

III. Economic Activities

1. The Building of Industrial Japan

In 1868, a new government was inaugurated in Japan. One of the national goals set by this Meiji Government was resistance against the might of Europe and the United States which were threatening to overrun East Asia. Modernization of industry as a means to this end became one of the new government's most important concerns. However, more was intended by modernization than a mere modernization of the indigeneous handicrafts and manufacturing. The Meiji Government imported directly the most up to date technology from the developed nations and planned to modernize as effectively as possible within a short time. Early on, scholars and engineers were invited from America and Europe, machinery was imported and existing scientific technology was mastered. In this way, Japan was able to benefit from the experiences of the developed countries as modernization progressed. Moreover, Japan already possessed a background which made rapid modernization possible. Manufacturing by hand was already established throughout the nation so its population was skilled in basic technics. Further, the early spread of primary education everywhere had produced a population with a high literacy rate, and a system by which new information could be quickly disseminated was already in operation.

A lack of private capital meant that the early modern industries were established under government aegis. These government run enterprises developed mineral resources and built up the heavy industrial base necessary for military expansion. Steel, shipbuilding and armaments are examples. On the other hand, private capital was invested from early on in the textile industry, the star exporter during early modernization. Silk production increased in the inland breeding areas and the cotton industry expanded rapidly along the Pacific coast as more and more raw materials for cotton spinning and weaving were imported. From the end of the nineteenth century to the beginning of the twentieth, Japanese heavy industry was gradually developed through the export of light manufactured goods such as raw silk, cotton, cotton goods and porcelain, mineral resources such as copper ore, and agricultural products such as tea, which financed the import of heavy machinery.

As in Europe and America, the development of Japanese industry was also closely related to war. Both the Sino-Japanese and Russo-Japanese wars were more than just spurs to developing the metal and machinery industries: they

furnished indemnity money for the victor, Japan, which could be invested in the new industries and also enabled the Japanese to expand their market for manufactured goods into China. Soon after, industrial products from Europe decreased sharply because of the First World War, creating a favorable climate for the establishment of Japan's heavy and chemical industries. Thus Japan, which had increased productivity, was able to expand into the Asian market. During this period Japan annexed Korea and Taiwan, made military forays into China and Southeast Asia and struggled bitterly with the United States over the control of markets and resources. Unlike Europe, which had spent more than three hundred years in its colonization of Asia, Japan, the late developer, challenged the system of regional administration established by Europe and the United States and planned the military subjugation of East Asia, all in the space of a mere fifty years. Thus, Japanese industry developed against a background of military expansionism until the country's devastating defeat during the Second World War.

Japan's industry was totally destroyed with its defeat. Ironically, what saved it was the confrontation between the victor nations, the United States and the Soviet Union, and the wars in East Asia. With the onset of the "Cold War" between the United States and the Soviet Union after the Second World War, the American fear of a communist takeover in the area led them to pump military and economic assistance into the area. The development of the Asian NICs (NIES) also owes a great deal to this assistance. In Japan's case, the demands created by the Korean and Vietnam Wars provided a favorable fillip to economic activity.

Although this confrontation provided an opportunity for economic revival, it cannot be said that modern Japanese industry was developed to meet military demand. The industry which was rebuilt under the "Peace Constitution" centers on civilian demand. The civilian market, unlike the military, does not guarantee secrecy or monopolistic production and it is difficult for a company to completely dominate any particular technology for a protracted period. Instead, companies must constantly develop new models and adopt a marketing strategy of short-term planned obsolescence. Subsequent new production technology and management techniques enabled Japanese corporations to penetrate the markets in the developed countries of Europe and North America.

Peculiarly Japanese corporate structures and business practices have had much to do with the country's rapid postwar economic development. Traditionally, business in Japan has been concerned more with the pursuit of long-term profits, minimizing the short-term distribution of profits to shareholders and ploughing profits back into the company. This tradition has enabled heavy investment into the expansion of production, more efficient management and the

development of the latest technology, and has increased Japan's international competitiveness. In addition, "labor harmony", created by lifetime employment, stabilized business and increased companies' ability to enter new fields. During the period of highest economic growth in the 1960's, average salaries were low in comparison with the US and Europe but this was the period when the Japanese succeeded in laying the management foundations which made companies big.

National prosperity based on this kind of Japanese-style business seems difficult to comprehend in societies where the rights of the individual take precedence over those of the group. "Labor harmony" is very advantageous to managements but it has been criticized as being one of the causes of the lack of improvement in the working conditions of the labor force. Undeniably, labor prosperity has not kept pace with the growth in national economic power, yet the Japanese "industriousness" which differs so starkly from western concepts has succeeded in creating a society with a hitherto unknown level of prosperity and one in which the gap between rich and poor is so narrow. Of course, this does not mean that the Japanese totally concur with their past economic development. More and more, the pros and cons of rapid economic development are being re-examined, such as the destruction of the environment, the regional imbalance in economic development and the over-concentration of population in some areas and depopulation of others.

2. A Regional Imbalance in Economic Development

A major problem confronting modern Japan is a regional imbalance in economic development. The extent of this problem can be appreciated by examining the regional differences in income, the structure of the industrial population and the distribution of Japan's population.

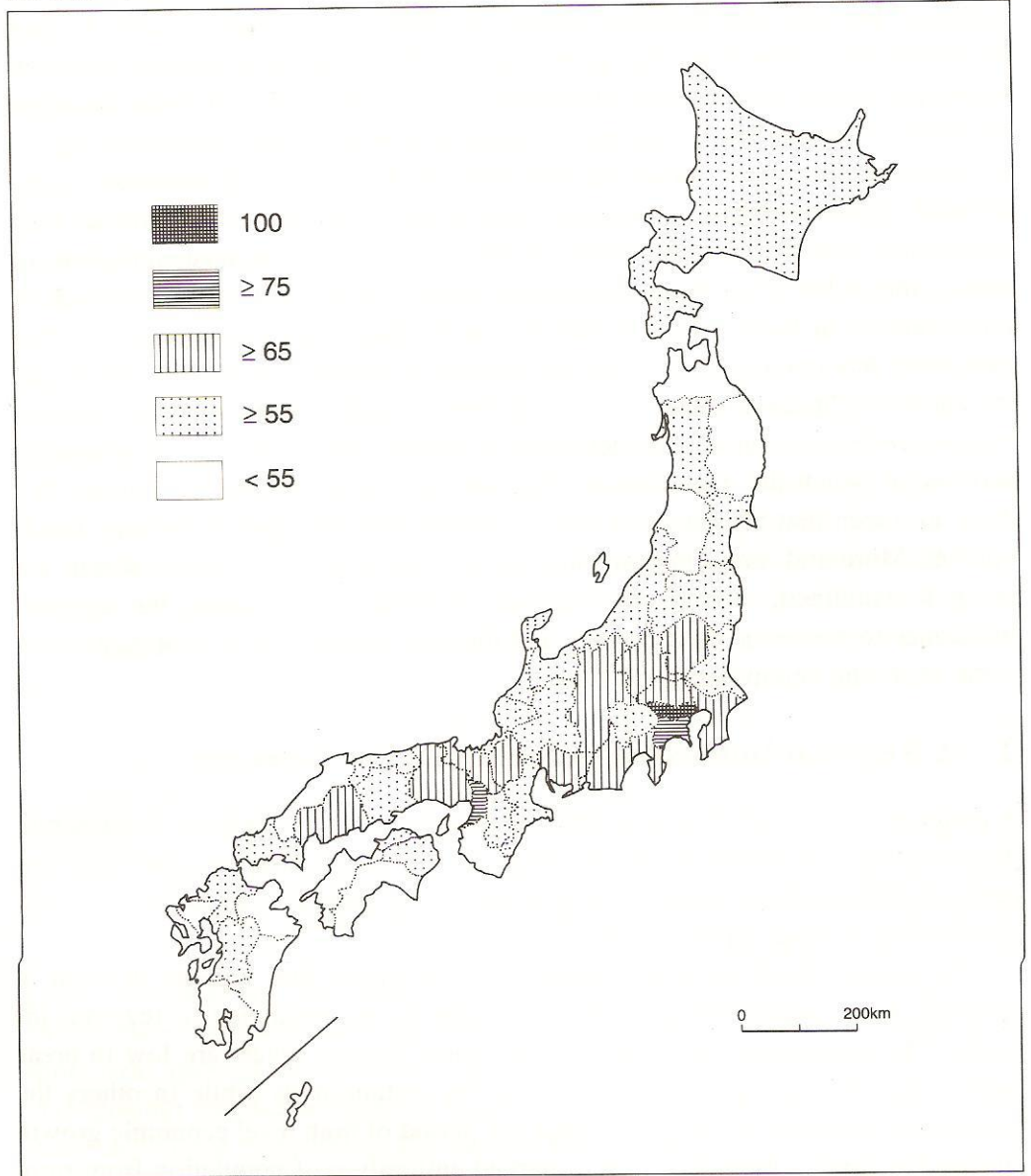
No matter where or when, human history shows that regions develop at different rates industrially and this gives rise to an imbalance in regional income. The population moves from areas where income levels are low to areas where they are high giving birth to cities in certain areas while in others the population continues to emigrate. Since the period of high level economic growth during the 1960's, there has been a marked emigration of population from rural areas in Hokkaido, Tohoku, Shikoku and Kyushu and an over-concentration of population in the metropolitan districts of Tokyo, Osaka and Nagoya.

Chart 10, A and B, illustrates this extreme regional imbalance in income levels. They also reflect the changes which have taken place in the infrastructure of Japanese industry which is described in the next section: the concentration of

Chart 10. Income per Head of Prefectural Population

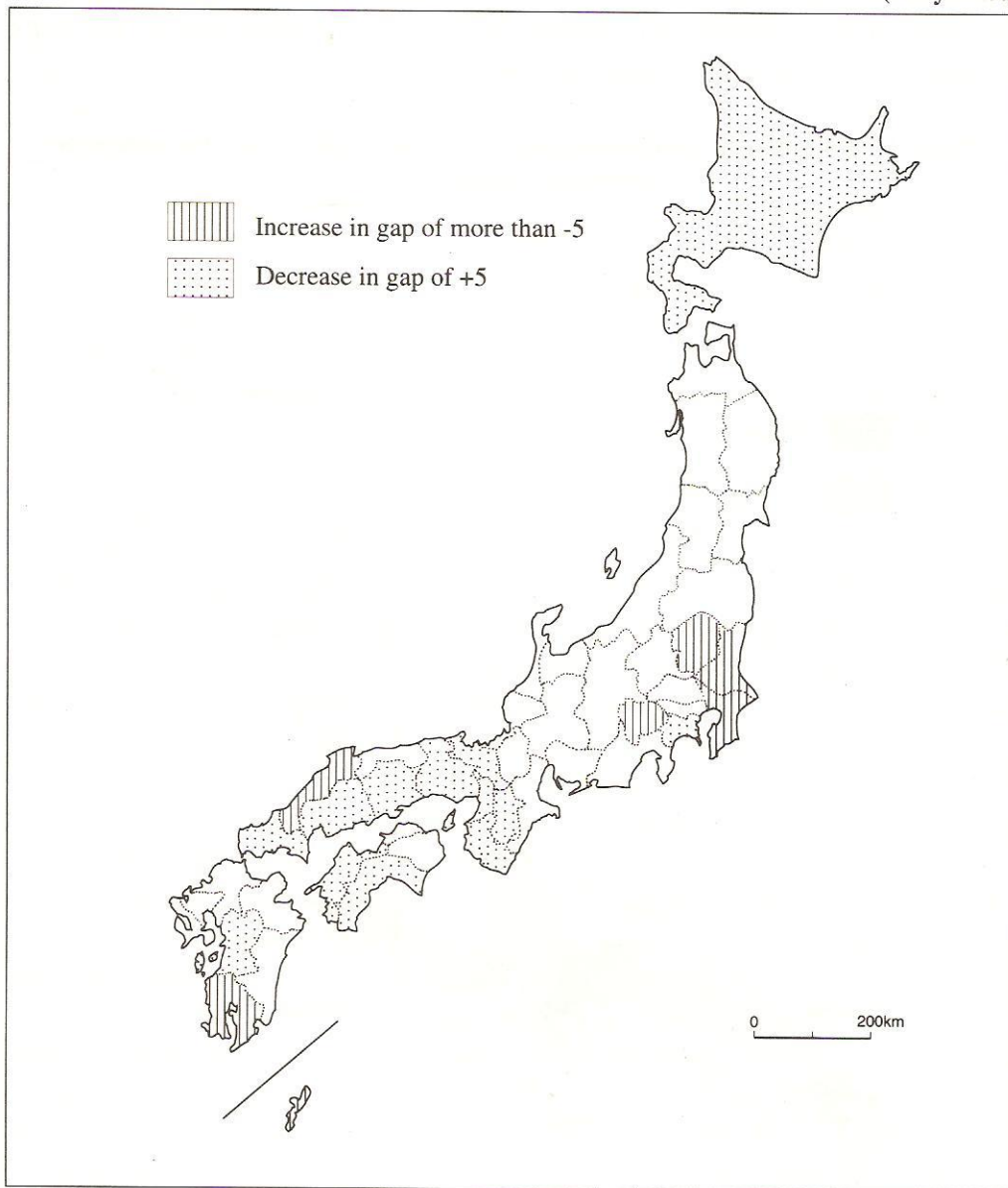
(A) 1988

(Tokyo=100)



