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Relatively Low Activities of the Hokkaido Economy and Regional Development Strategies

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Abstract

This paper presents some factors in the relatively low activity of the Hokkaido economy and regional development policies to improve these factors, especially using the strategies for adding higher value to products of primary industry.

The factors in the relatively low level of economic activity in Hokkaido are based on (1) insufficiently competitive conditions of Hokkaido primary industry in the world market, (2) small proportion of high tech industries in the manufacturing industry in Hokkaido and (3) low labor productivity and high distribution costs in tertiary industry. Moreover, central government subsidies have given only little inducement to encourage the competitive and creative powers of the enterprises in Hokkaido.

Concrete development strategies from product market aspect are to invite high tech industries from other prefectures. Invitation of such industries is more advantageous if they include related enterprises and subcontractors. At the same time, it is much more important to add high value to agricultural, forest and marine products. On the other hand, major strategy from factor market aspect is to educate and settle enterprising businessmen and technical experts.

Key Words: Developing Area in Japan, Deficit in Balance of Payment, High Proportion of Government Investment.

1. Object of the Analysis

International trade friction and fiscal rigidity in the Japanese economy have and are leading to decreases in financial assistance to Hokkaido. At present the level of economic activity in Hokkaido is relatively low compared with the national average, despite much financial assistance.

This report aims to explain some factors in the relatively low activity of the Hokkaido economy and regional development strategy, to improve these factors, especially a strategy for adding higher value to products of primary industry.

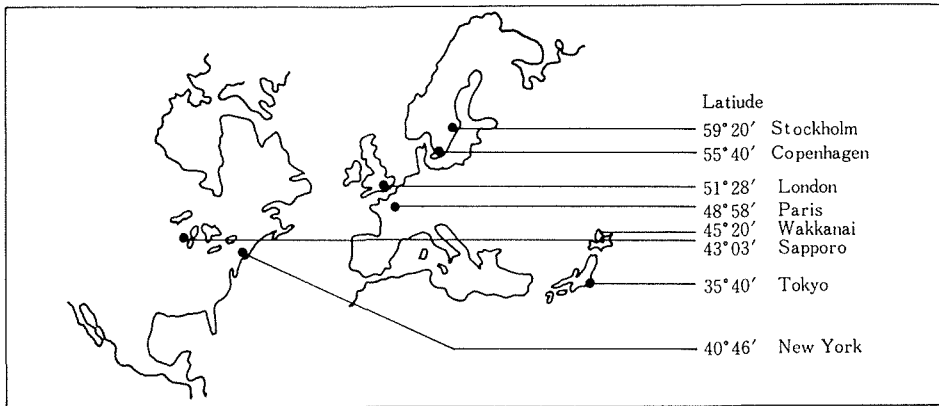
Factors in the relatively low level of activity of the Hokkaido economy were analyzed with considerations of the industrial structure, public finance, and social conditions. However, the financial and social factors, included in the tentative theory, have not been verified. For a regional development strategy it is proposed that technological innovation must be adopted in the Hokkaido economy, based on

the success this strategy has had in Denmark. This expresses some of the limitations of this paper.

2. Outline and Characteristics of the Development in Hokkaido

1) Outline of Hokkaido

- (1) Location (Fig. 2-1): The latitude of Sapporo is almost the same as Milwaukee in the United States and Marseilles in France.
- (2) Area (Fig. 2-2): The left value shows areas of regions computed by the density of population in the Tokyo, Osaka, and Nagoya areas. The right hand value is the area that remains when removing the converted area from the actual area.
- (3) Change in population (Fig. 2-3): The population of Hokkaido was about 50,000 in 1870s, 3,000,000 in 1930 and 5,700,000 in 1985, 4.7% of the national total.
- (4) Monthly mean air temperatures (Fig. 2-4): The temperature in Sapporo is lower than that in Tokyo, 5°C in summer and 10°C in winter.
- (5) Industrial structure (Table 2-1): It is a characteristic of Hokkaido that primary and tertiary industries are dominating and that the contribution of secondary industry is remarkably smaller than the national average.



Source: Hokkaido Development Bureau, "Development in Hokkaido" 1983.

Figure 2-1. Location of Hokkaido.

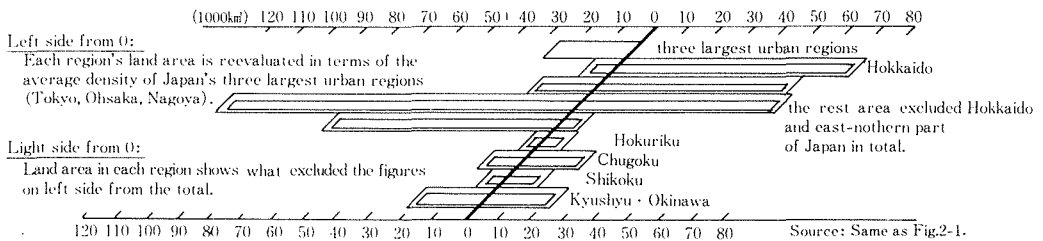
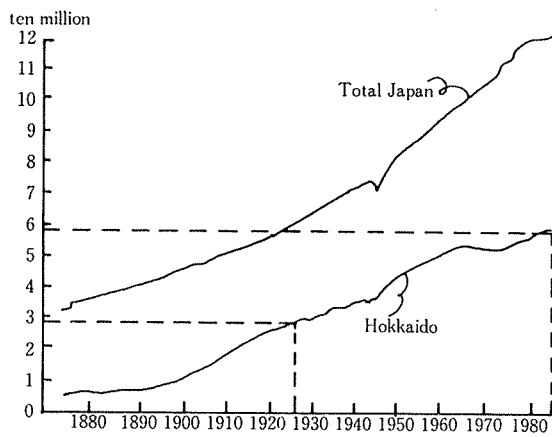
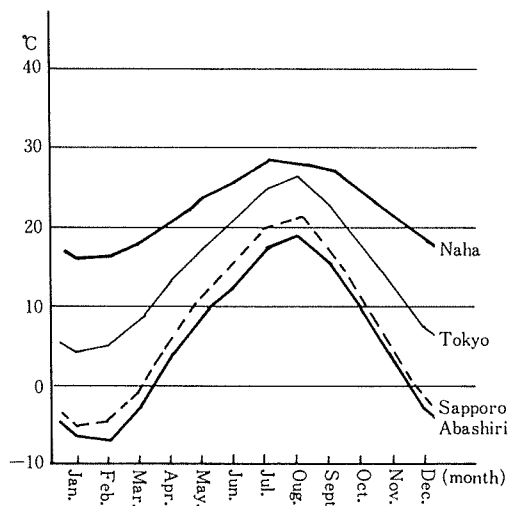


