that deals with the industrial structure is that of coordination and the "big push" (Okuno-Fujiwara[1988], Murphy, Shleifer and Vishny[1989], and Matsuyama [1992]). According to this idea, when a particular industry sees a gradual increase in its returns and has external economies there may be a "coordination failure" or "multiple equilibria" between industries with vertical (investment) linkage. Were they left on their own they would settle on a low equilibrium but the government can coordinate forecasts for the industries' futures so that a high equilibrium is achieved. In actual practice this means that subsidies and protectionist trade policies should be supplemented with "visions," council and other exchanges of information as an effective means of achieving simultaneous industrialization in a wide range of sectors. However, these arguments assume closed economies. If international trade delivers intermediates at low cost then the constraints of domestic market size are not necessarily a factor impairing the establishment of an industry. In addition, government "visions" will have no real effect unless private economic actors believe them.

Export promotion

The leading rationale for export promotion policies is that of "strategic trade policy," which focuses on the rents of oligopolistic markets. Under certain conditions policies that subsidize exports by domestic industry and protect it from imports will be effective in transferring the rents obtained by foreign companies to domestic companies.²³ This is similar in nature to the argument that domestic industries must be fostered in order to resist foreign monopolies. However, there are numerous problems with the realistic applicability of this theory. For instance, if one changes the assumptions about the form of international competition between companies (quantitative completion/price competition), strategic trade policies end up having undesirable effects in the countries that adopt them. Competition in the market for production factors may result in a detrimental influence on other growth industries. Subsidy policies may encourage new entrants that dilute the effects of policy. This is a "beggar thy neighbor" policy that harms companies in one's trading partners. If they retaliate with similar measures, then everyone loses. And last but not least, enormous amounts of information are required in order for the government to implement such policies appropriately.

A different tact is the "learning by consuming" argument. This says that when goods are involved for which the quality of the merchandise is only understood through actual use, economic welfare can be improved with export promotion policies for infant domestic

exporting industries (Mayer[1984]).

Technology policy

Technology policy has a relatively clear theoretical rationale.²⁴ Technology is essentially a public good (there can be no exclusion and there are spill-over effects) and the rate of return to society exceeds the rate of private returns. As a result, investments tend to be below the levels that are desirable from society's point of view. Remedying this justifies: 1) the government itself conducting basic research and development, 2) assistance for private research and development, and 3) increases in the possibility of exclusive possession of the results of research and development through the patent system and joint R&D projects. However, with regards the patent system one might also argue that investment could be excessive because of the rank-order competition for place between oligopolistic companies. For joint research and development, one might argue that it would encourage collusion that would delay research and development (Katz[1986], Suzumura[1992]).

Within the context of strategic trade policy there is also an argument that technology assistance policy to domestic companies in oligopolistic markets will have the effect of promoting exports (Spencer and Brander[1983]).

Adjustment assistance

In contrast to the policies above which are all forward-looking, adjustment assistance for industries in decline can be justified as a "second best" policy to reduce the social costs when there are distortions because of wage rigidity (see Bhagwati[1982] and Ito et al.[1988] chapter 21). Such policies could also be significant if they serve to stave off larger distortionary effects brought on by political factors, for instance, protectionist pressures. However there is also the risk that these policies will delay the inevitable adjustments and that the policy decision itself might be distorted by pressure from interest groups.

Limitation of Theoretical Arguments

This overview should show that from a theoretical standpoint there are many cases in which industrial policy might be latently effective in developing industry or improving economic welfare. (see Table 5.) What is important here are the conditions that justify industrial policy—market failures that have: 1) (dynamic) externality, 2) (dynamic) economies of scale (oligopolies, learning by consuming), and 3) imperfect information (risk, asymmetry).

At the same time, we have also made clear the problems and limits of these theories.²⁵ Arguments that justify government assistance for specific new businesses often depend on the specification and parameters of their models. What is more, market failures are only a minimum requirement for industrial policy (government intervention) they are

not a sufficient justification. For industrial policy to be socially desirable we must be able to compare the benefits of the policy with its costs (not only the direct costs of the policy but the costs of its side effects as well). A point of importance in this will be comparisons of market failures versus government failures. Government failures are large when policies themselves are determined endogenously by political pressure.

To sum up, our theoretical analysis of (narrowly-defined) industrial policy --or more broadly, our theoretical analysis of government intervention in economic development--has shown the *possibility* that such policy might be effective. But this is based on several assumptions and is therefore a different question from whether policy has in reality been effective or even socially desirable.

Therefore, to judge whether industrial policy had a desirable effect on Japanese economic development we must empirically analyze: 1) whether or not there were actually market failures (the minimum condition), 2) if policy was able to effect corporate behavior, the industrial structure, trade patterns, and resource allocation in the ways envisioned (policy effectiveness), and 3) if the costs were acceptable for the effects produced (sufficient justification).

(2) Empirical evaluation of industrial policy

We have now arrived at the question of whether Japan's industrial policy was empirically justified, and unfortunately there is not a lot of quantitative data available on Japanese industrial policy, and virtually nothing giving a general evaluation of its cost-effectiveness. Quantitative analysis depends on data availability, though in either case it is obviously difficult to compare the effects seen with what would have happened had there been no industrial policy.²⁶ We are therefore forced to look at the limited results of indirect analysis. A relatively large body of these results indicate that there were indeed "market failures," the minimum condition for government intervention. However, most analyses also deny the effectiveness of the inducement-oriented industrial policies of the postwar years.

Specific industry promotion

Policies to promote specific industries are predicated on market failures, and most studies confirm that there were indeed economies of scale and learning effects. In case studies of the Machinery Industry Promotion Temporary Measures Law and the computer industry development policy, the authors conclude that they were effective. However, these are generally descriptive studies, and there is an unignorable question of sample selection bias--it is possible the authors chose to analyze only policies that had been "successful." We must therefore turn to cross-industry analysis to examine the relation-

ship between the size of government assistance on the one hand and industrial development and trading patterns on the other. The relationship between protectionist tariff rates and trade patterns (net exports, indexes of apparent comparative advantage) have been done for infant industry protection policies. Some do indeed indicate that the protectionist policies of the period immediately following the war were effective (Urata et al.[1995]), but others find opposite findings (Saxonhouse[1989] and Noland[1993]).²⁷ Therefore the results are inconclusive.

Beason and Weinstein[1996] analyzes the effect of subsidies, government finance, and tax breaks in addition to protectionist tariffs. It finds that postwar industrial policy (tariffs, taxes, government finance, subsidies) was geared mostly to what were in fact industries with no growth potential or economies of scale. In other words, they had very little to do with the development of growth industries with economies of scale.²⁸ There are several cross-industry studies that examine only government finance and tax breaks, but they generally yield the same results. However, giving the fact that the preponderance of empirical research indicates imperfect financial and capital markets, it is conceivable that the market failures that would provide the rationale for government intervention did indeed exist. There is no positive correlation between the volume of lending and industry growth for the loans made by the Japan Development Bank, but event study techniques have been used to analyze whether there was a "cow bell effect"—whether the start-up of Japan Development Bank lending made it easier for private banks to lend. These are generally positive in their conclusions (Horiuchi and Sui[1993], Fukuda and Teruyama[1995]).

Upgrading the industrial structure

Much of the analysis of policies to upgrade the industrial structure looks at the spillover effects on productivity from the input/output relationship between heavy industries. They do not, however, reach a clear conclusion that policies were effective. For the prewar period Okazaki[1993] argues that the simultaneous promotion of maritime transport, shipbuilding, railways, and steelmaking played the role of a "big push." He also interprets the priority production system and industry rationalization policies of the postwar period from the point of view of coordination (Okazaki and Ishii[1994], Okazaki[1996]). Still, that is not enough material to generalize from. The empirical analysis that we referred to in the discussion on policy to promote specific industries can also be interpreted as an evaluation of policies to upgrade the industrial structure. There is anecdotal evidence that the information coordination that came out of "visions" and council reports was effective in promoting the exchange of information within the Industrial Structure Council and the Ministry of International Trade and Industry (Okuno and Hori[1994]), but this has yet to be subjected to adequate empirical analysis.

Export promotion

There is a large amount of cross-country regression analysis that indicates that

exports (or export-orientation) contribute to economic growth (for example, World Bank [1993]). However, there are problems with this analysis. However, it is pointed that the same results are obtained when imports are substituted for exports and that there can be a reverse causation. A study has been done of the relationship between exports and economic growth in Japan looking at causal relationships but it invalidates the idea of export-led growth. This is true for both the prewar and postwar periods and particularly true for the high growth period. However, we should note that none of these analyses looked directly at the effects of export *policies*.

From the strategic trade policy standpoint there are calibrations for the automotive and semiconductor industries. One example is Baldwin and Krugman's [1988] examination of the semiconductor industries in Japan and the US. Rather than export promotion policies *per se*, this paper assumes that Japanese protectionism (priority use of domestic products) has the effect of promoting exports. Had the Japanese market been open, they argue, Japanese companies would not have been able to establish themselves even in their home markets.²⁹ The paper also points out, however, that Japanese protectionism was detrimental to overall Japanese economic welfare, which invalidates the significance of policy. Empirical analyses are frequently done of the strategic trade policies employed by Europe and the U.S. for the aircraft and automobile industry and generally conclude that they result in too many participants and very little improvement in economic welfare.