(B) Range of change in indices, 1970-88

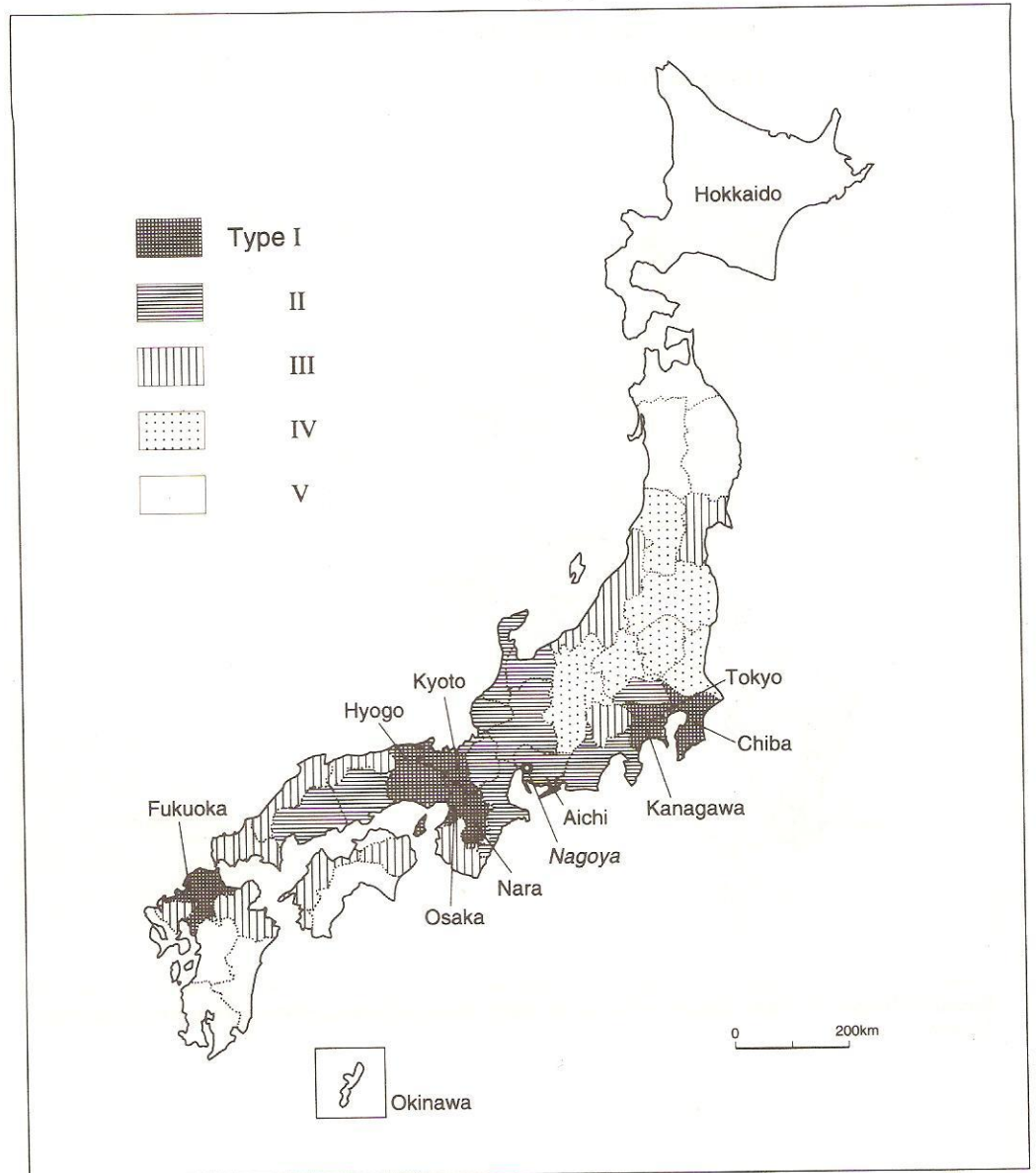
(Tokyo=100)



Based on Nippon no Tokei (Japanese Statistics) 1989, Statistics Bureau, Management and Coordination Agency

tertiary sector industries of a high value-added nature and central management functions in Tokyo and the demise of heavy industry. This is the first time there has been such a regional concentration of wealth in Japanese history and there are few similar examples among the advanced nations.

Chart 11. Prefectural Population Structure According to Labor Force Percentages per Industrial Category (1985)



Based on Nippon Kokusei-zue 1972 and 1992, the KOKUSEI-SHA Corporation

Table 3. Percentage of Population Engaged in Major Industries According to Place of Residence

Sector	Primary	Secondary	Tertiary
Nat. Total	9.3%	33.1%	57.6%
Type I	10% or less		60% or more
Type II	15% or less	30-45%	50-60%
Type III	10-20%	25-40%	50-60%
Type IV	20% or less	30-40%	less than 50%
Type V	10% or more	less than 30%	

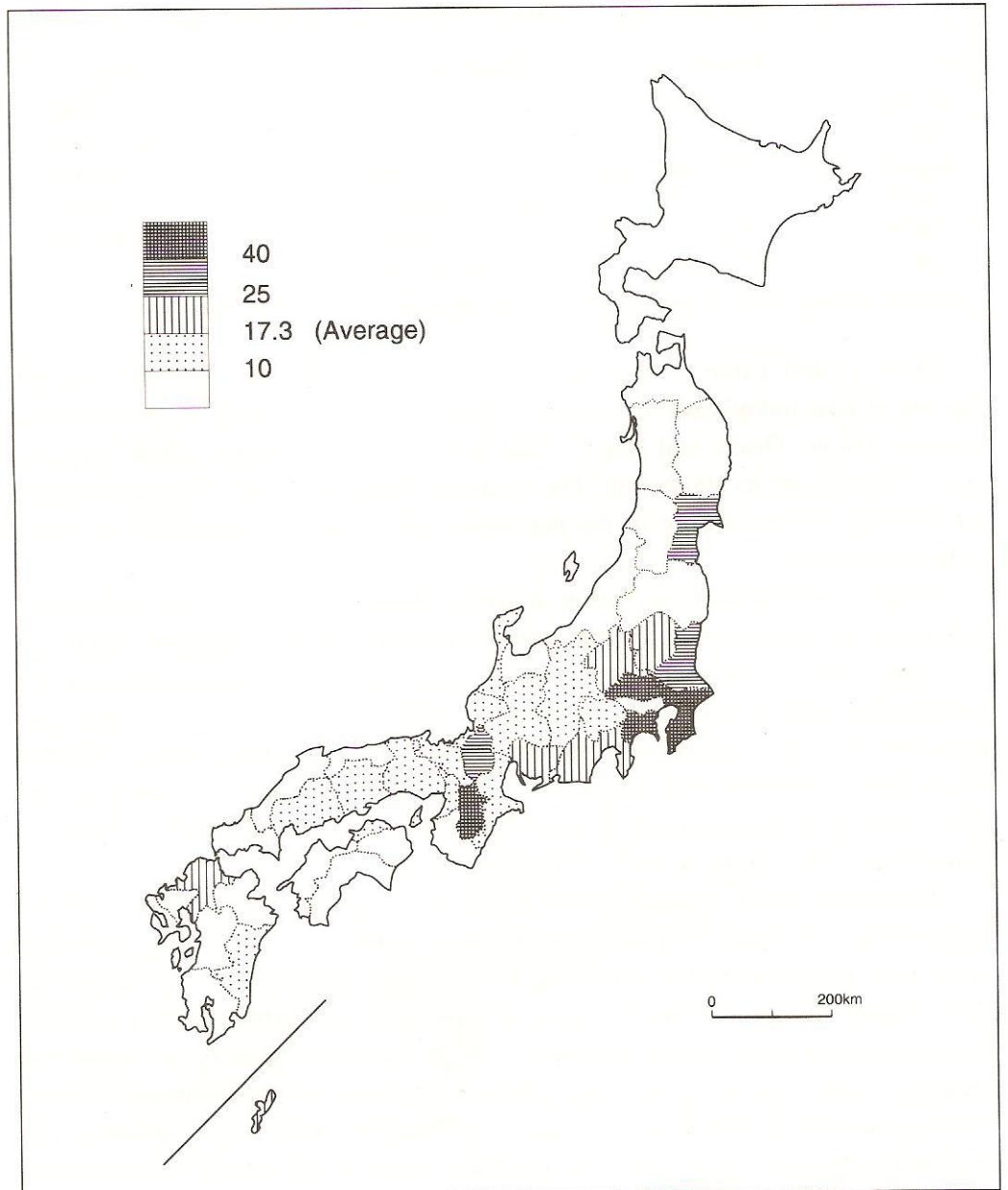
Source: Japanese Statistics 1989, Statistics Bureau, Management and Coordinations Agency

Chart 11 and Table 3 show the structure of the industrial population and tell the tale of how today's strong industries have developed around the metropolitan areas of Tokyo, Osaka and Nagoya and of how the further away from Tokyo an area is, the greater its stagnation. The industrial population can be divided roughly into five groups according to the percentage of residents engaged in the major industrial sectors.

Finally, population distribution statistics show extreme regional differences reflecting the development of the growth industries and the regional disparities in income. Particularly striking is the concentration of population along the Pacific Belt which runs from Southern Kanto to Kita-Kyushu, a continuous urban belt which is sometimes described as the "Pacific Megalopolis." Further, nearly half of Japan's total population lives in the three metropolitan areas and fifty cities with populations of over 100,000 cluster around the 23 wards of Tokyo and make up the world's largest metropolis.

Population began to concentrate in the fluvial plains where high yield rice agriculture developed and cities were formed. It was in these already opened up areas that modern industry developed and, in turn, attracted even more population, except during the last war years. This over-concentration of population gathered momentum during the years of high economic growth and Japan was sharply divided into areas with an over-concentration of population and depopulation. Industry is naturally attracted to productive areas, thus adding to the regional imbalance in income. The resultant spiral in the prices of increasingly scarce land drives out the weak companies and the labor force has to live further away from the city centers. In the Tokyo Metropolitan Area an overwhelming majority of workers commute more than one hour, and some even as much as two or three hours, leading to rapid population growth in the surrounding prefectures. However, interestingly these people continue to consider themselves "Tokyoites" so they do not take much interest in local politics.

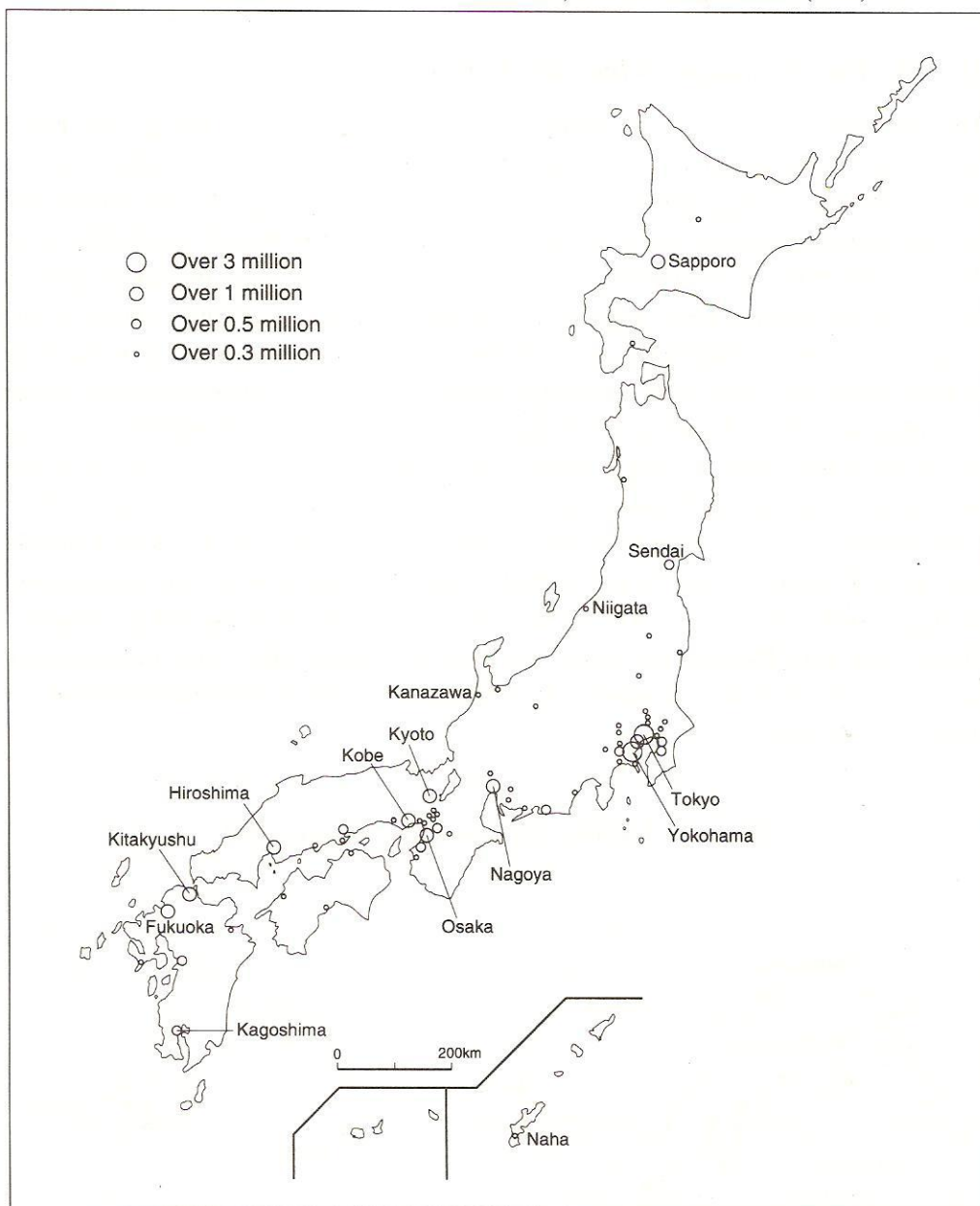
Chart 12. Population Increase Percentages (1970-1990)



Source: Nippon Kokusei-zue 1972, 1990, the KOKUSEI-SHA Corporation

With its high population base, Japan has succeeded in greatly increasing its GNP, has accumulated an enormous amount of material facilities within its small land area and now holds a unique position in the world. During the process, its urban inhabitants have been forced to live in housing which is

Chart 13. Distribution of Cities with 300,000 Persons and Over (1990)



Based on Nippon Kokusei-zue 1992, the KOKUSEI-SHA Corporation

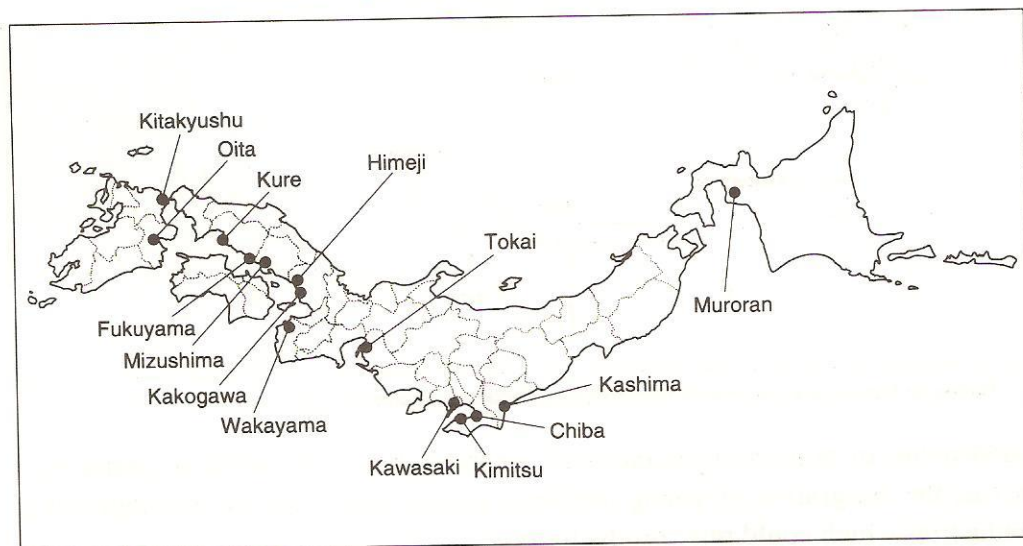
inadequate in proportion to the high incomes they earn, while in many rural areas, the emigration of young people is greatly hindering the development of industries which could raise productivity.