Figure 2-2. Area of Hokkaido Region.



Source: Hokkaido Development Bureau, "Development in Hokkaido" 1986.

Figure 2-3. Long Term Trend of Population.



Source: Same as Fig.2-1.

Figure 2-4. Temperature: Monthly mean.

| Population | | (1985) |
|--------------|--|-----------------|
| Japan (A) | | 12,104 thousand |
| Hokkaido (B) | | 5670 |
| (B/A) | | 4.7% |

| Density | | (1985) |
|--------------|--|------------------------|
| Japan (A) | | 3,3210/km ² |
| Hokkaido (B) | | 72 |
| (B/A) | | 22.4% |

Table 2-1. Net Product in Hokkaido

| | 1947 | 1960 | 1972 | 1984 | 1983 Japan |
|---------------------------------------|-------|-------|-------|-------|------------|
| I Primary Industry | 36.9 | 21.8 | 12.2 | 8.3 | 3.2 |
| 1) Agriculture | 25.6 | 13.9 | 7.7 | 4.9 | |
| 2) Forestry | 3.3 | 5.2 | 1.8 | 1.2 | |
| 3) Fishery | 8.0 | 2.7 | 2.7 | 2.2 | |
| II Secondary Industry | 29.4 | 29.0 | 25.8 | 22.8 | 37.2 |
| 1) Mining | 11.0 | 7.4 | 2.1 | 1.2 | 0.4 |
| 2) Construction | 4.3 | 7.3 | 10.0 | 9.4 | 7.6 |
| 3) Manufacturing | 14.1 | 14.3 | 13.7 | 12.8 | 29.2 |
| III Tertiary Industry | 33.7 | 49.2 | 61.9 | 68.9 | 59.6 |
| 1) Whole sale & Retail | 10.1 | 16.3 | 21.1 | 17.9 | 11.7 |
| 2) Finance, Insurance and Real Estate | 3.2 | 4.8 | 9.2 | 14.4 | 16.1 |
| 3) Transportation | | | 5.0 | | |
| 4) Communication | 8.0 | 9.2 | 1.1 | 6.1 | 10.0 |
| 5) Electricity, Gas & Water | | | 1.0 | 3.1 | |
| 6) Services | 9.9 | 13.1 | 17.0 | 21.2 | 17.2 |
| 7) Government | 2.5 | 5.8 | 6.7 | 6.2 | 4.6 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Hokkaido Prefectural Government, "Statistical yearbook of Income in Hokkaido".

The especially important industries are agriculture, construction, wholesale and retail, and service industries. Manufacturing industry is extremely undeveloped.

- (6) The per capita income in Hokkaido is nearly 5% lower than the national average. The national per capita income ranks fourteenth in the world (1983).

2) *Characteristics of Development in Hokkaido by Period*

- (1) Development in Hokkaido was started by the central government around 1868. Up to 1945 the main projects were land development and national defense by the colonists. Particularly agricultural development and increases in food production were stressed.
- (2) 1947-'51 Agricultural land development and emigration.
- (3) 1952-'56 Emigration and development of resources.
- (4) 1958-'70 Modernization of primary industry, and environmental improvements to develop secondary industry.
- (5) 1971-'87 Modernization of industry and development of infrastructure.

3) *Hokkaido's Development Budget*

- (1) The Hokkaido share of the national development budget (Table 2-2) was

Table 2-2. Govt. Expenditures to Public Works

| (year) | Hokkaido/Total Japan | | | | | |
|--------|----------------------|------|------|------|------|------|
| | 1952 | 1957 | 1963 | 1971 | 1978 | 1985 |
| (%) | 13.0 | 17.2 | 14.5 | 12.3 | 11.0 | 11.0 |

Source: Hokkaido Development Bureau, "Budget for Development".

Table 2-3. The Structure of Public Works in Hokkaido (unit: %)

| Expenditures | year | | | | | | | Japan 1984 |
|--|-------|-------|-------|-------|-------|-------|-------|---------------|
| | 1952 | 1957 | 1963 | 1971 | 1978 | 1984 | | |
| 1. Conservation of Forest and River | 25.7 | 13.6 | 14.2 | 15.6 | 17.1 | 16.8 | 13.7 | |
| 2. Road Improvement Works | 21.9 | 39.9 | 48.8 | 45.0 | 34.2 | 31.1 | 34.6 | |
| 3. Harbour Improvement Works | 11.2 | 10.3 | 10.4 | 10.6 | 13.1 | 11.6 | 7.3 | |
| A. Harbour | 5.6 | 5.4 | 7.0 | 6.7 | 7.4 | 6.1 | 3.7 | |
| B. Fishing Port | 5.6 | 4.4 | 3.0 | 3.3 | 4.9 | 4.1 | 1.9 | |
| C. Airport | — | 0.5 | 0.4 | 0.6 | 0.8 | 1.4 | 1.7 | |
| 4. Housing Measures | 2.7 | 4.4 | 2.5 | 2.9 | 3.7 | 4.3 | 15.5 | |
| 5. Improvement of Life Environment | 0.1 | 0.3 | 0.6 | 2.2 | 5.2 | 7.3 | 14.0 | |
| 6. Improvement of Agricultural Condition | 33.8 | 29.0 | 21.8 | 22.1 | 24.6 | 25.4 | 11.9 | |
| 7. Construction of Forest Roads | 4.5 | 2.5 | 1.7 | 1.6 | 2.1 | 3.4 | 3.1 | |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |

Source: Hokkaido Development Bureau, "Statistics on the Development in Hokkaido".