Technology policy

Several studies indicate that there are spillovers of technology between industries and companies in Japan and that the social returns outweigh the private returns of research and development (market failures). Examples include Goto and Suzuki[1989], Odagiri and Murakami[1992], and Irwin and Klenow[1994]. The conditions for intervention in the form of industrial policy seem to have been met. Some cross-industry regression analysis also shows that technology policy will have a positive effect on net exports with a time lag (Noland[1993]). Even still, it is unclear the extent of assistance that is appropriate for technology policy. Empirical analyses have been done of the private research and development promotion effects of tax systems designed to promote technology in Europe and North America (with inconclusive results), but relatively little has been done in this area for Japan. One aspect of Japanese technology policy that is of particular interest to Europe and North America is the use of joint research and development projects (for super LSIs, "Fifth Generation" computers and the like). The policies taken by the United States since the eighties to promote joint research and development referred extensively to Japanese experiences. There is some fairly in-depth descriptive research in this area that affirms the significance of Japanese policies (Katz and Ordover[1990], Nakamura and Shibuya[1995]).³⁰ Though the vast majority of the studies on the technology policy in the initial stages of industrialization are qualitative descriptions, the contributions made by Meiji Period policies to the import and dissemination of technology

are very highly regarded (Kiyokawa[1995], Shimbo[1995]).

Adjustment assistance

Several case studies have been done of the adjustment assistance policies for the textiles, shipbuilding, aluminum smelting, and petrochemical industries (Komiya et al.[1984], Sheard[1991]). There are also a few cross-industry studies (Peck et al.[1988], Morikawa [1996]). Evaluations of the policies are divided but none see them as having contributed greatly to industry adjustments. Generally, facilities have been disposed of by the independent actions of private companies and the role of industrial policy has been minor at best. It has been confirmed that in Japan's unique cartel-like method for disposing of excess capacity has resulted in a pro rata style of dismantlement.

If the labor force has skills that are particular to that industry, then job changes will produce adjustment costs and it may be possible to justify government intervention in the jobs market from the perspective of lessening the adjustment costs to society. Employment adjustment subsidies (Ministry of Labor) have yet to be subject to sufficient empirical analysis but some studies do show that the speed of employment adjustments in Japan was reduced after the system was introduced (Hashimoto[1993]). This can be interpreted as saying that these policies help stabilize jobs but also have the side effect of delaying changes.³¹ One prerequisite for adjustment assistance policy is that there be large costs to society for adjustment because of the fixed nature of capital and labor. Ideally there would be comparisons of the cost and benefits (reduction in social costs) of these policies, but in Japan there have been very few attempts to measure social adjustment costs. There are some estimates of the costs of unemployment and idle capital in Europe and the U.S., but the general conclusion is that they are not all that high.

Provisional Conclusion

So sum up, many technology promotion policies are comparatively well supported by both theoretical and empirical analysis, as is the information creation effect of development-bank lending.³² On the other hand, opinions are divided on the efficacy of export promotion policies, policies to promote specific industries, and adjustment assistance policies. Most of the results are not necessarily supportive. (see Table 6.) However, be careful that sufficient empirical analysis of industrial policy has not yet to be done, so these judgements are only provisional.³³

(3) Observations on the administration of industrial policy

Administrative skill is of the utmost importance for narrowly-defined industrial policy. More specifically, the points on which Japanese industrial policy excelled were that it: 1) was not directed towards specific companies, 2) placed time limits on protec-

tion, and 3) rendered the majority of assistance by indirect methods.

Japan's promotion of specific industries (protectionist tariffs, the Machinery Industry Promotion Temporary Measures Law and the like) and its export promotion policies (tax system that favored exports) did not foster specific companies or promote their exports but were open to all companies that met certain criteria. Because of this, they did not impede competition. As the World Bank [1993] points out, a contest was created and exports were the criteria for it. It was *industry* that Japan promoted, not *companies*. Common practice was to use quantitative criteria to select the industries involved.

The protection of infant industries was given specific time limits by the Trade and Foreign Exchange Liberalization Program. Many commentators concur that these time limits were what was important. Even tariffs, the means of protection used after import quotas were scrapped, were subject to phased-in reductions according to schedules determined in the GATT. The initial foreign exchange allocations were a comparatively hard policy tool that might have been conducive to rent seeking, but a step-by-step transition was made to an automatic approval system, and complete liberalization was achieved in 1963.

A look at policy tools indicates that indirect methods were favored over direct subsidies—they tended to be government loans subject to repayment or tax breaks that would be more beneficial as profits rose (special taxation measures). In short, they took the form of rewards for companies that made the effort. This had the effect of minimizing policy costs. The Ministry of International Trade and Industry budget is even today only about 1.3% of the central government budget (general account). During the high growth period it was 1-2%. Even during the Meiji Period, industrial promotion expenses were not that large a component of government spending. In the 1870s and 1880s industrial promotion expenses accounted for about 10% of total government fiscal outlays.

Another point to note is that adjustments between industrial organizations were effected not with statutory regulations but with administrative guidance—the government had to convince companies that it was in their best interests to do as it advocated. Some, however, argue that administrative guidance was ineffective because it lacked coercive force or that it lacked transparency. But administrative guidance had its positive aspects as well, for instance, its lack of rigidity. It made it easy for the government to "pull out" of policies. There were some examples of laws being used to effect adjustments between industrial organizations, particularly the Petroleum Industry Law and the Large-scale Retail Stores Law (natural monopolies like electric postwar and gas excepted), but intervention with these "hard" policy tools has proved in hindsight to have had large side effects.³⁴

In other words, the Ministry of International Trade and Industry did not have all that

much power. Industrial policy's ability to intervene was weak and the financial resources employed were limited. Also, the ministry pulled out of industrial policy fairly smoothly in the course of economic and industrial development. This had the effect of suppressing the costs of subsequent rent seeking and dynamic inefficiencies which could be a negative factor in Japanese industrial development.

One of the techniques often employed by economists in evaluating industrial policy is to compare real policy intervention with an "ideal market" in order to unearth problems. However, such comparisons are not necessarily appropriate in real-life political processes. Real policies are influenced by pressure from interest groups (Stigler[1971], Hillman[1982], Findley and Wellisz[1982]) and are often taken as a "second best" rather than an ideal. From that perspective it may be possible to give Japanese industrial policy high marks for its lack of detrimental intervention, paucity of government failures, and early demise.³⁵

(4) Factors behind Japanese economic development and the role of the government

As we have seen in the previous section, Japanese industrial policy was not narrowly-defined industrial policy but a mixture that included many other elements such as the erection of institutional and physical infrastructure that also had an effect on industrial activities.³⁶ Here we examine and evaluate the role of the government and the significance of industrial policy in the broad sense.

Factors in Japanese economic development

Below is a summary of the factors generally given for Japanese economic development that has been arranged according to greatest common denominators.

There were six elements that the prewar and postwar periods had in common: 1) initial conditions (backwardness, technology gaps), 2) high quality of human capital, 3) creation of an investment environment, 4) fiercely competitive markets, including international competition, 5) a favorable international environment, and 6) creation of social overhead capital.

There is no need to belabor the initial conditions. At the time of the Meiji Restoration Japanese income levels were lower than those of the industrialized Western countries when they began their modernization. After the Second World War, levels of economic activity were depressed and there were technology gaps in many areas because of the closed wartime economy. Even in the early fifties Japanese per capita GNP was only 30% that of Europe and only 10% that of the U.S.

The prewar period started off with high educational levels, which it inherited from the Edo Period temple schools. During the early Meiji Period a mandatory education system

was established and later technology universities and vocational high schools were created to further improve the quality of human capital. The quality of human capital was the most important factor in enabling Japan to accept and spread foreign technologies and boost its productivity (society's capacity to absorb new ideas). After the war, education levels rose in conjunction with economic growth. Long-term employment practices also made it possible for corporate on the job training (OJT) programs to contribute greatly to worker skill improvements. There was a national consensus on the need to emphasize growth, and worker motivation was high.

During the prewar period the corporate system was introduced and financial and capital markets were created to enable risk money to be gathered from a wide swath of society and invested in industry. In the postwar period, the main bank system combined with demographic factors, the bonus system, and taxes that encouraged savings to produce a high household savings rate and high levels of investment. It is possible that taxes designed to promote capital investment in a wide range of industries helped promote capital accumulation at the macro level.

During the prewar period there was no codified competition law, but the Meiji Restoration's abolition of feudalism made domestic competition possible in a wide range of industrial fields. Unequal treaties also subjected Japanese companies to direct competition with foreign companies right from the very first, which became a large factor in boosting economic efficiency. After the war, the occupation dismantled the *zaibatsu*, eliminated industrial concentrations, and passed an Antimonopoly Law that lay the institutional foundations for market competition throughout the entire economy. There was also pressure from international competition in both exports and imports thanks to balance of payments constraints and trade liberalization programs. This competition boost both static and dynamic efficiency.

During Japanese modernization the international environment was favorable. Pax Britanica had produced growth for the industrial countries of Europe and North America and worldwide expansion in trade. After the war, the world economy was once again in a growth phase while the Cold War strictures prevented economic disputes between members of the Western alliance from surfacing. The IMF-GATT system became one of the fundamental conditions for Japanese economic development. With the transition to IMF Article 8 status (1964) Japan was forced to terminate its foreign exchange budget. The Cold War structures were behind the political stability of the long, uninterrupted rule of the Liberal Democratic Party. The improvements in the terms of trade for raw materials all the way up to the oil crises also had a positive effect.

In the creation of social overhead capital much is made of the inefficiency of public works today, but it was seen in a positive light throughout the prewar and postwar growth periods, for example, the building of transportation and communications networks in the early years, or the creation of industrial roads, port facilities, and industrial parks in the postwar period. By alleviating the physical bottlenecks to growth these projects

formed the basis for industrial development.