3. Manufacturing Industries

1) *The Transformation of the Core Industries*

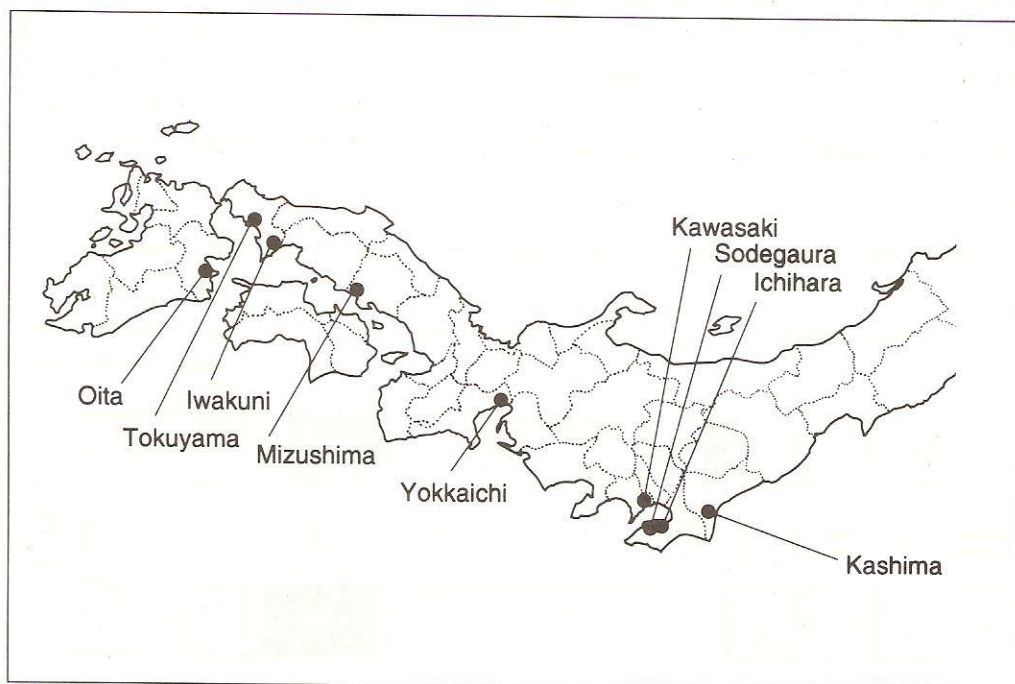
The importance of the tertiary sector in the Japanese economy has grown, but it has always been the manufacturing industries which contributed to the acquisition of foreign money and built Japan's present day prosperity. As mentioned before, Japan's pre-war star exporters was the privately owned textile industry. This was distributed throughout Japan with, in particular, the raw silk producers in the central inland areas and the cotton spinning and weaving centers in the metropolitan areas, Hanshin (Osaka-Kobe) and Chukyo (Nagoya). The machine industries, on the other hand, developed from government owned factories in the Keihin area (Tokyo-Yokohama). Tokyo was also characterized by the consumer goods industries and has been Japan's most important industrial city from the very beginning, although in output terms it caught up with Osaka in the 1930's. Until the 1950's, there were four major industrial areas, Keihin, Chukyo, Hanshin and Kita-Kyushu, where heavy industry had developed with the government managed mills as its core. Since then, the coastal belt joining Tokyo-Nagoya-Osaka and Kita-Kyushu has been the industrial base which has continuously supported the Japanese economy. Its concentration of heavy and chemical industries is striking.

Chart 14. Location of Iron and Steel Industry (1991)



Source: Nippon Kokusei-zue 1992, the KOKUSEI-SHA Corporation

Chart 15. Location of Petrochemical Plants (1991)



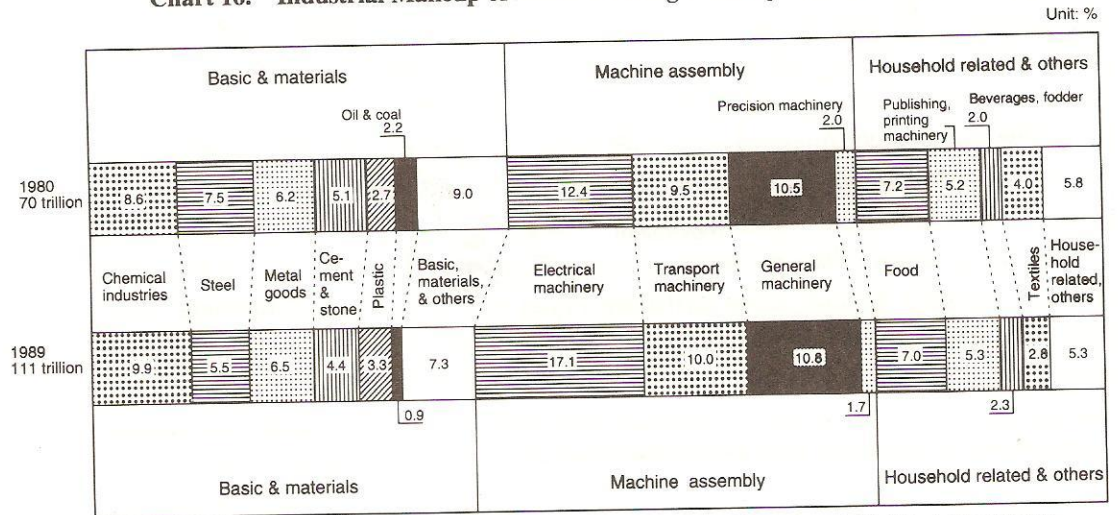
Source: Nippon Kokusei-zue 1992, the KOKUSEI-SHA Corporation

Industrial development continued along these lines after the Second World War, mainly in the Pacific industrial belt mentioned above which grew as industry expanded into the surrounding areas until the latter part of the 1970's. Heavy industry requires ports for the easy import of raw materials and the export of the finished products so it continued to concentrate in South Kanto around the Tokyo Bay, Tokai and the Ise Bay area, and areas along the Inland Sea including Osaka Bay area. These areas became the base for the heavy and chemical industries. Areas in which cities and towns already exist have established investment bases and industry. Thus new plants can be easily located in these areas of related industries and the development of increasingly large conurbations is the result. Naturally, the shinkansen and expressways were built first in the Pacific Belt, which is an example of this, as a matter of course. The central and local governments also actively assisted in financing the large scale industrial development of this belt.

Industrial development continued and the shortage of land in the densely populated Pacific Belt led to the construction of huge heavy industry and chemical plants on reclaimed land along the coast. Later, however, a change occurred

in the location of industry when exports shifted from steel and shipbuilding to automobiles and ICs. There was no fundamental change in the concentration of industry in the metropolitan and surrounding areas, the automobile industry continued to base its production in the Chukyo and Keihin areas, but advanced electronics industries migrated to the remote areas of Tohoku and Kyushu.

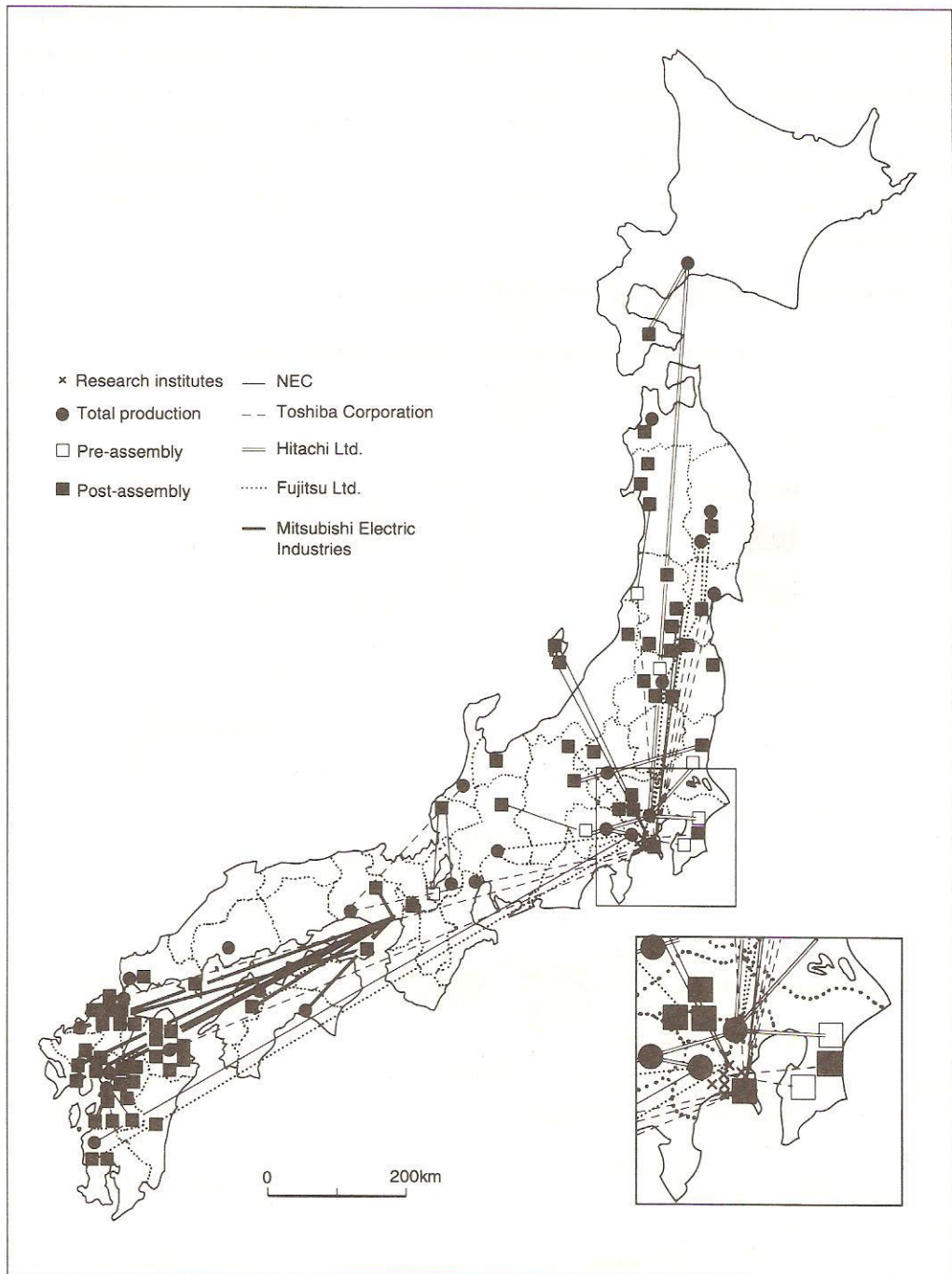
Chart 16. Industrial Makeup of Manufacturing Industry (Value Added Amount)



Source: Industrial Statistics Bulletin 1989, Research & Statistics Department, Minister's Secretariat, Ministry of International Trade & Industry

Unlike heavy industry, the IC makers do not have to be located near the sea ports because they have nothing heavy to transport. Rather, other factors need to be taken into consideration. The IC industry is very competitive and no single product is able to monopolize the market for long, so each company must assemble a short term rationalized production system in areas which meet the necessary conditions for each kind of production. Unlike the heavy industry plants, if they are close to an expressway or an airport, the IC plants do not have to be in a location near a source of raw materials or close to the consumer. As a result one IC plant after another is being opened in Kyushu where airports are being built, and in Tohoku where an expressway has been built. Both are areas where industrialization has lagged behind. However, the research and development and business management are more effective if located in the capital, where they have access to top class brains and accurate domestic and foreign market information.