17% in 1957 and decreased to 11% in 1985.

- (2) The ratio of the Hokkaido development budget in the Hokkaido income : In 1983, the ratio of the development budget to the income was 10%. The percentage of subsidies in the budget to the income was 6.9%. Nationally the proportion of expenditures for public works to the national income was 5.7%. The proportion of nationwide expenditures for public works to the national income was 2.6%.
- (3) Structure of Hokkaido's development budget (Table 2-3): In 1984 the ratio of expenditures for road improvements and agricultural land improvements were 57% of the total. When expenditures for soil conservation, flood control and harbor improvements were also included, this ratio reached 85%.
- (4) Marginal productivity of development projects in Hokkaido : The marginal productivities of public works expenditures in Hokkaido and nationally during 1961-'75 are found with a simple production function $Y=AL^{\alpha}K^{\beta}$ (L = employed population, K = public works expenditures). The marginal productivity of αK in Hokkaido was only 41% of the national rate.

3. Actual Condition of Nationally Relatively Low Level of the Hokkaido Economy

- 1) The economic growth rate in Hokkaido is low compared with that of the

Table 3-1. Changes of Economic Growth Rate by Region (%)

| Region | | Period | | | | | |
|------------------------------------|----------------|---------|---------|---------|---------|---------|---------|
| | | 1955~60 | 1960~65 | 1965~70 | 1970~75 | 1975~80 | 1980~83 |
| Total Japan | | 11.4 | 15.4 | 18.0 | 16.6 | 10.2 | 5.0 |
| Big Urban Area | Kanto Bay Area | 13.9 | 17.4 | 19.1 | 16.1 | 10.6 | 6.2 |
| | Kinki urban | 10.6 | 16.9 | 18.4 | 14.6 | 9.6 | 4.3 |
| Surrounding Area of Big Urban Area | Kanto Inland | 10.5 | 15.2 | 18.4 | 17.5 | 11.2 | 5.7 |
| | Tokai | 13.6 | 14.0 | 19.3 | 15.9 | 10.5 | 5.0 |
| | Kinki Local | 9.2 | 15.0 | 17.4 | 17.6 | 10.2 | 4.9 |
| | Sanyo | 11.4 | 14.7 | 18.8 | 15.8 | 8.9 | 4.4 |
| Outer Area of Big Urban Area | South Tohoku | 9.2 | 14.4 | 16.1 | 19.1 | 10.0 | 4.5 |
| | Hokuriku | 11.0 | 13.0 | 17.3 | 17.2 | 9.7 | 4.5 |
| | Shikoku | 9.1 | 13.6 | 17.2 | 16.5 | 9.5 | 3.4 |
| | North Kyushu | 9.3 | 12.7 | 16.5 | 18.9 | 10.1 | 3.9 |
| Depressed Area | Hokkaido | 10.2 | 13.2 | 15.0 | 17.3 | 10.9 | 3.0 |
| | North Tohoku | 9.8 | 14.5 | 15.0 | 18.8 | 9.0 | 4.0 |
| | San-in | 7.9 | 12.0 | 15.7 | 18.7 | 10.0 | 4.4 |
| | South Kyushyu | 7.3 | 15.1 | 14.2 | 20.2 | 10.9 | 5.0 |
| | Okinawa | — | — | 16.1 | 26.5 | 9.6 | 7.1 |

Source: Economic Planning Board, "Statistical yearbook of Local Economy".
Economic Planning Board, "Statistical yearbook of prefectural Income".

Table 3-2. Index of Structural Instability of Hokkaido Economy 1983

| Positive Factors | | Negative Factors | |
|------------------------------------|-------|--|-------|
| Total Index | 108.6 | Total Index | 156.9 |
| Degree of Richness | 84.0 | Rate of Unemployment | 98.1 |
| Income Difference | 93.5 | People Disappeared from Home | 144.1 |
| Number of Rooms per capita | 112.9 | Consumer Price Level | 103.9 |
| Social Overhead Capital per capita | 167.8 | Number of the Firm Bankruped | 228.2 |
| — | — | Ratio of the people Supported their Lives by the Govt. | 168.8 |
| — | — | Receipt of Shared Taxes for Local Government | 198.4 |

Source: Asahi Newspaper Co., LTD. "Minryoku" 1985.