We should also add to this two factors peculiar to the high growth period: 1) the so-called "Japanese-style economic system" and 2) stable macroeconomic management.³⁷

The "Japanese-style economic system" refers specifically to things like long-term employment, the main bank system, and long-term, continuous business relationships. It is generally agreed to have been an extremely effective incentive scheme. All of these aspects of the Japanese system had the effect of encouraging long-term competition within the context of a growth economy. Most of the hallmarks of the system have their origins in the prewar and wartime periods, but what was important was the postwar introduction of institutions that would maintain and strengthen them. For example, long-term employment was strengthened by the tax system (reserves for retirement allowances, deductions of retirement income) and labor laws (restrictions on job referral services and temporary employment agencies). The main bank system depended on the rents it enjoyed from the highly regulated financial markets and from the regulations on the capital markets that made indirect financing the main route for funding.

With the exception of the early postwar reconstruction years, the high growth period from the Dodge Line to the oil crisis was marked by stable Keynesian macroeconomic management. Here again the ban on deficit bond issues and Bank of Japan underwriting of government debt (even if they later ceased to have much in the way of real disciplinary effect) and the elimination of fiscal profligacy by the Dodge Line were extremely important.

Economic development and government intervention

This overview shows that most of the factors behind Japanese economic growth were basically in conformance with what economic growth theory and empirical analysis dictate.

In conventional growth theory, capital accumulation and technological advances exert an impact on per capita income.³⁸ Recent endogenous growth theory has theoretically demonstrated the importance of human capital, endogenous technological advances, an economy's international openness, and industrial linkage.³⁹ More recently still have been models of endogenous growth that take into account such factors as financial development and income distribution.⁴⁰ According to these theories, mechanisms to encourage the formation of human capital (education), mechanisms to stimulate technological advances (patent system), trade liberalization, and development of the financial system can have the effect of promoting economic growth. This conforms to Japanese experience.⁴¹

For empirical research on economic growth factors there are many fine quantitative analyses using cross-country data (for example, Barro [1991, and 1996]). A list of the stylized facts that can be gleaned from these studies as contributing to growth in per capita income would include: backwardness (low initial per capita income), capital investment, research and development, human capital (school enrollment rates, average life expectancy), openness to trade, public investment, financial development, macroeconomic

stability, and protection of intellectual property rights. Other factors that are related to economic growth but are not necessarily "stylized facts" would include a low population growth rate, a small government, changes in the industrial structure, equality of income distribution, establishment of property rights, political stability, democracy, and minimal corruption. All of these factors more or less match with Japanese experience. It is difficult therefore to conclude that Japan enjoyed high growth because of special reasons.

An evaluation of the role government in the economic growth process in light of this discussion would lead to the conclusion that it has a basic role to play in establishing property rights, setting up financial markets, establishing educational systems, formulating antimonopoly laws to serve as basic rules for competition, and putting the institutional frameworks. Improving the economy's international openness (trade liberalization) will not only bring static trade benefits but by promoting competition will raise dynamic efficiency. The postwar "Japanese-style economic system" was a means of maximizing the functions of competitive market mechanisms within the Japanese environment. Other important non-institutional policies would include the creation of physical infrastructure (transportation networks, postal services, telecommunications, etc.). In the postwar high growth period stable macroeconomic policy management was also important.

Compared to these policies, the role of narrowly-defined industrial policy (for instance, subsidization policies) was marginal at best. But even if marginal, there could be cases in which industrial policy is effective within the context of a particular economic system at a particular time. It is possible that protectionist trade policies were effective in the initial growth of heavy industries. Policies to promote capital investment contributed a certain amount to the macroeconomic capital accumulation rate. However, narrowly-defined industrial policies are phase-dependent, tactics-level policies that are based on fundamental institutions and systems. In Japan, policy was administered relatively well so there were few cases of it actively causing damage, but at least in its role of promoting industry, the significance of industrial policy has steadily declined. It was not that Japan enacted "special" industrial policies, it was that it was fairly clever about administering them. It was also very good at decrease or exit from such policies.

4. Current challenges facing the Japanese economy and future industrial policy

(1) Current challenges facing the Japanese economy

Stagnation

The phenomena that currently characterize the Japanese economy are the long-term stagnation of economic activities, an increase in unemployment, and the decline of domestic manufacturing.

At the macro level, economic growth has slowed, the business slump has been prolonged, and the unemployment rate is rising (see **Table 7**). During the high growth period, Japan enjoyed economic growth rate of close to 10% a year; after the oil crisis it made the transition to stable growth. During the 1973-1991 period, growth declined to about 3.8% a year. Since 1991 growth has continued to slump in spite of repeated expansive economic policy packages: 1.3% in 1992, 0.1% in 1993, 0.4% in 1994, and 0.9% in 1995. The government forecasts 1.9% for fiscal 1997 but many suspect at that figure. The result of this slow growth has been to keep per capita income more or less flat since 1991.⁴² The 1995 unemployment rate of 3.2% is a historical high for Japan and as of this writing the rate was still in excess of 3%. This prolonged stagnation is a new experience for the Japanese economy, which has so far known only continuous growth. Nor are there any signs of quick recovery in the foreseeable future; the stock market has in recent months become jittery again. Many researchers repeatedly pointed out that this stagnant situation was not only cyclical but also structural.

From the perspective of industrial activities, the biggest issue facing the country is what is referred to as "industrial hollowing" (see **Table 8**). The rise of the yen from 1993 to 1995 accelerated this trend. Manufacturing's domestic capital investments are down but its outward direct investments are up. Indeed the foreign production rate has grown by several percentage points over the last few years and is now at about 10% for manufacturing as a whole. Well over half of all "Japanese" color televisions, video decks, microwave ovens, and other consumer electronics are now produced in other countries, especially in Asian countries. According to the Ministry of International Trade and Industry's *Basic Survey of Business Structure and Activity*, the number of manufacturers with foreign subsidiaries grew by 18.2% between 1992 and 1995. Expansion into South Asia has been particularly prominent. Companies' domestic research and development has also been in decline since 1991, though foreign R&D is growing. Another factor in the shrinkage of corporate activities is that no sector has emerged as the clear new "leading industry." Industrial policy authorities are worried about the decline of the domestic manufacturing base.

Background

Five factors have contributed to these phenomena: 1) the Japanese economy has passed through the catch-up phase and no longer enjoys the benefits of being a late starter; 2) the values of the Japanese people have changed; 3) economic development in Asian countries and the increasingly borderless nature of economic activities have produced "mega-competition;" 4) society is growing older, and 5) the Japanese-style economic system has reached a dead-end.

The end of the catch-up phase is nothing particularly new but it has been a major factor in the decline in the growth rate. While capital accumulation was a major factor in postwar economic growth, gains in total factor productivity also made a large contribution, and the importation of foreign technology (and its dissemination and improvement) was an important factor in productivity gains. Now that Japan has closed the gap with "frontier" technology it is harder for it to enjoy the spill-over effects of foreign advances. While it has made consistent efforts to create its own innovations, the "batting average" is obviously lower for new technology development than for the importation and improvement of existing technologies.

Not to be overlooked either are the changes in values that have come about as income levels rise. Opinion surveys show a growing tendency to emphasize the enjoyment of life today over preparations for the future. Economic affluence has also brought a stronger emphasis on "spiritual richness" and "leisure." Polls taken around 1970 showed more than 50% of the population "saving and investing for the future" and less than 30% "enjoying the moment." In the nineties this has been reversed. More than half say they are "enjoying the moment." This trend grows more pronounced the older the sample, so the graying of Japanese society is having an effect on Japanese values at the aggregate level. A survey in 1992 found that less than 30% emphasized economic affluence. About 60% said that "income could stay the same if [greater affluence] meant less free time" (*Survey on National Life*, Prime Minister's Office, Public Relations Office[1996]). During the high growth period people emphasized the future and were highly motivated to expand their incomes. It was the aggregate of these personal efforts that produced vigorous competition and economic development. The "Income Doubling Plan" and the various policy incentives would have been meaningless without a motivated public. Naturally, most Japanese today probably would prefer to have more income, but this is merely a wish, working for it is an entirely different matter. Recently government and private think tanks have developed a penchant for calculations of the differences in the long-term economic growth rate assuming Japan does or does not reform its economic structures. I myself was involved in similar calculations about three years ago, and while each study will produce its own figures based on its own assumptions, the general consensus seems to be that there will be a difference of 0.5 - 1.5 percentage points per year in real economic growth in 2000 and 2010. However, if for example 60% of the population has put its values in something other

than income levels and behaves as if current income levels are just fine and another 40% seeks to maximize the expansion in production frontiers (say, by 3% a year) there will be an automatic difference of about 2 percentage points in the economic growth rate. This is greater than the effect of "economic structural reforms." Obviously, these are simplistic, mechanical calculations, but we should still not overlook the impact of changing values. Traditional economic policies and industrial policies are less in tune with the motivations of the public.

"Mega-competition" will continue to exert intense competitive pressures on sectors producing traded goods. However, competition, whether domestic or international, is something that is desirable from the perspective of the economy as a whole. Mega-competition will bring benefits to many consumers, a fact that can be made clear by a trip to the local discount store. Many point to the adverse effects of mega-competition as a cause of wage stagnation, wage reduction, or expanding wage gaps. Empirical analysis in Europe and the U.S., however, suggests that international competition at least is not responsible for these problems (Krugman and Lawrence[1993], Lawrence and Slaughter[1993], Richardson [1995]). The major factor is domestic technological change. We have arrived at similar conclusions for Japan as well (Tachibanaki et al.[1996a]).