Chart 17. Distribution of IC Plants

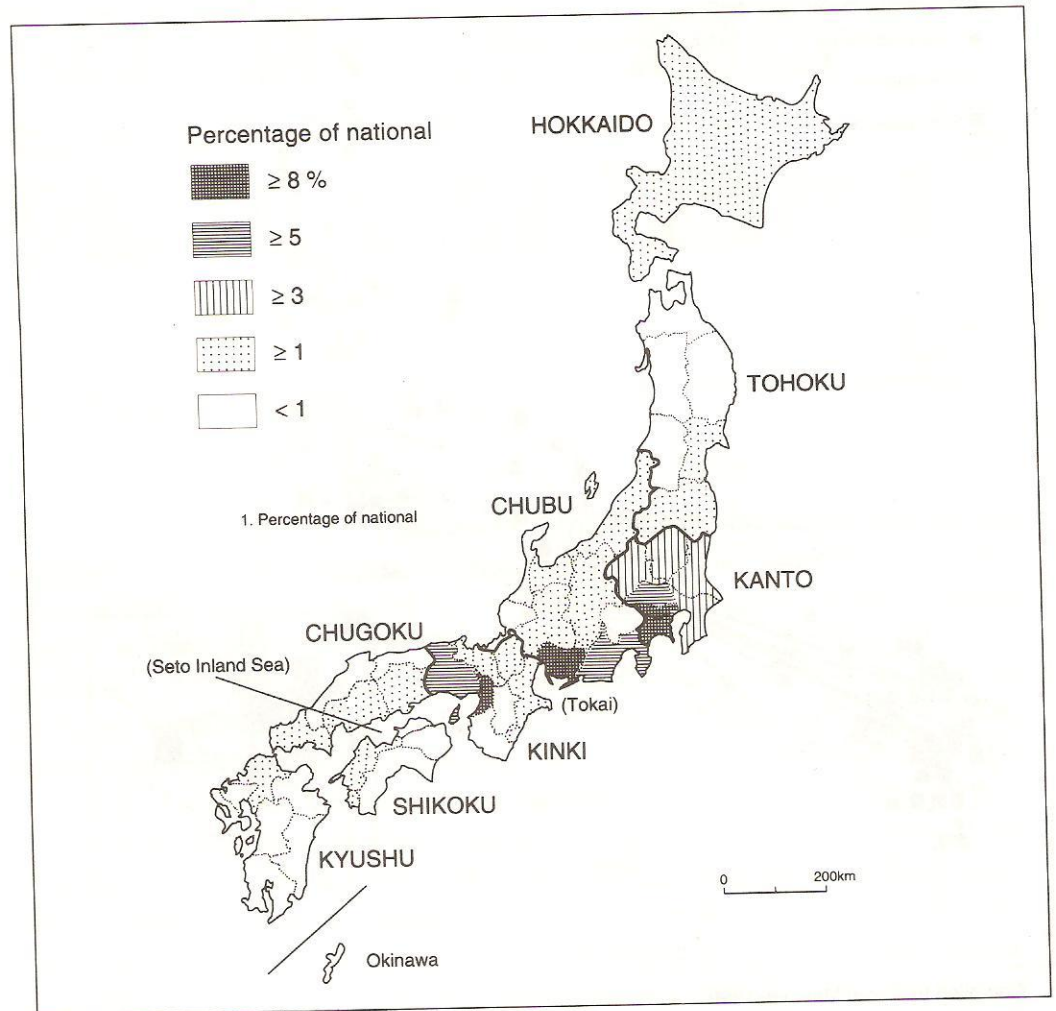


Compiled by Yanai Masaya, 1990

Thus, the 1980's was a decade when the automobile and electronics industries replaced the heavy and chemical industries as the industries which add the greatest value. Machine assembly industries have grown in importance and the mainstream today is computers and software, household electrical goods and cars. The percentage of typical consumer durables is high. In addition, the Japanese lifestyle is now very dependent on advanced technology. Notions about the use of resources and industrial products have changed and consumerism is on the increase.

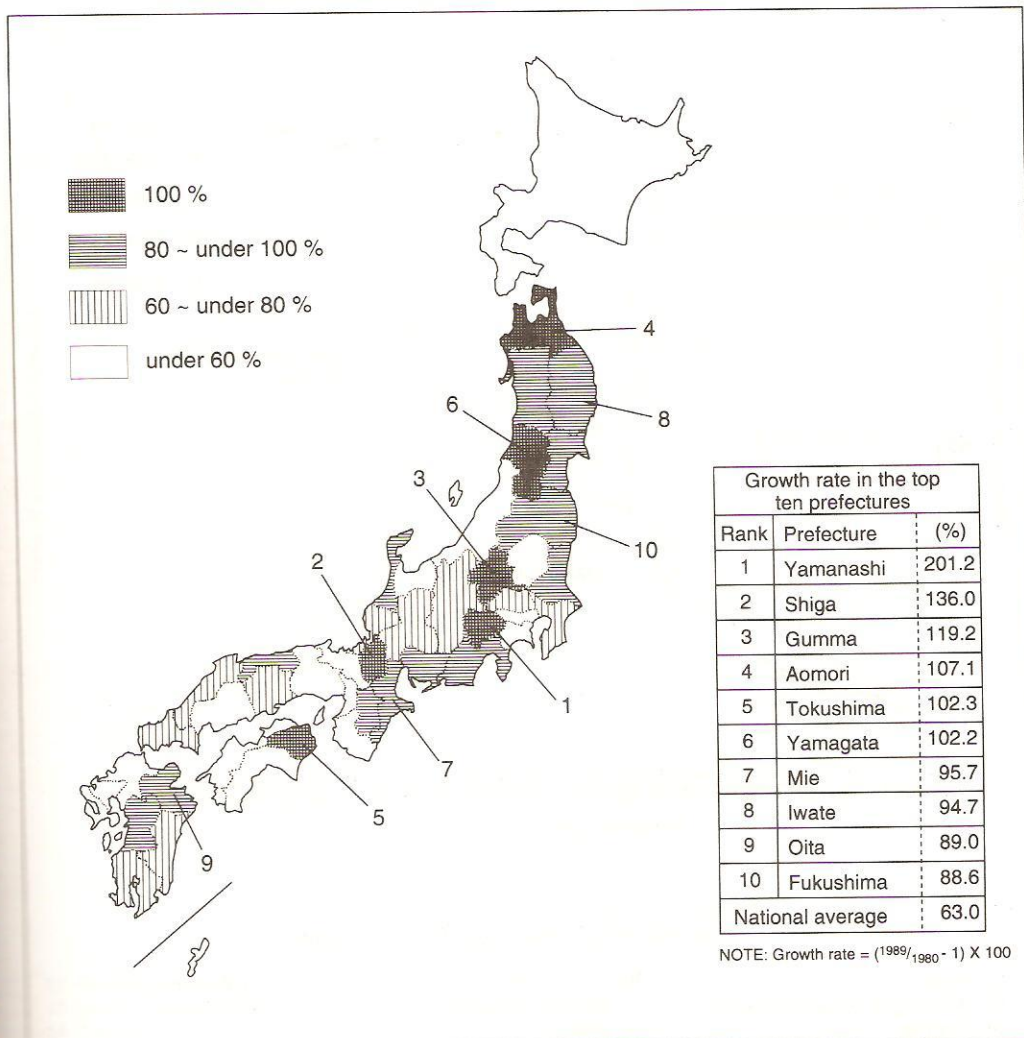
2) Regional Distribution of Industrial Production

Chart 18. Industrial Value Added Amount (1989)



Source: Industrial Statistics Bulletin 1989, Research and Statistics Department, Minister's Secretariat, Ministry of International Trade and Industry

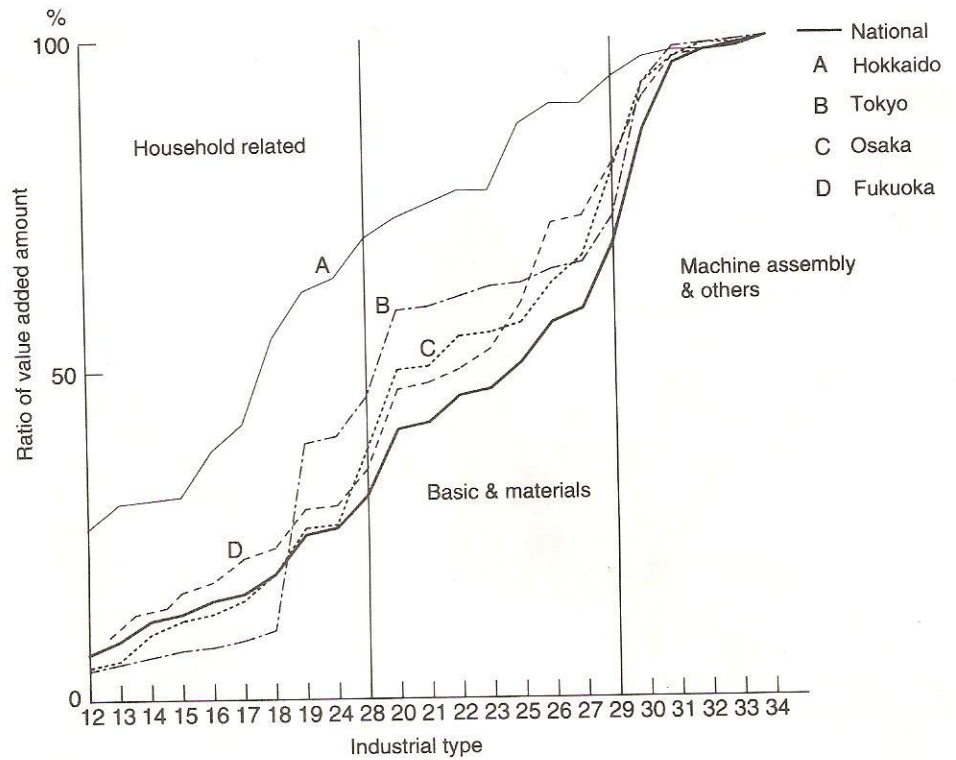
Chart 19. Growth Rate of Industrial Value Added (1989)



Source: Industrial Statistics Bulletin 1989, Research and Statistics Department, Minister's Secretariat, Ministry of International Trade and Industry

Today industry is widely distributed throughout Japan and the value added amounts remain as high as ever in the metropolitan areas and small in the remote areas, as Charts 18 and 19 show. The high ranking prefectures are all areas where the high growth machine assembly industries have developed, and particularly high in prefectures where the previous stars, iron and steel, chemicals and metals are located (see Table 4). The information industries have polarized in Tokyo, where the top ranking industries are printing and publishing. In remote areas are industries using special local products, but these are losing

Chart 20. Industrial Composition of Low Growth Group

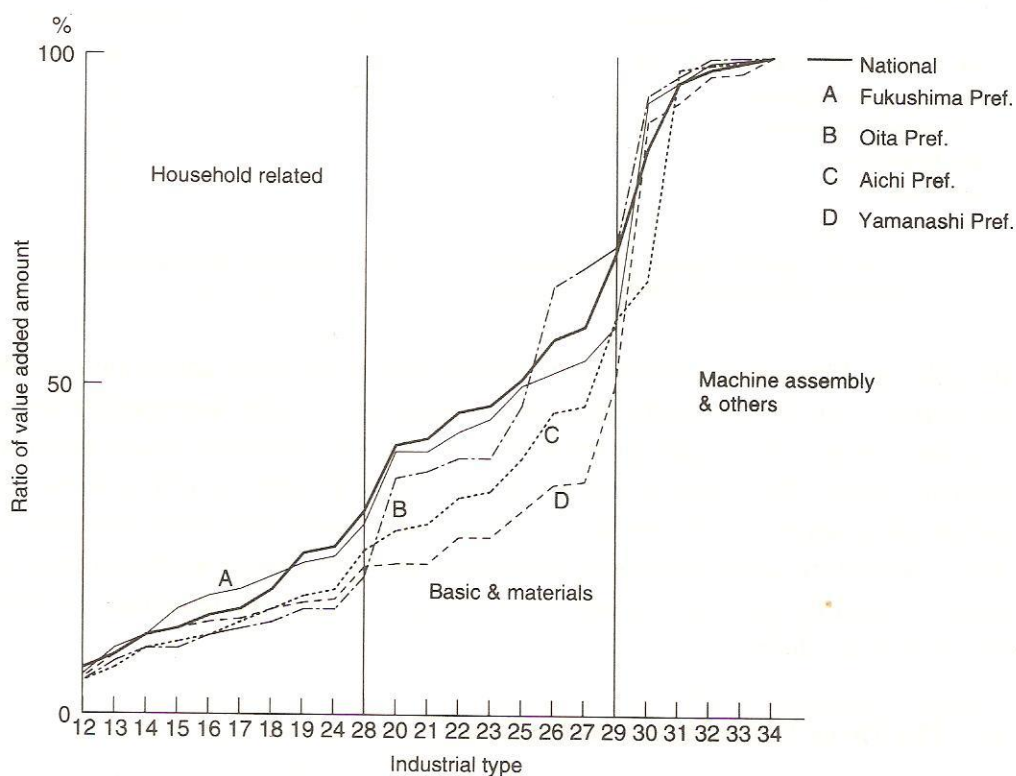


The industrial type classification codes

- | | | |
|---------------------------------|-------------------------------------|---------------|
| 12. Food | 20. Chemicals | 33. Armaments |
| 13. Beverages, fodder, tobacco | 21. Oil, coal products | 34. Others |
| 14. Textiles | 22. Plastics | |
| 15. Clothing & textile products | 23. Rubber | |
| 16. Timber & wood products | 25. Ceramics | |
| 17. Furniture, furnishings | 26. Steel | |
| 18. Paper & pulp | 27. Non ferrous metals | |
| 19. Publishing, printing | 29. General machinery & equipment | |
| 24. Leather products | 30. Electric machinery & equipment | |
| 28. Fabricated metal products | 31. Transport machinery & equipment | |
| | 32. Precision instruments | |

Based on Census of Manufactures, 1991, MITI

Chart 21. Industrial Composition of Medium & High Growth Group



The industrial type classification codes

- | | | |
|---------------------------------|-------------------------------------|---------------|
| 12. Food | 20. Chemicals | 33. Armaments |
| 13. Beverages, fodder, tobacco | 21. Oil, coal products | 34. Others |
| 14. Textiles | 22. Plastics | |
| 15. Clothing & textile products | 23. Rubber | |
| 16. Timber & wood products | 25. Ceramics | |
| 17. Furniture, furnishings | 26. Steel | |
| 18. Paper & pulp | 27. Non ferrous metals | |
| 19. Publishing, printing | 29. General machinery & equipment | |
| 24. Leather products | 30. Electric machinery & equipment | |
| 28. Fabricated metal products | 31. Transport machinery & equipment | |
| | 32. Precision instruments | |

Based on Census of Manufactures, 1991, MITI

Table 4. Industries Ranked by Frequency of Value Added per Prefecture

National rank	No. of prefectures where top	No. of prefectures where 2nd.	No. of prefectures where 3rd.
1st. Electrical machinery	18	8	7
2nd. Transport machinery	4	9	2
3rd. General machinery	4	8	8
4th. Chemicals	2	6	3
5th Food	7	4	6
Others	12	12	21

Source: Industrial Statistics Bulletin 1989, Research and Statistics Department, Minister's Secretariat, Ministry of International Trade and Industry

precedence. However, in terms of the growth rate of the value added amount for the period 1980-89, the prefectures on the outer edges of the metropolitan areas and the remote areas figure prominently, as machine assembly plants begin to relocate there. This trend is borne out by Charts 20 and 21 which show the industrial structure of the prefectures. Yamanashi prefecture is an example of how a prefecture which developed late industrially can change with the opportunities offered by the construction of an expressway and the relocation of high tech industries there.