Table 3-3. Relative low Level of Living

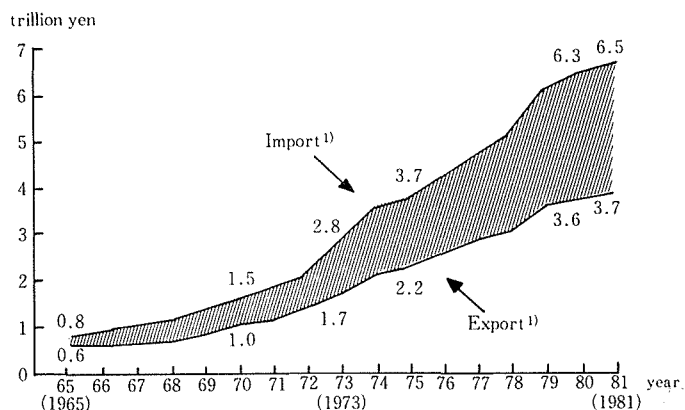
| Items | | Hokkaido/Total Japan | |
|--------------------------------------|---------------------------------|----------------------|----------------|
| | | 1968 (%) | 1983 (%) |
| Population | | 5.23 | 4.74 |
| Personal Income | | 4.90 (93.7) | 4.39 (92.6) |
| Total Power Index of the Region | | 4.86 (92.9) | 4.46 (94.1) |
| Private Finance | Bank Deposit | 2.59 | 2.45 |
| | Bank Loan | 2.53 | 2.46 |
| Luxury | Special Class Rice Liquor | 1.71 | 2.04 |
| | Cheap Japanese Liquor | 13.89 | 11.16 |
| | Cheap Japanese Cigarette "Echo" | — | 10.72 |
| Consumption | Store's Annual Sales | 3.80 (72.7) | 3.87 (81.6) |
| Information | No. of Newspaper | (89.9) | (98.5) |
| | | 5.91 | 4.07 |
| | No. of Mail | (113.0) | (85.9) |
| | | 5.45 | 4.56 |
| | No. of Books & Magazines | (104.2) | (96.2) |
| Health | No. of Library | 3.52 | 4.23 |
| | No. of Medical Doctors | 4.27 | 4.27 (88.8) |
| Public | National Taxes | 2.71 (51.8) | 2.87 (60.5) |
| Finance | Local Taxes | 3.68 | 6.10 |
| | | (70.4) | (75.1) |
| Ownership ratio of Consumer durables | | — | (88.6) |

Source: Asahi Newspaper Co. LTD "Minryoku" 1985.

The figures in bracket show the index of Hokkaido for 100, the level of total Japan.

nation and it fluctuates with the national fluctuations. Particularly the decreases in the growth rate in Hokkaido are large (Table 3-1).

- 2) The Hokkaido economy is more unstable than the national average because of many bankruptcies, a high consumer price index, and a high proportion of families on welfare (Table 3-2).
- 3) From the per capita income or the relative per capita activity level comprising consumption and cultural factors, the level of living in Hokkaido is lower than the national average (Table 3-3), (Figure 3-1).



Source: Statistical yearbook of Hokkaido Prefectural Income Estimation.

1) Both Concept of Domestic and Oversea Aspect.

Figure 3-1. Annual Changes of Import & Export in Hokkaido.

4. Some Factors in the Relatively Low Level of Economic Activities in Hokkaido

1) Industrial Structure

- (1) Primary industry in Hokkaido is relatively powerful, compared with the rest of Japan, but it is insufficiently competitive in world markets (Table 4-1).
- (2) The manufacturing industry in Hokkaido is mainly light industry (Table 4-2), and the proportion of high tech industries is small (Table 4-3).
- (3) Tertiary industry in Hokkaido has low labor productivity and high distribution costs due to a large number of public workers, and many very small-scale finance, real estate, and commercial enterprises.

2) Public Finances

- (1) Public budgets prepared by politicians and bureaucrats, are generally aimed at people in lower income brackets and producer interest groups, mainly from agriculture and the construction industry (Figure 4-1). Allocations for manufacturing industry is made only as indirect encouragement, and this may have retarded the progress of manufacturing industry.

Table 4-1. Labor Productivity, Net Product, Import & Export in Hokkaido (1983)

| | Labor Productivity Hokkaido/ Japanese Average | Net Product Hokkaido/ Total Japan | Shipment to Other Prefecture in Total Production | Domestic Import/ Regional Demand | Export/ Total Production | Import/ Total Demand |
|------------------------|--|--------------------------------------|---|-------------------------------------|-----------------------------|-------------------------|
| | % | % | ① | % | % | % |
| Primary Industry | 197.2 | 11.7 | 34.8 | 11.4 | 0.6 | 11.0 |
| Secondary Industry | 92.2 | 2.8 | | | | |
| Manufacturing Industry | 98.5 | 2.2 | (22.0) | (61.0) | (5.0) | (2.1) |
| Tertiary Industry | 89.3 | 5.0 | | | | |
| Wholesale & Retail | 97.2 | 4.4 | 4.1 | 4.6 | 0.3 | 0.0 |

Source: Hokkaido Economic White Paper.

Hokkaido Statistical Yearbook of Finance and Economy.

Input-Output Table Analysis of Hokkaido Economy in 1980.

*The figures in bracket show those of ordinary machinery. ① The Figures in 1983.

Table 4-2. Value of Shipment in Light and Heavy Industry (%)

| | Light ① | | | Light ② | | | Heavy ① | | | Heavy ② | | |
|----------------|---------|------|------|---------|------|------|---------|------|------|---------|------|------|
| | 1955 | 1970 | 1983 | 1955 | 1970 | 1983 | 1955 | 1970 | 1983 | 1955 | 1970 | 1983 |
| Total Japan | 9.5 | 10.9 | 12.3 | 45.8 | 26.8 | 23.1 | 18.0 | 37.7 | 40.9 | 26.7 | 24.6 | 23.7 |
| Hokkaido | 5.9 | 7.4 | 8.6 | 64.6 | 63.7 | 60.9 | 5.5 | 12.5 | 10.9 | 24.0 | 16.4 | 19.6 |
| Kanto Bay Area | 15.1 | 13.5 | 15.1 | 30.1 | 16.0 | 13.9 | 27.3 | 46.8 | 45.5 | 27.2 | 23.0 | 25.4 |
| Kanto Inland | 7.1 | 5.4 | 10.6 | 63.1 | 26.9 | 20.7 | 17.4 | 45.6 | 53.4 | 6.3 | 16.5 | 15.2 |
| South Tohoku | 6.6 | 6.6 | 10.9 | 51.9 | 41.7 | 33.2 | 11.5 | 27.4 | 38.1 | 29.9 | 23.1 | 18.0 |
| North Tohoku | 3.7 | 5.3 | 8.7 | 52.7 | 57.2 | 49.3 | 3.9 | 12.8 | 27.4 | 38.3 | 22.8 | 14.4 |

Liget ①: Apparel, Furniture and Fixtures, Print and Publication, Leather, Rubber.