The basic issues concern the process of short- and medium-term adjustment—how to deal with the industrial and employment adjustments from industries that competition has put into decline? The countries of Europe and the U.S. faced similar problems when they were exposed to competition from Japan. Though there may be differences of degree, Japan can also look to its own history for similar experiences: adjustments in the coal industry with the advent of the "energy revolution," measures for the textiles industry, measures for industries subject to structural slumps after the oil crises and for the jobs consequently lost. This is not something that is new from a qualitative perspective. The magnitude is, however, much larger than in the past.

Another major factor for structural change is the aging of the population and the decline in the birth rate. The productive-age population (15-64) peaked in 1995 and is now in decline. In 2007 the total population is forecast to start declining. By 2015, one in four Japanese will be elderly. The general understanding of a rapidly aging population—a sharp increase in the non-productive age groups—is that it increases the burdens on the working generations and therefore pulls the rug out from under economic growth. If institutions and systems are considered givens, then a certain level of economic growth must be maintained or the working generations may face a decline in their take-home income.

However, graying by itself does not automatically signal productivity declines. The opposite case could be made that short average life expectancy mean that the accumulated stock of human capital is wasted before it is sufficiently "depreciated." Cross-country analyses of economic growth routinely use average life expectancy as well as school

enrollment rates as proxies for the quality of human capital. There is a significant, positive correlation between long life expectancy and high economic growth rates.⁴³ Where the problem lies is in the fact that social systems are out of synchronization with the reality of 80-year life expectancy. The social security system and medical insurance system sap the elderly of any incentive to work. Practices like mandatory retirement and long-term employment are now encouraging the *salarymen* who are the mainstay of Japanese economic activities to take early retirement. A college-educated person who retires at 60 has had a useful life as human capital of 30 some odd years, which is far too short in comparison to the length of the investment. Obviously there need to be income transfers to the very old and the infirm, but generally speaking useful life could stand to be a bit longer. Obviously, were this to be done, there would need to be "renewal" investments along the way in the form of re-education and re-training.

In connection with these points is the most basic problem of all, the fact that the "Japanese-style economic system" has reached a dead-end. Japan's traditional economic system has been suited to "absorption" and "improvement," but not to "creation" and "break throughs." Most of our systems are suited to high growth by a late-developing country: long-term employment, the formation of skilled workers by long-term competition within the company underpinned by a seniority wage system, the main bank-centered funding and corporate monitoring systems, long-term business relationships and subcontracting, government-corporate relations. They are obviously out of synchronization with the situation of today. Generally changes to the system are never easy. Past practice, entrenched interests, and "institutional complementarity" all die hard. But past success are beginning to seem like fetters.⁴⁴

(2) Institutional reform and other measures

The issues described above have prompted the government of Japan to launch a series of "economic structural reforms." The most recent example is the "Program to Reform and Create Economic Structures" (1996). The key words in economic structural reform are "creation of new industries," "rectification of high cost structures," "institutional reform," and "deregulation" (See **Table 9**). There are two aspects to the policy content: 1) institutional reform (including deregulation), and 2) narrowly-defined industrial policy (refer back to **Figure 3**).

In conjunction with these are trial calculations of the macroeconomic effects and industrial structure should "economic structural reform" go through (see **Table 10**). The Industrial Structure Council is turning out economic forecasts almost every year now (1994, 1995, 1996). Economic Council's 1995 report provides a similar view.⁴⁵ "The Program to Reform and Create Economic Structures" defines fifteen new industrial sectors.

The mass media is fond of reporting that little headway has been made in economic structural reform, but a closer look reveals that considerable progress has indeed been made on institutional reform and deregulation. Some of this is not yet realized, but is in the process of realization.

Institutional reform and deregulation

The first layer of policy is that of institutions and infrastructure. At this level, institutional reforms are moving forward in the finished goods market, in the production factors market (labor market, financial market), and in corporate organizations. In the finished goods market, business regulations are being relaxed and the powers of the Fair Trade Commission enhanced. The basic guide to deregulation is the "Deregulation Promotion Plan" of 1995. The major sectors covered are telecommunications, transportation, distribution, energy, and financial services. For example, the Ministry of International Trade and Industry has reformed institutions so as to allow competition in the electric power and gas industries. For the factors market, the regulations governing the labor market and the institutions of the financial and capital markets are being revised (respectively, overhauls of the Labor Standards Law, Worker Referral Business Law, tax breaks for retirement funds, and corporate pension systems; and elimination of regulations on areas of business, enhancements to the over-the-counter stock market, expansion of disclosure requirements, and contraction of public finance). For corporate organizations, modifications to the Antimonopoly Law (elimination of the ban on pure holding companies, relaxation of the "Merger Review Guideline") and modification of Commercial Code (streamlining of merger procedures) are scheduled.

In parallel to this is a new emphasize on creating the physical infrastructure to meet new needs in telecommunications and distribution.

The relaxation of business regulations is an important component of institutional reform and for it to be successful the problem of rent seeking must be overcome. Regulated industries enjoy many rents and their workers share in them ("labor rent sharing"). The existence of these rents has been confirmed, for example, for the heavily-regulated broadcasting and financial services industries (Tachibanaki et al. [1996b]).⁴⁶ For these industries, rents produce more than just the static inefficiencies of high prices and under-supplies, they also result in negative dynamic inefficiencies in the form of stagnant innovation. In addition, many of the regulated industries supply the inputs for the manufacturing sector (the "user industry"), which is subject to international competition, and this produces large distortions in the industrial structure. Furthermore, while the basis of any economic incentive is to reward the efforts of the individual, rents produce an "unearned income" that has a detrimental influence on already low workermoral. It is therefore important from the perspective of both efficiency and fairness to deregulate these industries. However, the industries themselves can be expected to exert whatever

political clout they can to maintain their rents, which will make reform extremely difficult within the process of real-world political decision-making. A national consensus is unlikely to be built around the idea of minor gains in efficiency or the growth rate. But public interest in recent years has shifted away from efficiency and economic growth (expanding the pie) to income distribution (how the pie is cut). For deregulation and institutional reform to achieve wide acceptance it may be effective to emphasize not only the economic efficiency to be gained (the improvement in income levels) but also question of fairness (income distribution) and the remedying of informal income transfers (rents).⁴⁷

If the Japanese economy is truly at a dead-end as a system, then it is not just institutions but the "practices" voluntarily created by industries, companies, and workers that must be changed. What the government must do, however, is to change the legal framework. For example, long-term employment is strengthened by the labor laws and tax system and as long as these are givens there will be little incentive for companies and workers to change their practices. Indeed, changes might put them at a disadvantage. Whether or not new practices will form because the government has changed the basic institutions in which markets and companies function will be up to the independent behavior of private economic actors.⁴⁸ However, the assumption of new institutions leaves absolutely no room for relevant narrowly-defined industrial policies.

From the perspective of the Ministry of International Trade and Industry, most basic institutions and physical infrastructure is under the jurisdiction of other agencies and not something it can change on its own. However, history shows "coordination" between agencies on basic institutions and infrastructure to be common. During the early Meiji years and the transition from postwar reforms to high growth, policies were coordinated with the ultimate goal of economic development in mind. The measures that have been discussed in this paper are not possible only with narrowly-defined industrial policy; they will obviously require coordination within the government. There are, however, some institutions in which the Ministry of International Trade and Industry has a large say, for instance, intellectual property rights and standardization.

Narrowly-defined industrial policy

On the second tier of policy, that of narrowly-defined industrial policy, possible measures to deal with "hollowing" include: 1) promotion of new companies, 2) support for business conversions at existing companies, 3) activation of regional industrial concentrations, and 4) assistance for technological advances (see Industrial Structure Council [1996]).⁴⁹ These responses correspond well to current challenges and there is strong theoretical support for technology policy in particular. Unfortunately, it does not appear as if these responses are having a marked effect.

It may also be that policies for non-manufacturing sectors are still inadequate. It

used to be that the parts subcontractors were the decisive factor in the productivity of the machinery industry, Japan's leading sector, and while they certainly continues to be important today, it is the business services industry that is taking on greater latent importance as an object of narrowly-defined industrial policy. Many business services are industrial inputs that are impossible to trade. Today, the degree of quantitative and qualitative enhancement in an industry will in many cases influence its productivity and location.

For the foreseeable future the priority in industrial policy, or in the role of MITI, should be on institutional reform. There may be reason for transitional policy intervention along the way to encourage the switch to new systems. For example, assistance measures with time limits might lessen the social adjustment costs of deregulation.

The question is what the role of narrowly-defined industrial policy will be after the new institutions and systems have been put in place, and this is a difficult question to answer. Industrial policy probably has only a very small role to place in the development and promotion of growing industries. The role of industrial-promotion policies is diminishing from a historical perspective and this trend shows no sign of changing.⁵⁰ The relative effectiveness of incentives in the form of "assistance" is also declining. Compared to the expansion in private-sector activities, the expansion in assistance amounts has been small, and the budget constraints will only be growing tighter in the future. Meanwhile, financial liberalization has already greatly reduce the significance of government lending.

This does not, however, mean an immediate diminishment of the role of the Ministry of International Trade and Industry (or the "Ministry of Industry and Economy"). At the very least, its role in enforcing the rules (domestic laws and international disciplines) will grow, particularly in the area of trade policy, which will require enhancement and enforcement of international institutions (specifically, the WTO system). Doing a serious job of this will require a large staff. There are also many individual policy challenges that will require the design of institutions that better utilize market functions (for example, recycling and modal shifts). Other challenges facing the ministry are discussed below.