3) *The Three Major Industrial Regions*

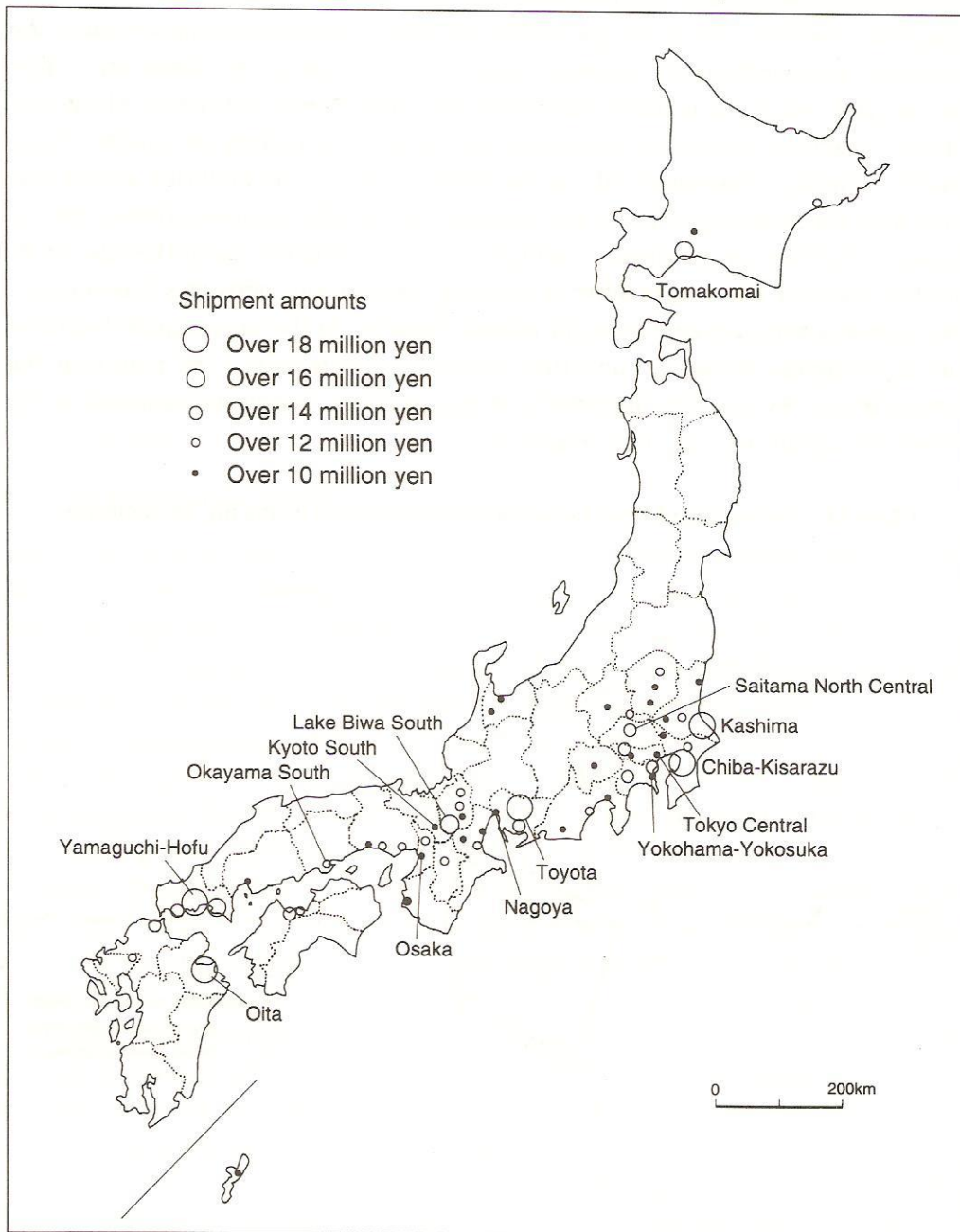
In lieu of value added amounts, the production totals from the Ministry of International Trade and Industry's 254 statistical industrial areas support the contention that nearly two-thirds of total industrial production is concentrated in the Pacific Belt in the three major industrial regions, centered on the three metropolitan areas of Tokyo, Osaka and Nagoya.

Table 5. No. 1 Industries in the Major Industrial Areas in the 3 Metropolitan Regions (1988)

	Industrial areas *	Electrical machinery	Transport machinery	Steel	General machinery	Chemicals	Others
Total	51	21	9	7	5	4	5
Tokyo	18	12	2	2	1	-	1
Nagoya	17	4	6	2	2	1	2
Osaka	16	5	1	3	2	3	2

* Areas where production exceeds 230 billion yen
Source: Industrial Statistics Table 1988, MITI

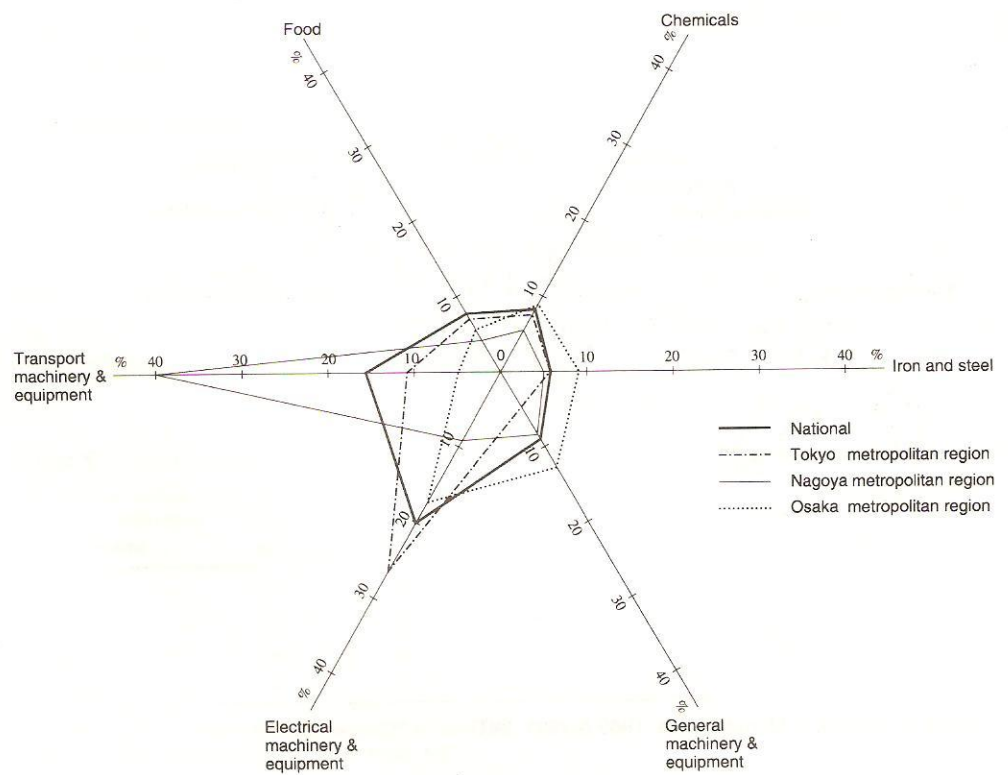
Chart 22. Distribution of Industrial Areas
 (with over 10 million yen in value added amount per person)



Based on Census of Manufactures, 1989 & 1991, MITI

Table 5 shows that the growth industries occupying the top positions in the three major metropolitan regions are electrical, transport and general machinery. Machine assembly industries typify the machine industries and they require the location of manufacturers of many types of materials in the same area. This encouraged a regional concentration of similar and related industries. Moreover, Japan's machine industries developed according to a pattern in which a large parent company subcontracted out to medium and small factories and it was easy to form groupings of similar activities in specific regions. Today, the increase in lightweight products of a high value added nature, as in the case of IC production, and the progress in developing expressway networks has reduced the necessity for a concentration of related factories in the same region but there has nevertheless been no concerted efforts to locate new core plants in the remote areas. As a result, the pattern of regional concentration continues as the industrial regions expand their boundaries.

Chart 23. Percentage of Total Industrial Production Held by the Big Six Industries



Based on Census of Manufactures, 1991, MITI

A comparison of the six major types of industry in the three major metropolitan regions shows some deviations from the national norm (see Chart 23) but the two metropolitan regions are close to it. Tokyo shows some deviation from the norm in electrical machinery and Osaka in transport. Nagoya has the greatest deviation because of the skew toward transport on account of the size of its automobile industry. Divergences in industries such as food, chemicals, steel and general machinery which developed before the 1960's reflect the fact that the major metropolitan regions only began to take on their special characteristics during the last twenty years or so.

In conclusion, apart from a slightly greater ratio in textile production in Osaka and Nagoya over Tokyo (but only 3% of total national production), the industrial activity of these three major regions is characterized by the high growth machine assembly industries, especially high tech electrical and transport machinery.

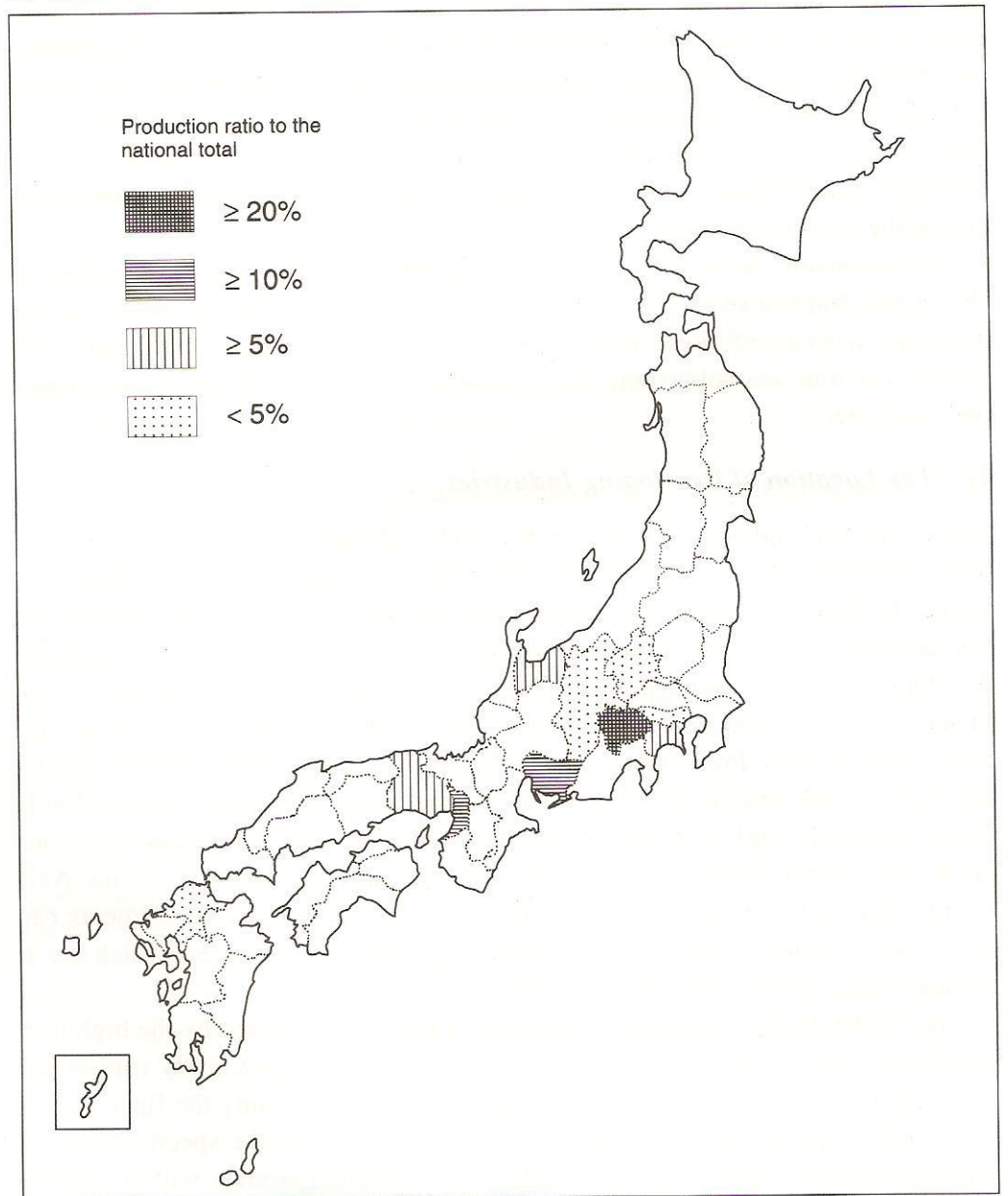
4) *The Location of Developing Industries*