Light ②: Food Processing, Textiles, Lumber and Wood Product, Pulp, Paper, Ceramic, Stone and Clay Products.

Heavy ①: Fabricated Metal Product, Ordinary Machinery, Electric Machinery Equipment and Suppliers, Transport Equipment, Precision Instrument, Ordnance and Accessories.

Heavy ②: Chemicals and Allied Products, Petroleum and Coal, Non-Ferrous Metal Product, Product, Iron and Steel.

Source: Ministry of International Trade and Industry. "Industrial Statistics".

(2) The ratio of subsidies covered by public finances is generally large. These subsidies are allocated from the nation to prefectures, from prefecture to municipalities, and from municipalities to various groups. Therefore there is only little inducement to encourage the competitive and creative powers of enterprises in a market economy. As the result there is little income

Table 4-3. The Share of High Technological Industry in Hokkaido (Billion yen)

| | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1982/ 1975 |
|--|------|------|------|------|------|------|------|------|---------------|
| Value of Shipment in High Tech. Industry (A) | 16 | 48 | 47 | 31 | 32 | 48 | 54 | 86 | 5.5 |
| Value of Manufacturing Industry (B) | 3646 | 3987 | 3978 | 4035 | 4449 | 5082 | 5128 | 5141 | 1.4 |
| (A)/(B) (%) | 0.4 | 1.2 | 1.2 | 0.8 | 0.7 | 0.9 | 1.0 | 1.7 | |

Source: Hokkaido Takushoku Bank, "Monthly Economic Report,," Aug., 1984.

from private corporations and much compensation of employees in Hokkaido (Table 4-4). The Hokkaido economy has largely been supported by public expenditures for a long time, which may have resulted in poorer inducements for development in Hokkaido than in other prefectures.

- (3) Public finance expenditure for Hokkaido has caused remarkable inducements to production in construction industry, commerce and to domestic import (Table 4-5, 4-6). In this way, financial assistance may have prevented capital accumulation in Hokkaido.

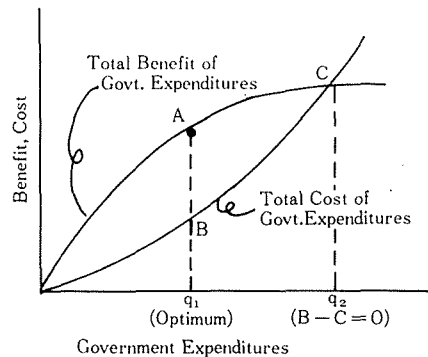


Figure 4-1. Benefit & Cost of Govt. Expenditures.

3) *Social Conditions*

Hokkaido emigrants were mainly lower-class 'samurais' (warriors) who by the Meiji Restoration could not make a living in their native districts, poor people who came to Hokkaido to work in fishery and mining, and criminals. The extreme natural and economic conditions possibly led to resignation and the resulting unstable social situation. Under these social conditions, constant help from public finances as mentioned above may have prevented the development of free competition in the community, and as a result manufacturing industry may have become retarded.

5. **Aims of Development in Hokkaido**

- 1) *To encourage income growth and employment.....Income growth policy*
 - (1) Hokkaido's per capita income can be increased by encouraging the production of high value added products through the industrial structure and by lowering the price of production to establish and independent economy, to move away from public financial expenditures to support import substitu-

Table 4-4. The structure of Income Distribution

| | | 1983 Income Distri- bution ④ | (%) | | | | | | | | | | | |
|---|--------------|--|------|------|------|---------|------|------|------|---------|------|------|------|---------|
| | | | 1955 | | | | 1970 | | | | 1983 | | | |
| | | | ① | ② | ③ | another | ① | ② | ③ | another | ① | ② | ③ | another |
| Total | Japan | 2,311 | 51.3 | 6.0 | 37.2 | 5.5 | 54.2 | 14.6 | 19.7 | 11.5 | 68.0 | 11.5 | 12.8 | 7.7 |
| Big Urban Area | Kanto Bay | 700 | 58.6 | 10.7 | 24.5 | 6.2 | 56.1 | 17.9 | 13.2 | 12.8 | 68.0 | 14.2 | 10.3 | 7.5 |
| | Kinki Urban | 343 | 58.7 | 7.0 | 28.0 | 6.3 | 53.1 | 17.4 | 16.2 | 13.3 | 66.2 | 11.5 | 10.3 | 12.0 |
| Surrounding Area of Big Urban Area | Kanto Inland | 164 | 37.5 | 3.8 | 54.7 | 4.0 | 51.6 | 11.8 | 26.4 | 10.2 | 64.7 | 11.7 | 16.1 | 7.5 |
| | Tokai | 262 | 50.4 | 7.1 | 36.8 | 5.7 | 52.0 | 17.3 | 19.1 | 11.6 | 68.1 | 12.3 | 12.4 | 7.2 |
| | Kinki Local | 59 | 45.3 | 3.7 | 47.1 | 3.9 | 52.7 | 11.3 | 25.8 | 10.2 | 66.8 | 11.2 | 13.5 | 8.5 |
| | Sanyo | 116 | 49.5 | 4.1 | 41.7 | 4.7 | 55.7 | 14.5 | 20.3 | 9.5 | 68.2 | 12.2 | 11.4 | 8.2 |
| Outer Area of Big Urban Area | South Tohoku | 131 | 40.6 | 2.9 | 50.9 | 5.6 | 51.9 | 9.6 | 28.1 | 10.4 | 69.4 | 8.8 | 15.8 | 6.0 |
| | Hokuriku | 55 | 43.7 | 4.5 | 47.4 | 4.4 | 52.7 | 12.8 | 23.7 | 10.8 | 67.7 | 10.1 | 14.8 | 7.4 |
| | Shikoku | 67 | 38.9 | 4.0 | 52.3 | 4.8 | 49.7 | 9.6 | 30.0 | 10.7 | 64.9 | 7.9 | 18.5 | 8.7 |
| | North Kyushu | 143 | 55.3 | 2.2 | 37.1 | 5.4 | 56.5 | 10.8 | 23.6 | 9.1 | 68.4 | 10.3 | 14.4 | 6.9 |
| Depressed Area | Hokkaido | 99 | 57.0 | 4.5 | 33.7 | 4.8 | 64.9 | 8.0 | 20.8 | 6.3 | 80.0 | 5.3 | 12.9 | 1.8 |
| | North Tohoku | 62 | 42.1 | 2.6 | 50.9 | 4.4 | 50.4 | 6.3 | 32.6 | 10.7 | 79.6 | 5.3 | 20.1 | 5.0 |
| | San-in | 21 | 43.6 | 1.9 | 50.3 | 4.2 | 56.1 | 7.9 | 25.8 | 10.2 | 72.1 | 7.0 | 15.4 | 5.5 |
| | South Kyushu | 73 | 40.2 | 1.8 | 53.3 | 4.7 | 49.2 | 6.0 | 34.6 | 10.2 | 66.6 | 7.8 | 19.4 | 6.2 |
| | Okinawa | 16 | — | — | — | — | 50.1 | 4.6 | 30.3 | 15.0 | 62.8 | 7.5 | 28.4 | 11.3 |