It is quite likely that "adjustment" of declining industries will take on more importance in narrowly-defined industrial policy. Even with institutional reforms, the economic growth rate will probably slow. Meanwhile, "mega-competition" will bring about ever sharper swings in industry fortunes. This situation carries the pursuit of selfish interests by trying to maintain the status quo in incomes and rents (entrenched interests). The handling of decline, withdrawal, and protectionist pressures will therefore be important.⁵¹ Since there will be few or no industries on which to focus forward-looking industrial promotion policies, the power of pressure groups from

this direction will be small. Industry associations generally only form after the industry has to a certain extent established itself. By contrast, adjustment policies for declining industries will come up against entrenched industries and their workers, who will bring enormous political influence to bear.⁵² This is what makes backwards-looking industrial policies far more difficult to handle than forwards-looking. History bears this out. Europe and the U.S. often resort to protectionist trade measures (antidumping duties, safeguards, VERs) for declining industries and it is not uncommon for these measures to be long-term. In Japan, measures to rescue specific companies are almost inconceivable, but the rescue of specific companies in trouble is not unheard of in the West. Germany has rescued Volkswagen, Britain Rolls Royce, and the United States Harley Davidson. We have already seen that Japanese industrial policy (regardless of its effectiveness) has been pursued at relatively little cost. Japan has almost never taken border protection measures for declining industries (agriculture being the one exception). Generally, however, Japanese companies are bad at "exiting," so the costs may be rising in the future. Indeed, the coal and textiles industries provide past examples of how large the costs can grow.

It might be possible to reduce these influences if institutional reforms to the labor, financial, and capital markets facilitate the free movement of production factors between industries. That is probably wishful thinking, however. Even in the United States, which is far faster to make employment adjustments than Japan, protectionist pressure has resulted in a plethora of protectionist policies. Generally protectionist trade measures (safeguards, antidumping duties) transfer more benefits to the industries in question than would domestic assistance policies (subsidies), which must live within budget constraints. However, they have large negatives for the economy as a whole in the form of static deadweight loss, X-inefficiency, and dynamic inefficiency. Our giant trade surplus has in recent years served as a large political restraint on protectionist policies in Japan, but over the long term that surplus is likely to close and could even turn into a deficit. This will have the effective reducing both the international constraints and the psychological resistance to protectionist trade policies.

MITI is currently very cautious about enacting safeguards, which is why it has been able to avoid the situation that many countries in Europe and North America find themselves in. Still, one of the major challenges for the future will be to minimize politically-motivated economic negatives. Important in this will be the administration of the Ministry of Labor's "industrial policies"—the employment insurance system and employment adjustment assistance programs.

Administrative, judicial, and educational reform

Finally I would like touch very briefly on administrative reform and other issues that impinge on economic structural reform. Several scandals among the bureaucracy made administrative reform a major focus in the last national elections. While it may have seemed as if administrative reform was the only issue, reform the judicial and educational

systems are also important.

The debate on administrative reform focuses on reductions in organizations and staffing, consolidation of central government agencies, privatization, information disclosure, and decentralization of authority. All are important issues. I personally see two essential questions in this: 1) a rethink of the division of roles between the government and private sectors (particularly as relates to such government businesses as the post office, hospitals, and universities), and 2) information disclosure and the related issues of systematic information storing.⁵³

There is also a debate on judicial reform though it has not attracted nearly the interest of administrative reform and unfortunately is not included among the Hashimoto government's "Six Major Reforms." Deregulation and less interference by the bureaucracy will not guarantee that private economic actors alone will get the markets to function. Even if deregulation lowers costs, market transactions will not function if even greater costs are incurred in the enforcement of self-accountability. If ex ante "coordination" is to shift to ex post dispute resolution, then the judiciary will be taking on a greater role in the infrastructure for market transactions. But Japanese courts currently cost too much both in terms of time and money. We have too few judges and lawyers. While there have been expansions in the bar exam quotas, they have been negligible in comparison to the growth in demand. The biggest reason is that the "law industry" is a very powerful pressure group. Barriers to entry currently give lawyers enormous rents. But enhancement of the judiciary system is urgent if the infrastructure for self-accountability in market transactions is to be put in place. In this connection it may be useful to recall that one of the first things done in the Meiji Period was to lay the foundations for market transactions and market competition. If progress cannot be made in reforming the judiciary itself, administration may need to establish and expand their dispute settlement systems.

Education is also an extremely important factor in economic development. What Japan currently requires are people who are creative and independent, and this in turn requires an education system capable of producing this new kind of human capital. Competitive mechanisms are what is needed. It would be desirable to deregulate private universities and to privatize national universities and graduate schools. There is also much to reform in the elementary and middle school systems. Children must be taught to value difference and diversity rather than homogeneity. Privatization at this level is one option.

5. Conclusions

In conclusion I would like to sum up the major points made in this paper. There are three main points with respect to the role of industrial policy in past economic development:

1. The key factors in Japanese economic development were quality of human capital, vigorous competition between companies, international openness and the resulting competitive pressures and acceptance of foreign technologies, and personal motivation for high growth. In other words, the basic factor was private-sector vitality.

2. Where government intervention has played an important role in economic development has been in policies for appropriate institutional reform and physical infrastructure creation—factors outside of "narrowly-defined industrial policy." Recent theoretical studies show the latent potential for industrial policy to be effective, but there is little evidence of empirical effectiveness. The role of narrowly-defined industrial policy in industrial promotion is secondary and has declined over time.

3. However, there are few cases in which industrial policy has actually proved harmful to Japan and it was not an impediment to growth. There were indeed some aspects of it that were effective, if only marginally so. Japanese industrial policy fit the economic system as a whole, and behind this can be seen the skill with which industrial policy was administered. The fact that the economy as a whole was achieving high growth also made it easy to prevent the negative aspects of industrial policy from surfacing.

There are also four points to be made concerning the future role of government action and industrial policy in Japan:

1. Institutional reform is essential to dealing with the challenges that Japan currently faces. This could be a reform period every bit the equal of the Meiji Restoration or the postwar reforms. The focus of industrial policy for the foreseeable future should be on these aspects.

2. Among narrowly-defined industrial policies, the handling of backwards-looking adjustments is likely to be of major importance. The experience of other countries indicates that backwards-looking industrial policies rarely function effectively. Japan has luckily had very few cases of such policies, but judging from its limited experience with them, it cannot be an exception (agriculture, coal, textiles etc.)

3. Industrial policy has changed to keep pace with the times and will continue to do so. Much of this will be a process of trial and error and it is extremely important that failed policies be quickly curtailed. This in turn makes ex-post evaluation of industrial policy of critical importance. Once there has been policy intervention, both the demand side (industrial pressure) and the supply side (politicians and bureaucrats) tend to be loathe to abandon it. In that sense it would be worth considering the

establishment of a bureau within the Ministry of International Trade and Industry to evaluate policy.

4. The building of these new economic systems will require not only economic structural reform and administrative reform but also judicial reform and educational reform.

Notes

1. The opinions expressed in this paper are solely those of the author and may not reflect the opinions of Saitama University or the Ministry of International Trade and Industry. Modified version of this paper is presented at a seminar sponsored by Soka University and Nanyang Technological University.
2. For the purposes of this paper, the term "institutions" will refer to the law as and regulations established by the government; "systems" adds the "practices" of private economic actors to this.
3. Harada and Kosai [1987] note the importance of these two reforms from the perspective of building institutions that restrained rent-seeking activities.
4. For the last decade or so there has been a growing interest in other countries about Japanese industrial policy and numerous comments on MITI policy have been requested. Most of these requests are from developing countries and marketizing economies, but, at least prior to the bubble, there was great interest in the "Japanese miracle" among the developed countries of Europe and North America as well. In general, the explanations have focused on industrial policy since postwar reconstruction. There are two primary reasons for this. First, on the demand, side, Japan's "high growth" is famous overseas and it is this period that other countries are interested in. Second, on the supply side, the leading literature providing a comprehensive overseas of Japanese industrial policy—Tsuruta[1982], Komiya et al.[1984], and MITI[1994]—has covered only the postwar period and it is this upon which most systematic explanations are based.
5. I personally do not place much credence in the "replicability" of industrial policy, though I would allow that *failed* industrial policies might serve as useful lessons. Even if the prescriptions of neoclassical economics are not panaceas, it does not immediately follow that there is value in trying to transplant industrial policies.
6. Even in the 1930s and 1940s about half of the population worked in primary industries (though secondary industries were already on top in terms of production value).
7. Another important group of policies in the prewar period were the economic control policies that began to be seen in the mid-thirties. These policies ultimately contributed to the development of Japanese heavy industry, and many of them continued to have an impact on the economic systems of postwar Japan. We do not deal with control policies in this paper, however, because they were special policies peculiar to wartime. The creation

of monopolies, the imposition of economic controls, and the closing of an economy are all basically incompatible with sustainable economic growth.

8. Japan partially regained the right to set its own tariffs in 1899 and had fully regained it by 1911. Later in the twenties tariffs underwent a large-scale revision that resulted in high rates being imposed on heavy industrial goods. The country also adopted a "tariff escalation" in which the level of protection became higher the greater the degree of processing: raw materials, intermediates, finished goods. Unlike textiles, import substitution in heavy industrial and chemical sectors was accomplished under protectionist policies.

9. There were also some positive "initial conditions" inherited from the Edo Period: 1) literate human resources (43% of men and 10% of women in 1868), 2) transportation infrastructure in the form of a road network and domestic shipping, 3) export goods in which Japan had a comparative advantage, namely silk thread and mineral resources (copper and silver).

10. To this was added a program of tariffs after Japan gained the right to set its own tariffs (1911).

11. In 1896 a subsidy was introduced to promote exports of silk thread (under the "Silk Thread Direct Exports Promotion Law"). However, it was abolished after just two months because of foreign opposition.