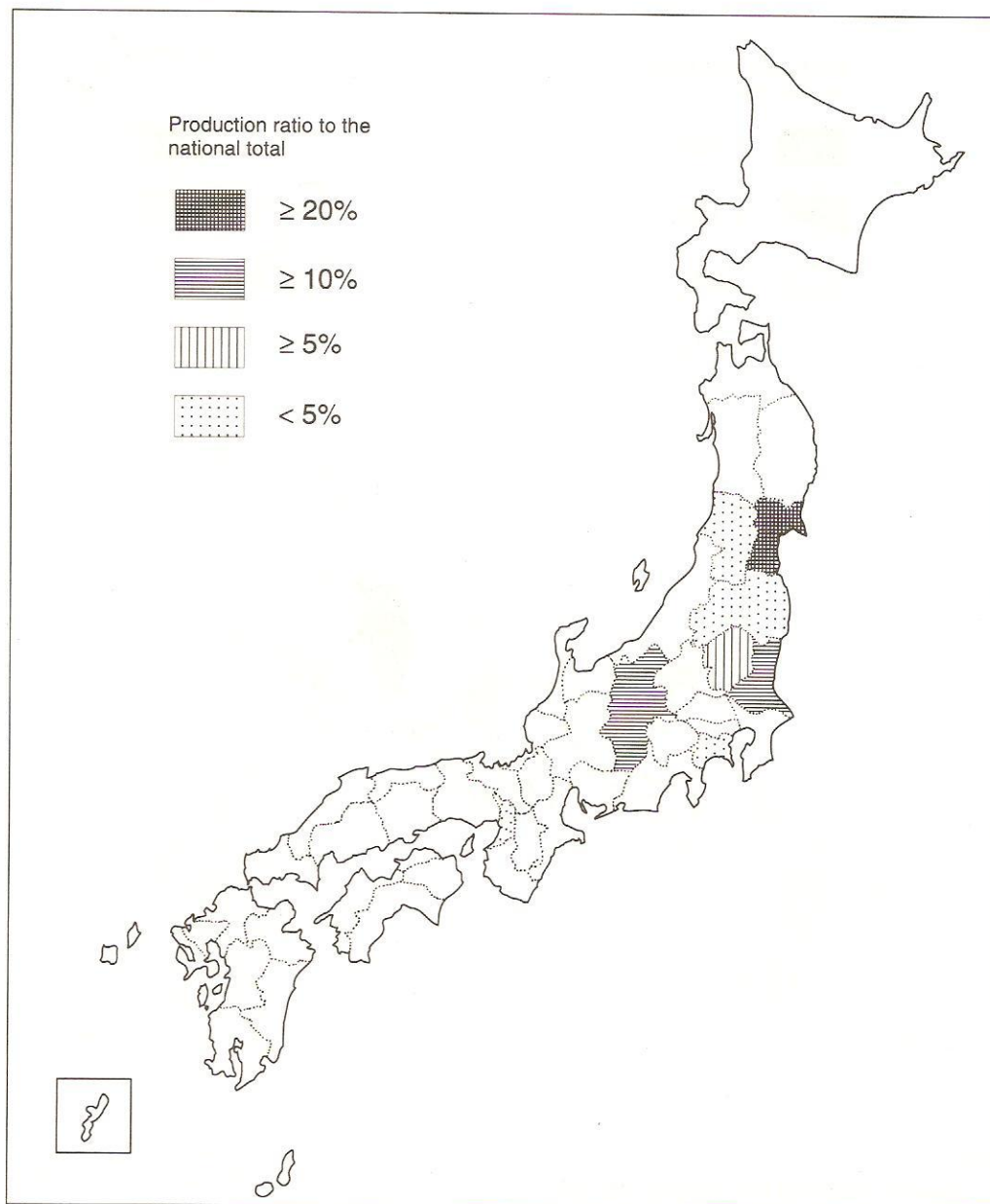
Out of the steel industry, which was the center of Japanese industry for a long time, developed the automobile and electrical machinery industries. These sustained the high level economic growth, and the ongoing production rationalization and technological revolution within have further stimulated the next industrial development. In the four types of industry depicting this, two trends are recognizable: concentration in and around the Tokyo metropolitan area and dispersal to the remote areas. Prefectures outside this trend can be seen in Tohoku, Chubu and Kyushu and here the growth rate of income is low. However, competition is fierce among the high tech industries, and as the parts and components divisions are highly mobile, some have been relocated inside Japan and abroad too. As a result, only sectors which have to be located near the research departments can be certain to remain there so it is difficult to predict whether areas which are at present top in production will remain so.

The technological progress of Japanese industry, epitomized by the high tech industries, owes a great deal to quality control. This is particularly true of the machine assembly industries, in which the large plants are only the final assembly point for parts made by many smaller plants. Thus, if the specifications of each part are not strictly monitored, the final assembled product will be of poor quality. The law of the survival of the fittest ensures that the lead company will only retain those subcontractors which make high quality products. The monitoring is strict but the parent company seldom stints its financial and technological assistance, further increasing expertise and thus productivity.

Chart 24. Distribution of Developing Technological Industrial Plants (1989)

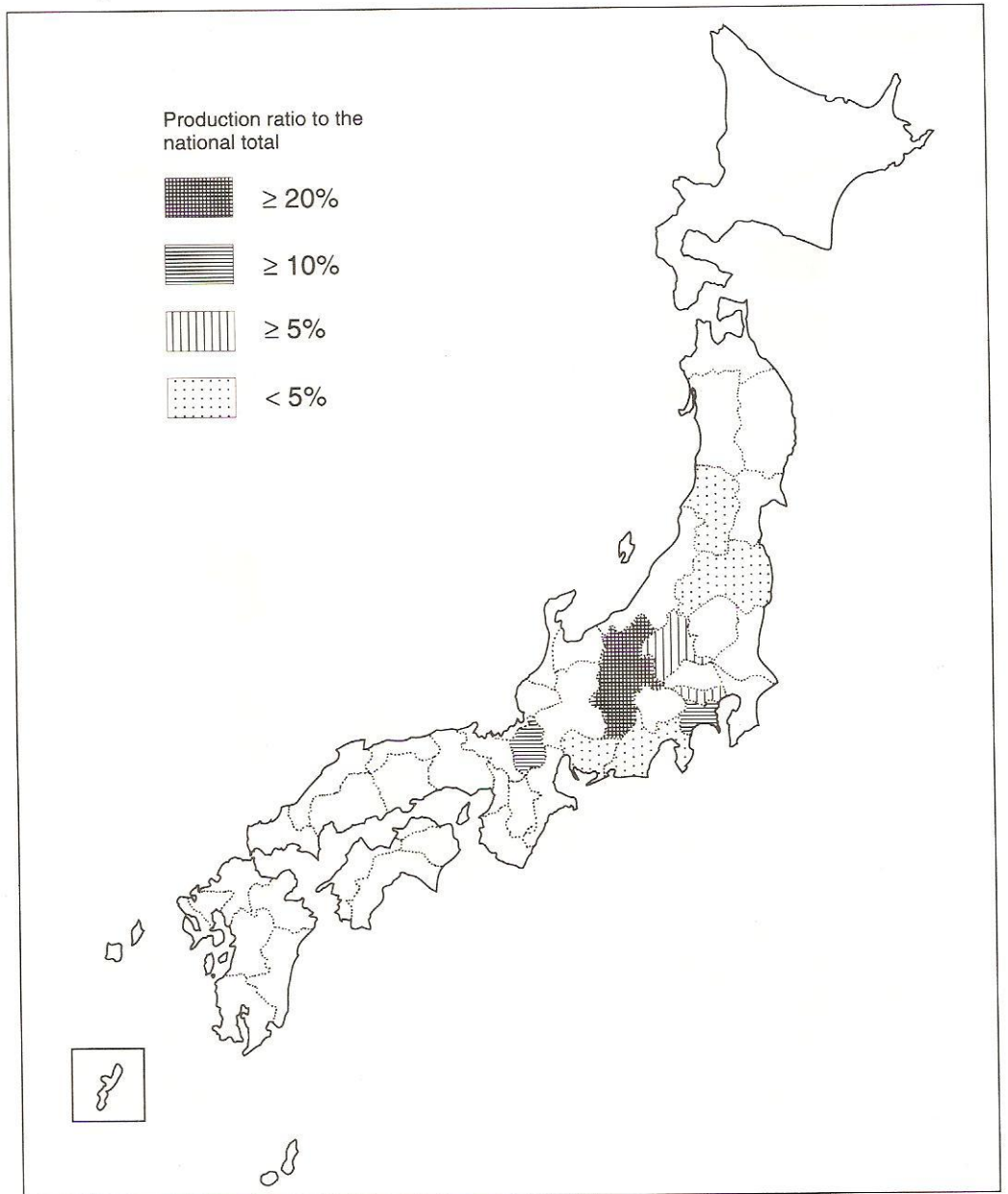
A. Industrial Robots



B. Magnetic Tapes

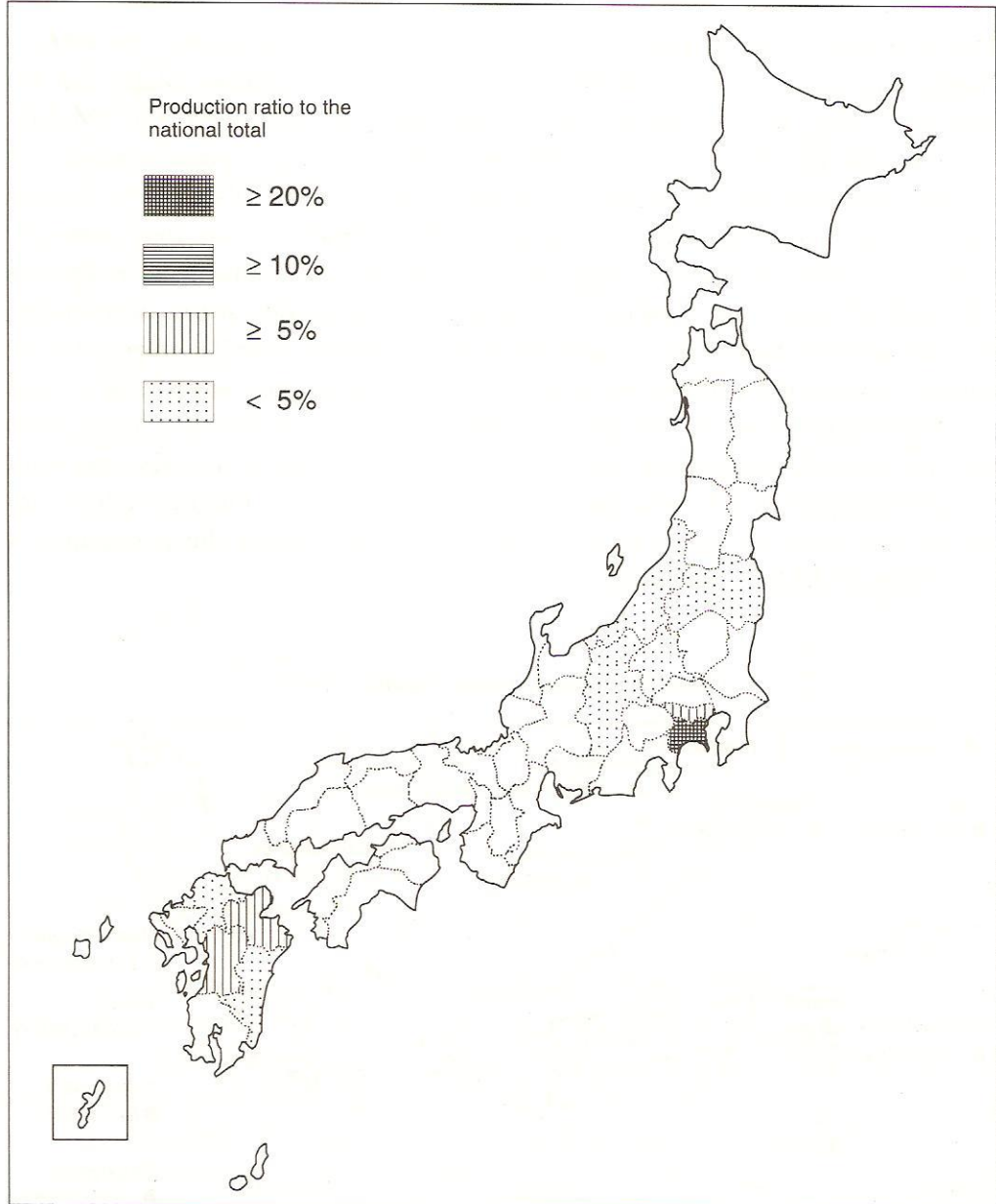
Based on Census of Manufactures, 1991, MITI