① Compensation of Employees.

② Income from Private Corporations.

③ Income from Unincorporated Enterprises.

Source: Economic Planning Board, "Income Statistics by Region".

④ 100 billion yen.

Table 4-5. Production Inducement by Each Item in Final Demands

unit: 0.1 Billion yen

| | year | Business Consumption Expenditures | | Private Consumption Expenditures | | General Government Consumption Expenditures | | Gross Domestic Fixed Capital Formation | | Net Increase in stock | | International Export | | Domestic Export | | Total Final Demands | |
|--------------------|------|-----------------------------------|-------|----------------------------------|-------|---|-------|--|-------|-----------------------|--------|----------------------|-------|-----------------|-------|---------------------|-------|
| | | | | | | | | | | | | | | | | | |
| Primary Industry | 1970 | 220 | 6.1 | 5,351 | 11.1 | 237 | 1.4 | 1,087 | 3.3 | 123 | 11.5 | 429 | 9.7 | 13,348 | 25.6 | 20,831 | 13.4 |
| | 1975 | 190 | 4.1 | 5,042 | 7.5 | 165 | 0.9 | 1,051 | 2.2 | 98 | 35.6 | 305 | 5.9 | 11,689 | 22.3 | 18,539 | 9.5 |
| | 1980 | 213 | 3.8 | 5,072 | 6.3 | 214 | 1.0 | 1,143 | 1.9 | △ 138 | 162.4 | 266 | 5.6 | 11,533 | 19.6 | 18,303 | 7.9 |
| Secondary Industry | 1970 | 626 | 17.4 | 11,146 | 23.2 | 1,488 | 8.5 | 26,161 | 79.9 | 650 | 60.8 | 3,164 | 71.7 | 27,246 | 56.1 | 70,481 | 45.2 |
| | 1975 | 667 | 14.3 | 14,666 | 21.8 | 1,304 | 7.5 | 37,386 | 78.5 | 45 | 16.4 | 3,913 | 75.7 | 29,311 | 55.9 | 87,292 | 44.8 |
| | 1980 | 825 | 14.9 | 16,134 | 20.2 | 1,775 | 8.2 | 45,962 | 77.1 | 29 | -34.1 | 2,756 | 58.4 | 33,180 | 56.5 | 100,661 | 43.7 |
| Mining | 1970 | 10 | 0.3 | 226 | 0.5 | 30 | 0.2 | 406 | 1.2 | 23 | 2.2 | 87 | 2.0 | 2,623 | 5.4 | 3,405 | 2.2 |
| | 1975 | 8 | 0.2 | 145 | 0.2 | 18 | 0.1 | 480 | 1.0 | △ 2 | -0.7 | 83 | 1.6 | 2,086 | 4.0 | 2,817 | 1.4 |
| | 1980 | 16 | 0.3 | 235 | 0.3 | 42 | 0.2 | 982 | 1.6 | △ 40 | 47.1 | 80 | 1.7 | 2,016 | 3.4 | 3,330 | 1.4 |
| Manufacturing | 1970 | 585 | 16.3 | 10,049 | 20.9 | 1,216 | 6.9 | 8,416 | 25.7 | 619 | 57.9 | 3,052 | 69.1 | 24,331 | 50.1 | 47,268 | 30.9 |
| | 1975 | 626 | 13.4 | 13,117 | 19.5 | 1,077 | 6.2 | 10,055 | 21.1 | 45 | 16.4 | 3,805 | 73.6 | 26,940 | 51.4 | 55,666 | 28.6 |
| | 1980 | 767 | 13.8 | 14,797 | 18.5 | 1,494 | 6.9 | 13,045 | 21.9 | 70 | -82.4 | 2,639 | 55.9 | 30,828 | 52.5 | 63,640 | 27.6 |
| Light | 1970 | 492 | 13.7 | 8,098 | 16.8 | 780 | 4.3 | 3,154 | 9.6 | 346 | 32.4 | 887 | 20.1 | 14,626 | 30.1 | 28,363 | 18.2 |
| | 1975 | 483 | 10.3 | 9,703 | 14.4 | 562 | 3.2 | 4,080 | 8.6 | △ 161 | -58.5 | 756 | 14.6 | 15,640 | 29.8 | 31,062 | 15.9 |