12. There were also some backwards-looking industrial policies like the "Industrial Rationalization Policy" of the thirties, which imposed uniform standards and mandatory cartels, encouraged corporate groupings and the banding together of smaller enterprises. In 1937 these indirect controls became direct controls.

13. There are many other important industrial policies that are not included in this: small business policy, energy policy, regulations on non-profit businesses, policies to encourage industrial adjustments, and trade negotiations. However, the topic of this paper being the relationship of industrial policy to industrial and corporate development we have concentrated only on those policies that are directly relevant.

14. One exception is Miwa[1993] who argues that the anti-concentration policies had almost no effect.

15. This does not take into account the rents from foreign exchange quotas, quantitative restrictions on imports, or protectionist tariffs.

16. During cyclical downturns the problem of over-capacity loomed and this period is marked by "recession cartels" and government-led production adjustments. However, some argue that these policies functioned as "safety valves" and therefore became a factor for active capital investment during boom times. In other words, they actually made "excessive competition" more intense.

17. Even still, there were many large mergers in the late sixties and early seventies.

18. Capital liberalization (the liberalization of incoming direct investment) was a bit later in coming. The basic guidelines were not determined until 1967. The five liberalizations that occurred between 1967 and 1973 resulted in capital movements being 100% free in all but a few special exceptions. Regulations on foreign capital were kept in place longer than import restrictions and resulted in policies biased towards domestic companies (cold treatment for foreign capital companies). This is one of the most prominent characteristics of Japanese industrial policy and stands in sharp contrast to the rigorous non-discrimination between individual companies.

19. The average tariff on mining and industrial goods is today about 2%, which converted to rent subsidies is roughly worth something in excess of ¥2 trillion, a figure that is far greater than the monetary value of industrial subsidies, government financing, and policy-driven tax breaks (estimated at a total ¥500-600 billion). In as much as tariff rates were much higher during the high growth period than they are today, we can assume that their relative weight was also greater.

20. Obviously, there are also some points that the prewar and postwar periods have in common. For example, in both periods the scheme employed was to provide financial assistance to companies that met certain criteria. The tariff escalation for heavy industrial and chemical products imposed after Japan gained the right to set its own tariffs (1911) is similar to the tariffs employed during postwar trade liberalization. Parts of the industrial rationalization, merger and concentration policies of the fifties were similar to the industrial rationalization policies of the thirties in that they provided assistance to larger-scale companies and used cartel-like methods.

21. Even today industrial policy has a strong tendency to emphasize manufacturing. One need merely look at an organizational chart of MITI to see how few departments are actually charged with the promotion of non-manufacturing sectors. Among them the information services sector has received a comparatively strong push, but here again the initial orientation was towards hardware.

22. Itoh et al.[1988] provides a comprehensive overview of the theory of industrial policy.
23. For a survey of strategic trade policy theory see Krugman[1989], Honda et al.[1994], Tomiura[1995], Brander[1995].
24. For a theoretical survey see Itoh et al.[1988] chapters 16-20; Reinganum[1989]; or Scherer and Ross[1990] chapter 17.
25. Grossman[1990] provides a very lucid overview of the theoretical limits and problems of industrial policy. Working from a theoretical standpoint, he divides industrial policy into: 1) subsidies for marginal exports, 2) assistance for industries with economies of scale or learning effects, 3) assistance for industries with externalities, 4) intervention to remedy imperfections in the capital markets, and 5) intervention with barriers to entry based on reputation for quality.
26. In fact, it is even difficult to make an indirect evaluation of expected "coordination," which is why this section relies on anecdotal evidence.
27. Bell et al.[1984] surveys the research that has been done on infant industries in developing countries and finds that most policies to protect infant industries fail to achieve international competitiveness.
28. One exception is Lee[1993], which uses a computable general equilibrium model (CGE) of the Japanese economy to find that Japanese industrial policy was indeed effective. This model takes oligopolistic markets (economies of scale) into account.
29. There is, of course, the question of whether the protectionism (priority use of domestic products) upon which this analysis rests in fact existed.
30. Here too, however, the problem of sample selection bias rears its head and it would be wrong to conclude that joint research and development is generally effective. Analysis of joint research and development projects in the U.S. indicates that projects may be unsuccessful depending on how they are managed (Katz and Ordover[1990]).
31. On the other hand, Sekiguchi[1989] says the effects of employment adjustment subsidies were not all that pronounced. The US has a policy called "trade adjustment assistance (TAA)" that uses increases in imports to help workers who have lost their jobs. From a politico-economic standpoint this policy is praised for reducing protectionist pressures (Aho and Bayard[1984]).

32. It is also likely that regulations on non-profit operations, the patent system, and energy policies after the oil crisis were also meaningful, though they have rarely been the subject of empirical economic analysis.

33. As noted above, the amount of money spent on policies to promote specific industries or export promotion policies is not all that large. It may be that the effectiveness of the incentives mechanism (the creation of a contest) is more important than the actual gains in production value and exports for the industry promoted.

34. The areas in which the detrimental effects of regulation are pointed to today—transportation, telecommunications, broadcasting—are for the most part areas in which hard policy tools were resorted to.

35. The Beason and Weinstein[1966] analysis can be interpreted differently from this perspective. It is possible that had there been no industrial policy that policies would have had even more bias towards low-growth industries. Industrial policy's allocation of resources to high-growth industries might have had something of a remedial effect. In this case, the interpretation would be that while industrial policy was not bad the Ministry of International Trade and Industry was relatively powerless politically.

36. The building of physical infrastructure is not under the jurisdiction of the Ministry of International Trade and Industry except for a few limited cases such as industrial water supplies. However, industrial location policies are one of the Ministry's more important industrial policies and during the high growth period the programs to create infrastructure for four major industrial zones and the Pacific industrial belt became an key industrial policy that was enacted in coordination with other ministries and agencies.

37. Some also point to low military spending, small government, and equal distribution of income.

38. However, capital accumulation does not have a perpetual growth effect.

39. See Romer[1986 and 1990], Lucas[1988], Grossman and Helpman[1991], and Aghion and Howitt[1992].

40. See Greenwood and Jovanovic[1990], Bencivenga and Smith[1991], Saint-Paul[1992], Berjee and Newman[1993], and Perotti[1993].

41. On the other hand, Japanese restrictions on incoming direct investment are an example of industrial policy that is clearly at odds with theory.

42. This is, however, because growth is seen as a "rate." If current conditions are looked at in terms of the "amplitude" of growth, the impression is quite a bit different. Growth of 1% today brings an increase in income that is equivalent to what 6% growth would have produced in 1960.

43. However, these empirical analyses include developing countries. It has not been confirmed whether the trend holds true for developed countries.

44. Debates on Japanese-style economic systems tend to emphasize the economic theory behind the practice of long-term employment itself or behind the "institutional complementarity" between it and the main bank system. From an empirical standpoint, however, it is not clear just how rigid this really is. I personally do not think that "institutional complementarity" is a decisive impediment to changes in the system, first because even in the past only about 30% of all workers were actually employed in "long-term" jobs, most were fluid; and second because even though it is a fact that main banks have influenced corporate behavior in the past, there have been many exceptions to that rule as well.

45. Having become a front runner, it is now harder for Japan to forecast its industrial structure since it can no longer look to the example of more advanced economies. It is therefore unlikely that there are any corporate managers who believe the council's views literally and use them as a basis for decision-making. Little in the way of "coordination" effects can be expected from the reports any more. The outlooks are not so much forecasts as a convenient way to make the case for adopting certain policies.

46. Industries with high wages even granting the need to control the quality of workers include broadcasting, financial services, and electric power. Among manufacturers, the printing, publishing, and petroleum sectors are also high. All of these industries are regulated. Broadcasting in particular enjoys the rents both from licensing and from allocations of frequencies, and wages in this sector are close to 60% higher than the all-industries average. What is needed to remedy this is a system to auction airwaves. There are no business regulations in printing and publishing, but they face little international competition. The resale price maintenance system also has an influence.

47. Similar problems can be found in the reform of public works and social security. The impediments here are entrenched interests.

48. But from a broader perspective the "institutions" themselves are endogenous variables. In a democracy it is impossible for a "rational" government to design institutions independently. Legal institutions must ultimately be determined by the votes of the people

and the behavior of pressure groups.

49. "Hollowing" is generally understood as a decline in the weight of manufacturing and the transfer of production overseas. Generally, however, these are not essential issues. Policy responses are only required 1) when these phenomena are occurring because there are distortionary factors, or 2) when the existence of external economies has produced a gap in the social discount rate and personal discount rate of the presence of domestic production. The goal of industrial policy is often said to be strengthening international competitiveness. International competitiveness is a very problematic concept from an economic standpoint but has the virtue of being easily understood. The term "hollowing" as used today is a convenient, easily comprehended way to argue the need for policy action.

50. The perceptions of the efficacy of industrial promotion policies (and of the influence of MITI) is different for different generations of MITI officials. While there are differences among individuals, the tendency is for there to be a greater perception of their effectiveness among older officials. This trend probably reflects the decline in the effectiveness of industrial promotion policies over time.

51. Jensen[1993] argues for the importance of "exit" issues from the perspective of corporate governance.

52. Theoretical analysis with a specific factor model shows that when specific production factors exist the interests of the capitalists and workers in an industry facing decline match (this is not the case when factors are free to move), and this brings political pressure in the form of worker-management solidarity.