C. Computer Parts and Components



Based on Census of Manufactures, 1991, MITI

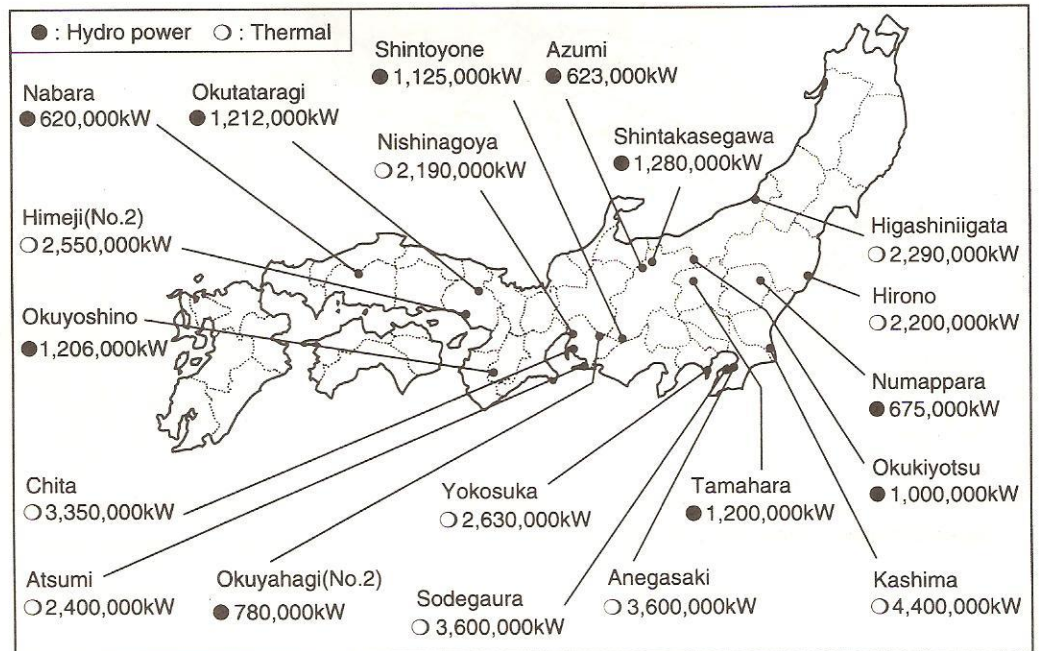
D. Semi-Conductor Accumulation Circuits



4. Energy Industries

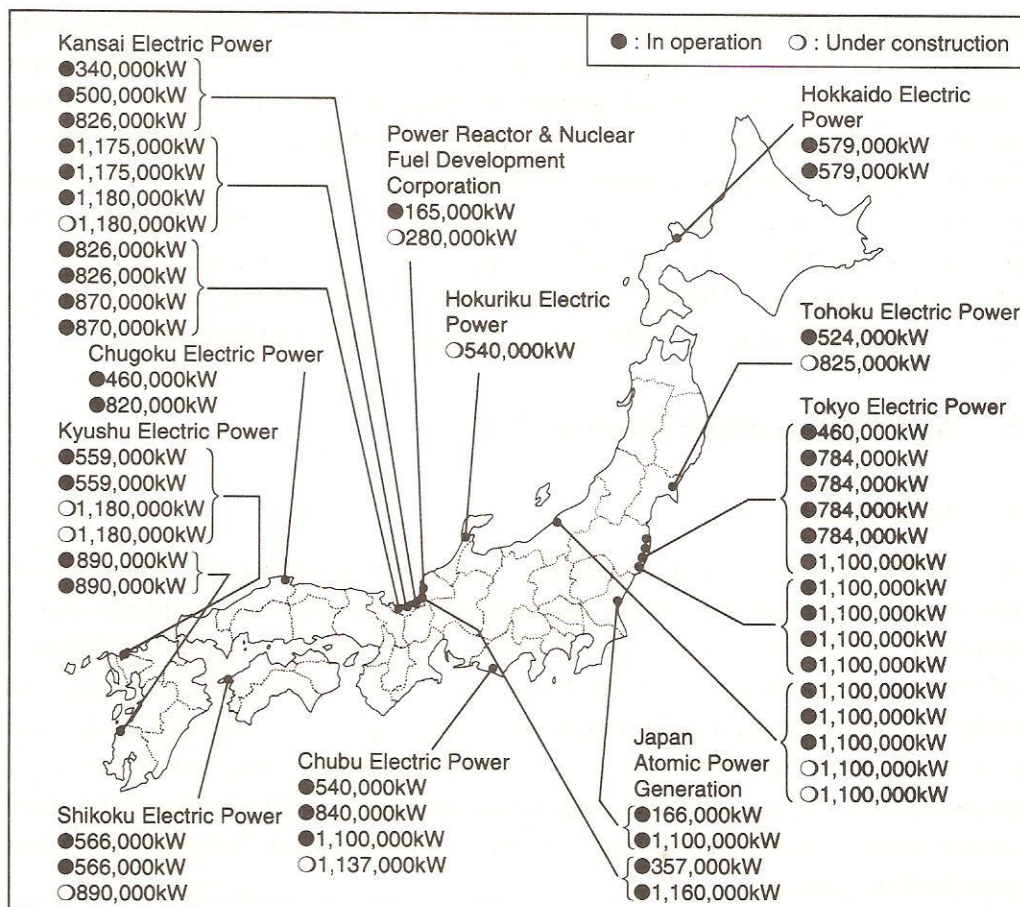
The Japanese source of industry switched from coal to oil during the 1960's. Hardly any oil is produced domestically, so demand is almost totally met by imports. Today, most of Japan's oil is imported from Southwest Asia (Middle East) and the political situation in this region therefore has a great influence on the Japanese economy. Until the "oil shock" of the early 1970's, oil was a cheap highly efficient energy source, so it was more profitable to use than domestic coal with its high production costs. By this time the coal seams near the surface had been exhausted and coal mining had to move to the thin seams deep underground, and the high costs meant the mining industry found it impossible to operate without government assistance. Once this assistance was abolished and a switch in energy policy was planned, one coal mine after another closed down and the formerly prosperous coal mining areas of Hokkaido and Kyushu were visited by depression. Even today in the coal mining areas the after-effects are visible and there are many cities, town and villages where the population is continuing to decline as a result.

Chart 25. Electric Power Facilities (1991)



Source: Nippon Kokusei-zue 1992, the KOKUSEI-SHA Corporation

Chart 26. Atomic Power Generation Projects (1991)



Source: Nippon, a charted survey of Japan 1992/93, the KOKUSEI-SHA Corporation

The 1960's, when the large scale consumption of oil began, was also a period of change in the electric power industry. Prewar generation of electricity was principally hydroelectric while thermal was subsidiary. In the postwar period, too, hydroelectricity generation was predominant for a time. However, the power plant sites were far from their market, the big cities, and the costs of power transmission were huge. Moreover, in a small country like Japan the construction of dams and reservoirs often results in villages being submerged under water so the costs which had to be borne by the inhabitants increased and hydroelectricity became a costly operation. The focus therefore shifted to more economical thermal electricity which could be located near the market, and the use of cheap oil increased even more. Today the large thermal electricity generating plants are concentrated in the Pacific Belt.

In the 1970's there was concern about the need to rely on imported oil for energy and debate about the air pollution and the warming of the earth's atmosphere caused by the burning of oil. The government and the electric power industry decided to put a much greater emphasis on nuclear power generation. As of 1991 Japan ranks third in the world in the number of nuclear power reactors, and almost one quarter of the nation's electricity or 9.8% of total energy supply, is generated by nuclear power. However, the use of nuclear power is haunted by the fear of radiation accidents and has attracted a great deal of popular antipathy. The fact that the plants are constructed so far from the large markets for electricity only adds to the questions about their safety.

5. Agriculture and Fisheries

1) An Overview

Agriculture in Japan is characterized by wet field rice cultivation. Rice cultivation makes use of the hot, humid summers and promises a high yield per unit of area in a country where only 14% of the total land area is suitable for all forms of agriculture, including livestock. Rice is, and always has been, the staple food in the Japanese diet, and even with today's rice surplus over one half of the land cultivated grows rice. However, government rice acreage reduction policies and an increase in the production of vegetables and livestock has reduced the share held by rice in the total agricultural production figures from 50% in 1960 to less than 30% in 1980.

Table 6. Transformation of Cultivated Land (unit 1,000 ha.)

Year	Total	Paddy field	Dry field			Sub total
			Ordinary	Orchard	Grazing	
1965	6,004	3,391	1,948	526	140	2,614
1975	5,572	3,171	1,289	628	485	2,402
1980	5,461	3,055	1,239	587	580	2,406
1985	5,379	2,952	1,257	549	621	2,427
1990	5,243	2,846	1,275	475	647	2,397

Source: Nippon Kokusei-zue 1990, 1991, and 1992, the KOKUSEI-SHA Corporation

A look at the transformation of cultivated land, Table 6, shows that livestock farming increased during the postwar period of high economic growth, but imports of fodder are still high and the grazing acreage is still small in comparison with European countries and the United States. Wheat imports continue to rise

as Japanese eating habits are diversified as their income rises and they consume more bread than before. Japanese self-sufficiency has dropped to less than 20% in wheat and 30% in total cereal production. However, in spite of the outcry from urban consumers and rice exporting countries led by the US, the Japanese government continues to allow no rice imports whatsoever in pursuit of its goal of total self-sufficiency in "its staple food", rice. Doubtless there will be an eventual change in government policy.

Table 7. Division of Farms According to Scale

Cultivated area per farmhouse	1965	1975	1985	1990
<0.5ha	37.7%	40.5%	42.8%	59.3%
0.5-1.0	31.3	29.2		
1.0-2.0	24.2	22.0	20.4	34.2
2.0-3.0	4.2	5.0		
3.0-5.0	1.5	1.9	2.5	3.8
>5.0	1.1	1.4	2.7	2.7
No. of farming household('000's)	5,665	4,953	4,376	2,971
Percentage engaged exclusively in agriculture		12.4%	14.3%	12.3%

Source: Nippon Kokuseizue-zue 1990, 1992, and 1992, the KOKUSEI-SHA Corporation

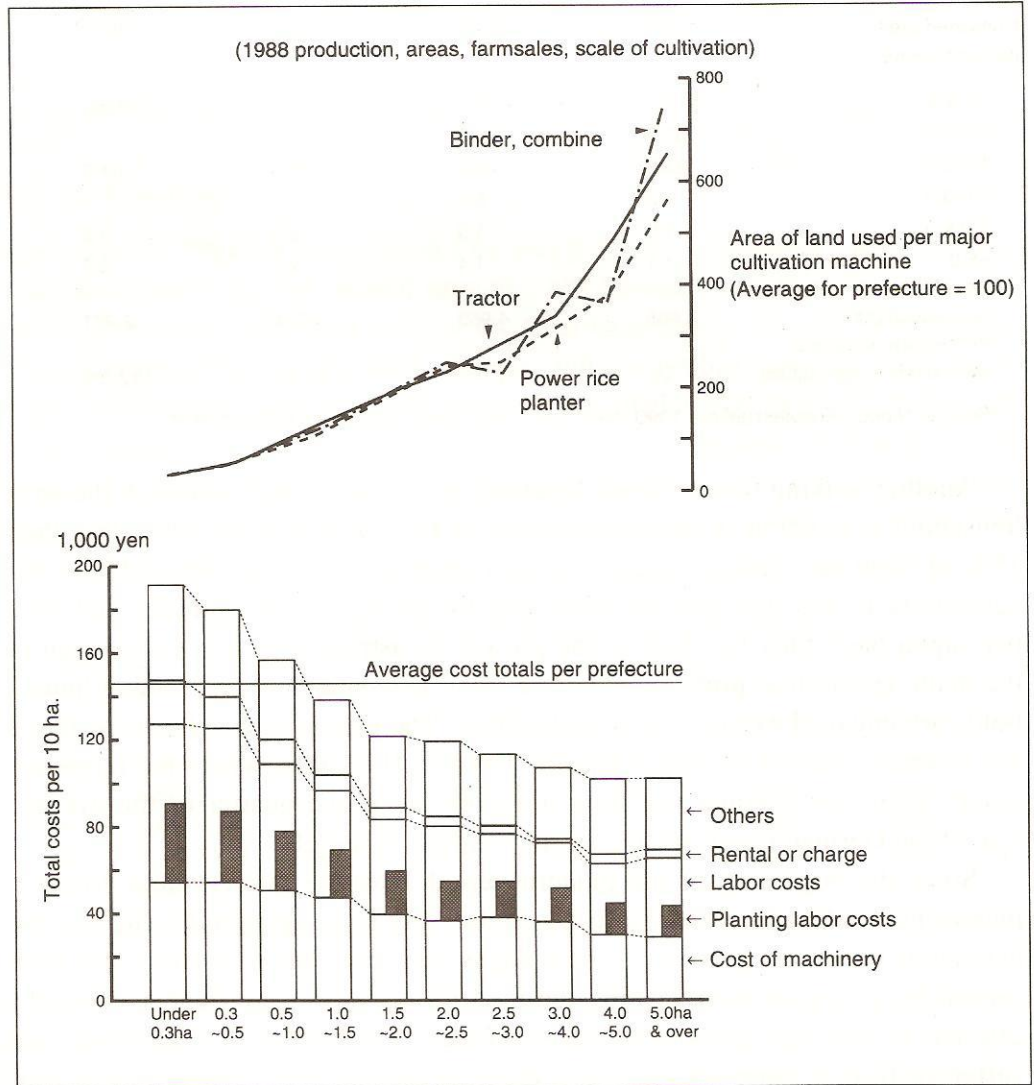
Another striking feature about Japanese agriculture is that, although the farm household population is large, exceeding 17,083 million as of 1991, less than 15% of them are mainly engaged in agriculture and the total output figure for agriculture is less than one-twentieth that for manufacturing industry and on a per capita basis falls far short of the growth industries. This is because even in the main agricultural prefectures only a small percentage of the farming households are engaged exclusively in agriculture. The reason is that Japanese farms are so small, many less than 1 hectare. Even in Hokkaido, where the farms are much larger, the average size does not even reach one quarter of the average size of the German farms, which are the smallest in the EC.

Since the beginning of the modern period Japanese farmers have found it increasingly difficult to make a living exclusively from agriculture and thus the handicraft industries grew up in the villages. An acute labor shortage has been caused by young workers leaving the land for the easier and higher paid jobs offered by the high growth industries. Today, the majority of the farms are suffering from a labor shortage and they are unable to be self-sufficient economically. The national and prefectural governments give preferential treatment

and assistance to the farmers, but the Land Agricultural Act prohibition on the free sale and purchase of agricultural land suppresses the development of viable farming areas and prevents movement towards farming on a large scale.

The shortage of agricultural labor and the necessity for guaranteeing income by combining farming with another job is one reason why farms are being mechanized in spite of their small size. The percentage of machinery use increases with the area under cultivation, but in all cases the percentage of rice

Chart 27. Rice Cultivation Costs and Use of Major Cultivation Machinery

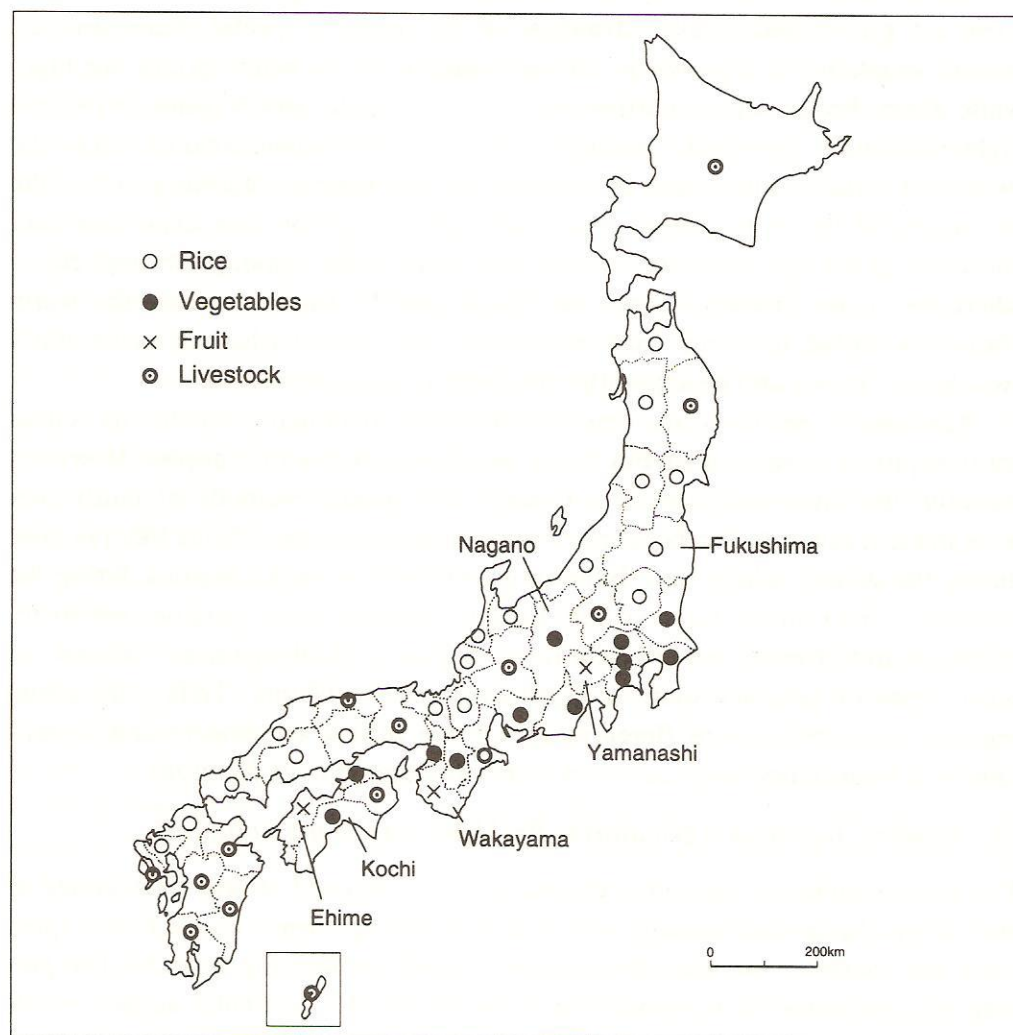


Source: Japanese Agricultural Yearbook 1991, Ministry of Agriculture and Forestry

production costs occupied by machinery is about 30% regardless of the size of the farm (see Chart 27). The widespread use of compact farm machinery, fertilizers and pesticides has reduced the number of hours spent farming and enabled the farmers to work elsewhere. In the regions where heavy snow makes farming difficult during the winter, many farmers leave for the cities to work on building sites, and in many cases this income is used to pay for machinery. The mechanization of small scale farms which cannot be self-sufficient is becoming even more of a reason why farmers should combine agriculture with other jobs.