| | 1980 | 593 | 10.7 | 10,655 | 13.3 | 803 | 3.7 | 5,129 | 8.6 | 104 | -122.4 | 623 | 13.2 | 17,801 | 30.3 | 35,708 | 15.5 |
| Chemicals | 1970 | 31 | 0.9 | 582 | 1.2 | 87 | 0.5 | 464 | 1.4 | 50 | 4.7 | 216 | 4.9 | 2,014 | 4.1 | 3,444 | 2.2 |
| | 1975 | 71 | 1.5 | 1,909 | 2.8 | 219 | 1.3 | 909 | 1.9 | △ 10 | -3.6 | 353 | 6.8 | 4,767 | 9.1 | 8,219 | 4.2 |
| | 1980 | 87 | 1.6 | 2,182 | 2.7 | 306 | 1.4 | 1,084 | 1.8 | △ 83 | 97.6 | 200 | 4.2 | 5,041 | 8.6 | 8,818 | 3.8 |
| Metal | 1970 | 34 | 0.9 | 475 | 1.0 | 100 | 0.6 | 2,171 | 6.6 | 1 | 14.0 | 1,391 | 31.5 | 6,578 | 13.6 | 10,902 | 7.0 |
| | 1975 | 38 | 0.8 | 468 | 0.7 | 67 | 0.4 | 2,391 | 5.0 | 221 | 80.4 | 1,803 | 34.9 | 5,269 | 10.0 | 10,258 | 5.3 |
| | 1980 | 54 | 1.0 | 744 | 0.9 | 98 | 0.5 | 3,642 | 6.1 | 0 | 0.0 | 1,311 | 27.8 | 6,142 | 10.5 | 11,990 | 5.2 |
| Machinery | 1970 | 28 | 0.8 | 894 | 1.9 | 267 | 1.5 | 2,626 | 8.0 | 73 | 6.8 | 559 | 12.7 | 1,113 | 2.3 | 5,560 | 3.6 |
| | 1975 | 34 | 0.7 | 1,037 | 1.5 | 230 | 1.3 | 2,674 | 5.6 | △ 5 | -1.8 | 893 | 17.3 | 1,265 | 2.4 | 6,127 | 3.1 |
| | 1980 | 33 | 0.6 | 1,215 | 1.5 | 287 | 1.3 | 3,191 | 5.4 | 48 | -56.5 | 506 | 10.7 | 1,843 | 3.1 | 7,123 | 3.1 |
| Construction | 1970 | 31 | 0.9 | 872 | 1.8 | 241 | 1.4 | 17,338 | 53.0 | 7 | 0.7 | 25 | 0.6 | 293 | 0.6 | 18,808 | 12.1 |
| | 1975 | 33 | 0.7 | 1,404 | 2.1 | 208 | 1.2 | 36,845 | 56.4 | 2 | 0.7 | 25 | 0.5 | 285 | 0.5 | 28,809 | 14.8 |
| | 1980 | 42 | 0.8 | 1,103 | 1.4 | 239 | 1.1 | 31,935 | 53.6 | △ 1 | 1.2 | 37 | 0.8 | 336 | 0.6 | 33,692 | 24.6 |
| Tertiary Industry | 1970 | 2,745 | 76.4 | 31,640 | 65.7 | 15,807 | 90.2 | 5,488 | 16.8 | 296 | 27.7 | 821 | 18.6 | 7,902 | 16.3 | 64,700 | 41.5 |
| | 1975 | 3,820 | 81.7 | 47,639 | 70.7 | 15,936 | 91.6 | 9,244 | 19.3 | 132 | 48.0 | 952 | 18.4 | 11,443 | 21.8 | 89,138 | 45.7 |
| | 1980 | 4,517 | 81.3 | 58,786 | 75.5 | 19,771 | 90.9 | 12,505 | 21.0 | 23 | -27.1 | 1,697 | 36.0 | 14,006 | 23.9 | 111,305 | 48.3 |
| Total | 1970 | 3,591 | 100.0 | 48,138 | 100.0 | 17,532 | 100.0 | 17,532 | 100.0 | 1,069 | 100.0 | 4,415 | 100.0 | 48,533 | 100.0 | 156,013 | 100.0 |
| | 1975 | 4,677 | 100.0 | 67,347 | 100.0 | 17,405 | 100.0 | 17,405 | 100.0 | 275 | 100.0 | 5,170 | 100.0 | 52,443 | 100.0 | 194,969 | 100.0 |
| | 1980 | 5,555 | 100.0 | 79,992 | 100.0 | 21,760 | 100.0 | 21,760 | 100.0 | △ 85 | 100.0 | 4,720 | 100.0 | 58,718 | 100.0 | 230,270 | 100.0 |

Relatively Low Activities

Source: Sapporo Branch of the Ministry of International Trade and Industry.
 "Input-output Table Analysis of Hokkaido Economy in 1970-'75-'85" 1985.