53. Advocates of consolidation in the central government point to "compartmentalized administration" and pathological turf battles to argue that a reduction in the number of ministries and agencies will have an immediate effect. This is a simplistic mistake. A bit of overlap is better for the economy as a whole since it gives scope for marginal competition (among the bureaucracies, see Niskanen[1994] for further discussion of the importance of competition between bureaucracies). Some also point out that competition between bureaucracies will have a restraining effect on corruption (Shleifer and Vishny[1993]). In policy coordination it is often the case that coordination among different agencies functions better than coordination within a single agency.

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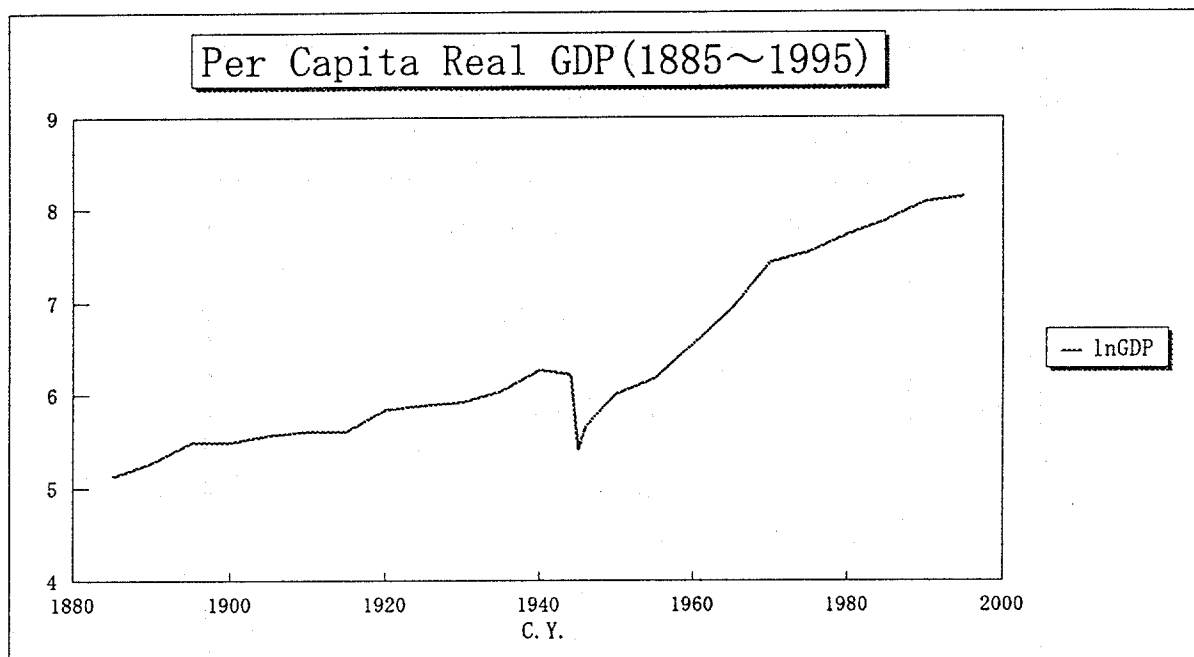
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【 Table 1 】 Japanese Per Capita Real GDP (Comparison with Other Countries)

Year	Income Level (1990=100)	Today's Corresponding Country
1859	1~2%	China, Pakistan, India
		Philippines, Indonesia
1885	5.2%	Peru, Colombia
1915	8.4%	Thailand
		Turkey, Brazil, Malaysia
1937	14.0%	Mexico, Hungary
1953	14.1%	
		Taiwan, Korea
1975	58.4%	Singapore
1990	100%	

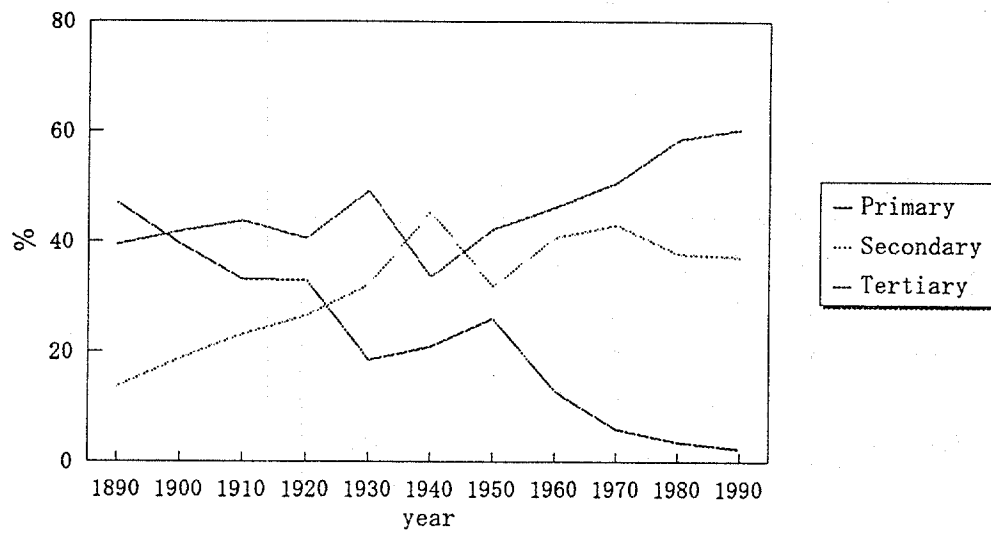
*Japanese Long-term Data was taken from Mizoguchi[1996].

【 Figure 1 】 Japanese Long-run Economic Development (1885 ~ 1995)

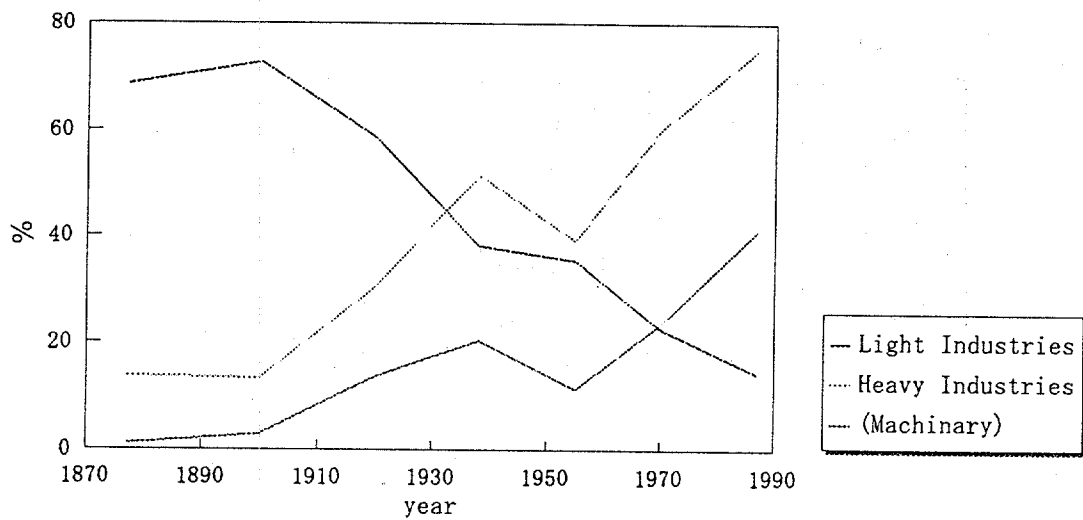


[Figure 2] Japan's Industrial Structure

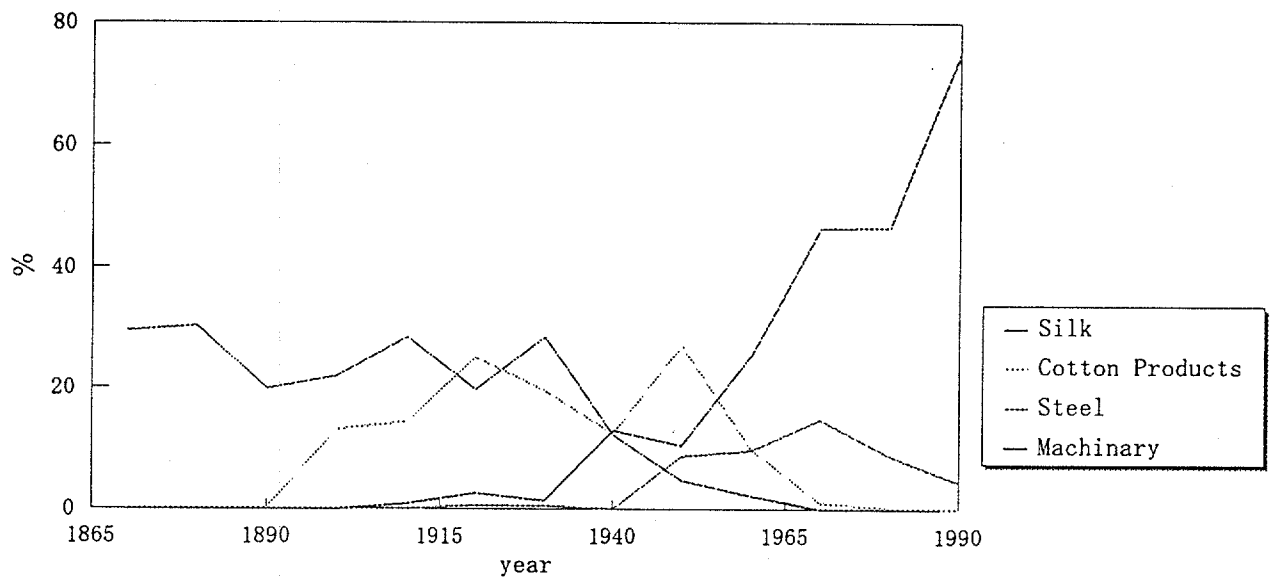
(1) Industrial Structure (GDP)