2) *The Regional Distribution of Agricultural Products*

Chart 28. Top Ranking Agricultural Products per Prefecture (1988)



Source: Japanese Agricultural Yearbook 1991, Ministry of Agriculture and Forestry

Chart 28 shows that, roughly speaking, agriculture in the Pacific Belt is multi-product farming in which fruit or vegetables figure as the top product, whereas in the north and on the Japan Sea side rice prevails. Livestock farming stands out in the remote areas.

The market prices of agricultural products fluctuate greatly but the buying price of rice is fixed by the government and thus the farmer is guaranteed a minimum income. Consequently, rice is widely cultivated throughout Japan, and is regarded as particularly profitable in those regions where heavy snowfall makes farming difficult during the winter. Rice is not the best crop for urbanized areas where the price of land has risen, but elsewhere it is as indispensable a crop as before in most regions. Among these are regions where speciality crops are grown which take advantage of the region's special characteristics. Hence, vegetables are grown in the metropolitan areas where prices are high, while Kochi Prefecture capitalizes on its warm climate, and Nagano on its cool highland climate. Livestock farming is practiced in the remote areas of Hokkaido, Iwate and Kyushu where land is available for non-intensive farming. Along the perimeters of the metropolitan areas, cattle are raised for their expensive beef and there is pig and chicken farming on a large scale. Among the prefectures where the major product is fruit are Ehime and Wakayama, where the warm climate is suited to citrus fruit cultivation, and Yamanashi has successfully switched to grapes and peaches after the decline of its sericulture.

Agricultural products are closely connected to climatic conditions: citrus fruits require a warm climate but the climate has to be cool for apples. However, recently, the increasing use of hothouses and special methods of cultivation have made it possible for the warmer areas to cultivate specialities like potatoes during the winter, which were hitherto grown only in cooler regions during the summer. For example, Kyushu only used to produce sweet potatoes which require a warm climate, but recently it has begun to challenge areas famous for other types of potatoes such as Hokkaido and Fukushima. Today, therefore, regional competition is as fierce in agriculture as it is in industry and regions famous for speciality crops cannot be sure of retaining their positions.

3) Modern Japanese Agriculture: Problems and Some Solutions

The emancipation of agricultural land after the Second World War aimed at abolishing the tenant farming system and nurturing owner farmers. An upper limit was therefore set upon the amount of land per farming household to prevent the concentration of ownership in the hands of a particular section of the population. However, this also prevented expansion. Farmers wanting to increase

their income from farming would have to raise the yield from their land by investing heavily in labor and capital because they could not obtain more land. Consequently, the farmers have directed their energies into producing products with high market prices, and this has acted to emphasize the standardization of agricultural products. For example, with fruit and vegetables, the size has become standardized for ease of transportation and pricing. In addition, looks have come to take precedence over taste, and despite the greater amount of labor involved, and consequently higher prices, Japanese consumers are still prepared to pay for fruit and vegetables which look good. The producing regions which perceived this tendency early on produce today's specialities.

Of course, normal market conditions operate, and in the metropolitan areas farming has reached its limits and the farmers are confronted with a serious dilemma. The government has stepped in with a policy of reduced taxes for land which is actually being farmed, but the farmer must agree to farm it for thirty years to eliminate token farming. High costs, an aging population and heavy death duties are forcing many urban farmers to reconsider their commitment to farming.

In the remote areas, unsuitable for products with high market prices, there are the farmers who are having to leave their farms because they are unable to make a living. As the young people leave for other regions and higher incomes, the mainstay labor force is lost, productivity drops and those left behind are unable to maintain even the existing level of productivity. Uneconomic agriculture is eliminated but unlike the urban areas, where the land can be used for housing, the land in such regions turns into wasteland and is lost. The forests are also abandoned and, without maintenance, marketable timber can no longer be produced, making it even more difficult to utilize the forest resources in areas of depopulation.

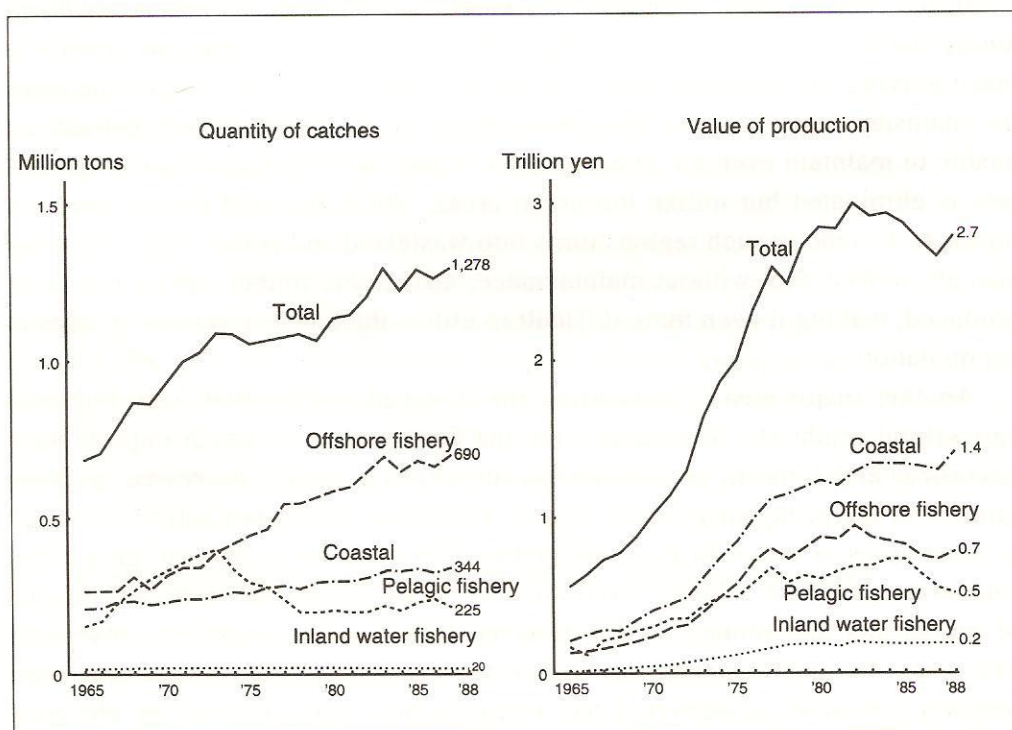
Another major area of concern is the threat of competition from imported agricultural products. Soy beans were the first product in which imports were liberalized and domestic production has subsequently greatly decreased, as many farmers in the principal growing region, Hokkaido, have been forced to switch to other crops or out of farming altogether. However, the citrus fruit growers of southern Japan drew a lesson from this and, when faced with increased imports of grapefruits and oranges, revolutionized their business methods, developed new varieties and branched out into fruit processing, thus maintaining their position. Likewise, in eastern Japan many farmers have survived by changing crops. Unlike cereals producers, the advantage lies with the domestic producer in fresh produce, but even so there would have been many more bankruptcies

without the effort of the farmers and farming cooperatives. Rice, the biggest crop produced, is a very sensitive issue and is considered endangered by international competition. The overwhelming majority of rice producers have reached the limit of rationalization and are demanding measures in a form which will prevent liberalization.

4) Fisheries

Even today, Japan is the world's top fishing nation and it is known not just for the quantity of its catches but for the variety. At one time, the ocean fishing industry was very prosperous, the size and the performance of the vessels were increased and fishing fleets were sent worldwide. Today, however, production is on the decrease due to 200 mile limits and salmon and sea trout quotas in the northern seas. Consequently, on the whole, production from coastal and offshore fisheries is now greater (see Chart 29).

Chart 29. Catches by Sector of Fisheries



Source: Japanese Fishery Yearbook 1989, Ministry of Agriculture and Forestry

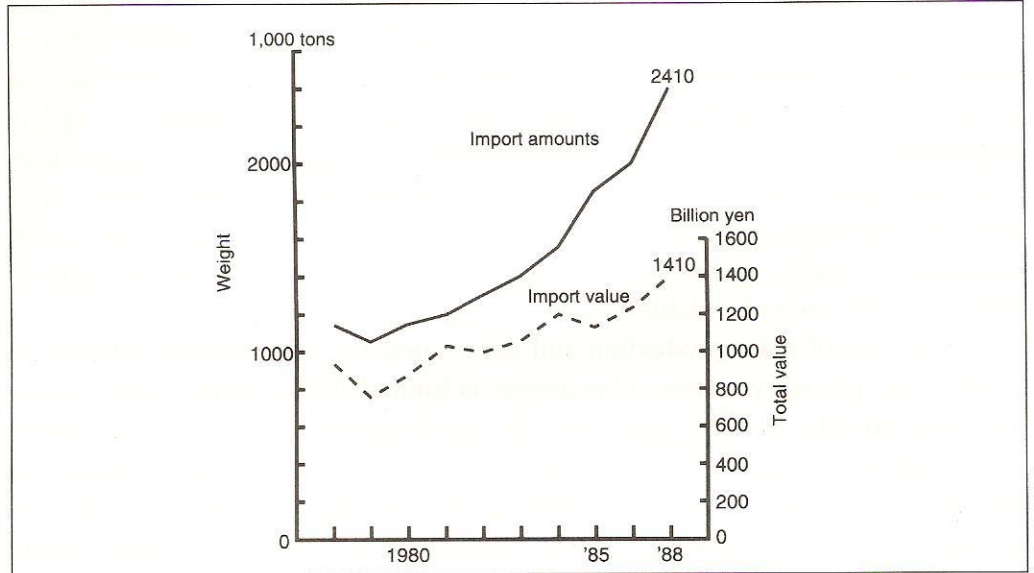
Within the primary sector the fishing industry displays the greatest disparity between small businesses and large companies. There are about 180,000 family-owned firms and about 3,000 fairly large companies, but the former account for less of the total production than the latter. This is because the purchase of a vessel is a large investment if fishing is to be a commercial proposition even on a small scale. It is impossible for the small scale fisherman already engaged in coastal fishing to compete with commercial catches. The government therefore assists the fisherman financially, and promotes coastal fishing by building fish farms and developing the technology for hatching and cultivation as well as constructing small fishing harbors in each area. As a result, the amount produced by inland water fish farming has quadrupled during the last twenty years. However the fish farms are limited to specific areas of water where the water quality deteriorates quickly and a new problem is created which has to be overcome if these ventures are to be viable.

In this era of mass production and mass sales, the development potential of small scale, privately managed businesses is limited. The smaller fishing vessels can only operate near the shore and the small catches landed at minor fishing ports have no attraction for the large scale wholesale distributors. Hence, the fishing industry bases are concentrated at specific large fishing ports. Thus the facilities provided to promote fishing villages are not being used fully. Unlike agriculture which, for reasons noted earlier, does not see large scale expansion, economies of scale operate very strongly in the fishing. Originally, coastal fishing was a part-time occupation for the fishing villagers, but today it is difficult to make a living if fishing is a subsidiary job. Fishermen are now faced with a choice between making fishing, even on a small scale, a full time job, becoming a worker in a fishing company or giving it up completely. However, because traditional fishing rights are recognized in the coastal waters, a fisherman who chooses the first option cannot freely expand his area of operation, although this might guarantee him/her a minimum catch. There are some fishermen who are making use of their existing fishing rights and switching to tourist fishing (sport fishing boat companies).

While the 200 nautical zones and bilateral fishing quota agreements have reduced the areas in which Japanese fishing fleet can operate and the fishing season, the domestic demand for fish and shellfish, especially gourmet varieties, is on the increase (see Charts 30, 31). As demand is not just limited to natural products, the number of firms which are participating in fish farming operations abroad is increasing. Representative products imported from various countries of origin are the United States and Canada for salmon, trout, crab and cod;

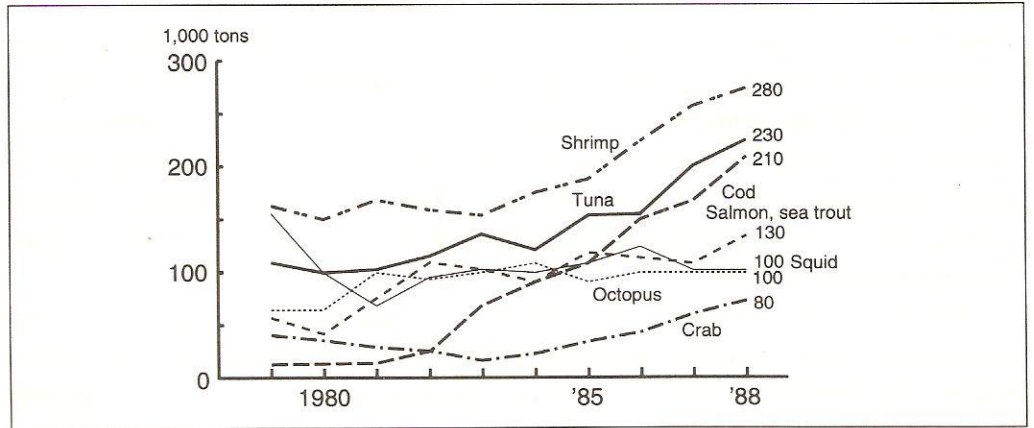
Korea and Taiwan for tuna and swordfish; Indonesia, China and Thailand for shrimp varieties; Mauritania, Morocco, Spain and Thailand for squid and octopus.

Chart 30. Change in Fishery Trade



Source: Japanese Fishery Yearbook 1989, Ministry of Agriculture and Forestry

Chart 31. Import Amounts per Major Fishery Products



Source: Japanese Fishery Yearbook 1989, Ministry of Agriculture and Forestry