(2) Composition of Manufacturing (Output)



(3) Composition of Export



【 Table 2 】 Number of Companies

(1) Prewar Period

Year	1884 (A)	1939 (B)	B/A
Number of Companies	1,492	85,122	57.0 (7.6% /year)

(2) Postwar Period

Year	1949 (A)	1993 (B)	B/A
Number of Companies	207,910	2,561,830	12.3 (5.9% /year)

【 Table 3 】 Industrial Policy (Meiji Era ~ W.W. II)

Stage	Major Industrial Policies
1. <i>Early Meiji Era</i> (~1885)	1) Abandon Feudal Regulations: Free Traffic, Free Choice of Occupation, etc. 2) Social Infrastructure: Property Rights, Banking System etc. 3) Physical Infrastructure: Railroads, Post, Telegram etc. 4) Industry Promotion Policy: Government Managed Model Factory, Privatization 5) Free Trade : Forced by Unequal Treaty
2. <i>Industrialization</i> (1885~1914)	1) Social Infrastructure: Enterprise Law, Patent Law, etc. 2) Technology Import, Technology Diffusion: Exhibition, Contest 3) Industry Promotion: Shipping Promotion, Shipbuilding Promotion, National Yawata Steelworks, etc. 4) Restore Autonomy of Tariff Rate Setting
3. <i>Inter-War Period</i> (1914~1937)	1) Industry Promotion: Iron Promotion, Chemical Promotion, etc. 2) Tariff Protection: Strengthen Tariff Escalation 3) R&D Promotion: Set-up National Laboratories 4) Industry Rationalization: Standardization, Cartel, Encourage Use of Domestic Products
4. <i>Wartime Economy</i> (1937~1945)	1) Control Major Industries: Automobile, Steel, Machinery, etc. 2) Overall Control: Capital, Labor, Trade, etc. 3) Autarky: Segmented from International Market

【 Table 4 】 Industrial Policy after the W.W. II

	Major Industrial Policy
1. Reconstruction Period (1945~1952)	1) Economic Democratization: Dissolution of the <i>Zaibatsu</i> , Anticoncentration Policy, Antitrust Law, etc. 2) Priority Production System: Joint Expansion of Coal and Steel Transitional Economic Control 3) Dodge Line (Ultra Stabilization Policy)
2. Economic Independence (1952~1960)	1) Rationalization: Equipment Investment for Rationalization 2) Industrial Promotion Policy: Machinery, Petrochemical, etc. 3) Export Promotion Policy: Tax Incentive, JETRO, etc. 4) Industrial Organization Policy: Prevent 'Excessive Competition'
3. Rapid Growth Era (1960 ~Early 1970's)	1) Trade Liberalization: Step-by-Step Liberalization 2) Industrial Structure Policy: Promote Heavy/Chemical Industries, Export Promotion Policy, R&D Promotion Policy
4. Diversification (Early 1970's ~1985)	1) Energy Policy: Energy Conservation, Substitute Petroleum, etc. 2) Industrial Structure Policy: Create Knowledge Intensive Industrial Structure, Adjustment of 'Structurally Depressed Industries' 3) Trade Policy: Negotiation on Trade Frictions, VETs Reduction of Trade Barriers
5. Recent Stage (1985~)	1) Trade Policy: Expansion of Imports, GATT Uruguay Round, WTO 2) Industrial Structure Policy: Adjustment Assistance, Assistance for New Companies 3) Technology Policy: Promote Basic R&D Strengthen IPRs Protection 4) Industrial Organization Policy: Deregulation

【 Figure 3 】 Social, Physical Infrastructure and Industrial Policy

○ *Industrial Policy* (in the Narrow Sense)

- Subsidy, Financing, Tax
- Tariff, Import Quota
- Industry Regulation etc.

○ *Physical Infrastructure*

- Road, Port, Airport, Telecommunication etc.

○ *Social Infrastructure*

- Property Rights
- Monetary System, banking System
- Enterprise System, Antitrust Law
- Education System
- International Trade Rule (GATT, WTO) etc.

○ *Social and Economic Conditions*

- Resource Endowments, Human Capital
- Geographical Location etc.

【 Table 5 】 Economic Theories Concerning Industrial Policy

Type of Policies	Theoretical Rationale
1. Specific Industry Promotion	<ul style="list-style-type: none"> • Infant Industry Protection (Economies of Scale, Learning-by-doing) • Information Assymetry (Financial/Capital Market Imperfection, Learning-by-consuming) • Strategic Trade Policy (Monopoly/Oligopoly Rents)
2. Upgrading the Industrial Structure	<ul style="list-style-type: none"> • Development of Marginal Export Industry • Coordination Failure, Big Push
3. Export Promotion	<ul style="list-style-type: none"> • Strategic Trade Policy • Learning-by-consuming
4. Technology Policy	<ul style="list-style-type: none"> • Underinvestment (Public Goods Nature, Spillover) • Strategic R&D Policy
5. Adjustment Assistance	<ul style="list-style-type: none"> • Reduction of Social Costs

【 Table 6 】 Empirical Evaluation of Industrial Policy

Type of Policies	Empirical Studies	Conclusion
1. Specific Industry Promotion	<ul style="list-style-type: none"> • Economies of Scale, Learning Effects • Case Studies • Cross Industry Regression • "Cow Bell" Effect (of JDB) 	Found Effective ? Inconclusive (or Negative) Effective
2. Upgrading the Industrial Structure	<ul style="list-style-type: none"> • Productivity Spillover • Case Studies (on "Big Push") • Econometric Analysis 	Found Effective ? Not Exist
3. Export Promotion	<ul style="list-style-type: none"> • Cross Country Regression • Calibration (on Strategic Trade Policy) 	Openness Matters Ineffective
4. Technology Policy	<ul style="list-style-type: none"> • Spillover, Social Rate of Return • Cross Industry Regression • Case Studies (on RJV) 	Exist / High Effective Effective ?
5. Adjustment Assistance	<ul style="list-style-type: none"> • Case Studies • Cross Industry Analysis • Social Cost of Unemployment (U.S. Canada, EU) 	Ineffective (or Harmful) Ineffective Relatively Low

【 Table 7 】 Recent Japanese Macroeconomic Situation

	1991	1992	1993	1994	1995	1996
Real GNP Growth (%)	3.8	1.2	0.3	0.5	1.4	
IIP Growth (%)	1.7	▲6.1	▲4.5	0.9	3.4	
Real Wage Index Growth (%) (Manufacturing Industry)	0.1	▲0.5	▲1.0	1.6	3.6	
Unemployment Rate (%)	2.1	2.2	2.5	2.9	3.2	3.4

【 Table 8 】 "Hollowing" of (Manufacturing) Industry

(1) Domestic Equipment Investment and FDI (Manufacturing Industry)

(FY)	1991	1992	1993	1994	1995
Equipment Investment (Trillion Yen)	87.7	81.4	72.8	70.3	73.9
Foreign Direct Investment (100 Million Dollar)	123	101	111	138	186

(2) Overseas Production Ratios

	1985	1990	1994	1995 (Forecast)
Manufacturing as a Whole	3.0	6.4	8.6	10.0
Electrical Machinery	7.4	11.4	15.0	
Transportation Machinery	5.6	12.6	17.3	

(3) Private-Sector Corporate R&D Spending

(FY)	1991	1992	1993	1994
R&D Spending (100 Billion Yen)	97.4	95.6	90.5	89.8
% Points Change	5.1	▲1.8	▲5.3	▲0.8

【 Table 9 】 Essence of the "Economic Structural Reform"

(Purposes)

1. *Creation of Environment Favorable to New Industries*
2. *Creation of a Business Environment that is Attractive for Japanese as well as Foreign Companies*

(Policy Measures)

1. *Institutional Reform*
 - Easing Corporate Restructuring, Ban on Holding Companies (Revision of Antimonopoly Law), Revision of Commercial Code Rules
 - Create Efficient Financial Market
 - Create Flexible Labor Market, Labor Market Deregulation
 - Strengthen FTC
 - Industrial, Governmental and Academic R&D Collaboration
2. *Deregulation*
 - Deregulation of Promising New Markets
 - Deregulation of High-Cost Services (Transportation, Telecommunication, etc.)
3. *Infrastructure Investment*
 - Infrastructure Conductive to Economic Structural Reform
4. *Incentives*
 - "Business Angel" Tax Incentive, Venture Capital Tax Incentive
 - Invigoration of Regional Industrial Concentrations
 - Promote Private R&D

(Promising 15 Areas (Examples))

- Medical Care, Welfare and Related Fields
- Information, Communication
- Environment and Related Fields
- Business Support Services
- Biotechnology
- Human Capital Related Fields
- New Distribution and Related Fields
- Housing and Related Fields
- etc.

【 Table10 】 Future Outlook for the Japanese Economy (Industrial Structure Council)

		1995	2000	2010	2025
Scenario A	Economic Growth Rate	2.3%	3.0%	2.3%	2.2%
	Rate of Increase of Workers' After Tax Income	1.5%	2.5%	2.0%	1.7%
	Tax and Social Security Burden on Income	36.7%	39.2%	42.9%	45.6%
Scenario B	Economic Growth Rate	2.3%	2.6%	1.8%	0.8%
	Rate of Increase of Workers' Average Net Income	1.5%	1.9%	1.0%	▲0.3%
	Tax and Social Security Burden on Income	36.7%	39.7%	47.4%	60.0%

(Note) Scenario A: Economic Structural Reform Case

Scenario B: Present Economic Structure Case

(Source) Industrial Structure Council[1996].