Table 4-6. Changes of Inducement Effects by Each Item in Final Demands

Unit: 0.1 Billion yen

| Index | year | Production Inducement | | | Production Inducement | | | Production Inducement | | | Production Inducement | | |
|---|----------|-----------------------|-------|-------------|-----------------------|-------|-------------|-----------------------|-------|-------------|-----------------------|-------|-------------|
| | | value | % | coefficient | value | % | coefficient | value | % | coefficient | value | % | coefficient |
| Business Consumption Expenditures | 1970 | 3,591 | 2.3 | 1.285378 | 2,049 | 2.7 | 0.733339 | 98 | 1.8 | 0.035166 | 646 | 2.2 | 0.231409 |
| | 1970 (A) | 1,437 | 2.2 | 1.244757 | 786 | 2.4 | 0.681335 | 41 | 1.8 | 0.035159 | 327 | 2.2 | 0.283379 |
| | 1975 | 4,677 | 2.4 | 1.243030 | 2,728 | 2.8 | 0.724959 | 172 | 1.6 | 0.045773 | 862 | 2.2 | 0.229144 |
| | 1975 (A) | 3,445 | 2.4 | 1.223146 | 2,014 | 2.8 | 0.715128 | 122 | 1.7 | 0.043234 | 680 | 2.2 | 0.241479 |
| | 1980 | 5,555 | 2.4 | 1.261271 | 3,119 | 2.8 | 0.708031 | 189 | 1.6 | 0.043010 | 1,096 | 2.3 | 0.248882 |
| Private Consumption Expenditures | 1970 | 28,138 | 30.9 | 1.150982 | 27,494 | 35.7 | 0.657383 | 1,828 | 33.2 | 0.043697 | 12,499 | 42.1 | 0.298853 |
| | 1970 (A) | 20,503 | 31.0 | 1.090440 | 12,025 | 36.9 | 0.639553 | 715 | 32.2 | 0.038026 | 6,061 | 41.7 | 0.322328 |
| | 1975 | 67,347 | 34.5 | 1.120065 | 38,329 | 39.3 | 0.637460 | 4,005 | 36.7 | 0.066605 | 17,786 | 45.3 | 0.295853 |
| | 1975 (A) | 49,051 | 34.6 | 1.094713 | 28,389 | 40.0 | 0.633585 | 2,676 | 37.5 | 0.059713 | 13,738 | 44.7 | 0.306601 |
| | 1980 | 79,992 | 34.7 | 1.136190 | 45,874 | 40.8 | 0.651581 | 4,271 | 36.2 | 0.060662 | 20,254 | 42.4 | 0.287685 |
| General Government Consumption Expenditures | 1970 | 17,532 | 11.2 | 1.375073 | 10,948 | 14.2 | 0.858713 | 237 | 4.3 | 0.018558 | 1,567 | 5.3 | 0.122882 |
| | 1970 (A) | 6,555 | 9.9 | 1.399871 | 3,891 | 11.9 | 0.831049 | 94 | 4.2 | 0.020134 | 698 | 4.8 | 0.149132 |
| | 1975 | 17,405 | 8.9 | 1.321847 | 11,205 | 11.5 | 0.850971 | 372 | 3.4 | 0.028238 | 1,593 | 4.1 | 0.120987 |
| | 1975 (A) | 12,912 | 9.1 | 1.316198 | 8,361 | 11.8 | 0.852351 | 238 | 3.3 | 0.024215 | 1,213 | 3.9 | 0.123658 |
| | 1980 | 21,760 | 9.4 | 1.317145 | 13,576 | 12.1 | 0.821756 | 588 | 5.0 | 0.035579 | 2,356 | 4.9 | 0.142616 |
| Gross Domestic Fixed Capital Formation | 1970 | 32,736 | 21.0 | 1.340333 | 15,320 | 19.9 | 0.627272 | 1,079 | 19.7 | 0.044163 | 8,004 | 27.0 | 0.327732 |
| | 1970 (A) | 13,875 | 21.0 | 1.254135 | 6,012 | 18.5 | 0.543406 | 508 | 22.9 | 0.045912 | 4,531 | 31.1 | 0.409523 |
| | 1975 | 47,651 | 24.4 | 1.338042 | 22,372 | 23.0 | 0.628198 | 1,840 | 16.8 | 0.051672 | 11,395 | 29.0 | 0.319972 |
| | 1975 (A) | 33,574 | 23.7 | 1.299807 | 15,147 | 21.3 | 0.586425 | 1,301 | 18.2 | 0.050349 | 9,376 | 30.5 | 0.363006 |
| | 1980 | 59,609 | 25.9 | 1.377517 | 25,546 | 22.7 | 0.590356 | 2,040 | 17.4 | 0.047374 | 15,673 | 32.8 | 0.362192 |
| Net Increase in Stock | 1970 | 1,069 | 0.7 | 0.890670 | 433 | 0.6 | 0.360816 | 93 | 1.7 | 0.077717 | 670 | 2.3 | 0.558133 |
| | 1970 (A) | 490 | 0.7 | 0.768772 | 2,115 | 0.7 | 0.336941 | 45 | 2.0 | 0.069922 | 375 | 2.6 | 0.589246 |
| | 1975 | 275 | 0.1 | 1.277801 | 139 | 0.1 | 0.644230 | -141 | -1.3 | -0.653403 | 212 | 0.5 | 0.983549 |
| | 1975 (A) | 203 | 0.1 | 0.85507 | 110 | 0.2 | 0.481504 | -69 | 1.0 | -0.303036 | 183 | 0.6 | 0.738747 |
| | 1980 | -85 | 0.0 | -4.002526 | -50 | 0.0 | -2.347858 | 35 | 0.3 | 0.638785 | 37 | 0.1 | 1.760535 |
| International Export | 1970 | 4,415 | 2.8 | 1.945123 | 1,506 | 2.0 | 0.663689 | 183 | 3.2 | 0.076110 | 562 | 1.9 | 0.247783 |
| | 1970 (A) | 2,050 | 3.1 | 1.931136 | 716 | 2.2 | 0.674605 | 71 | 3.2 | 0.066492 | 257 | 1.8 | 0.242005 |
| | 1975 | 5,170 | 2.7 | 1.837788 | 1,683 | 1.7 | 0.598241 | 300 | 2.7 | 0.106532 | 807 | 2.1 | 0.226827 |
| | 1975 (A) | 3,611 | 2.5 | 1.879771 | 1,130 | 1.6 | 0.588418 | 186 | 2.6 | 0.096881 | 584 | 1.9 | 0.303879 |
| | 1980 | 4,720 | 2.0 | 1.827657 | 1,612 | 1.4 | 0.624258 | 195 | 1.7 | 0.075572 | 759 | 1.6 | 0.293780 |
| Domestic Export | 1970 | 48,533 | 31.1 | 1.789341 | 19,255 | 25.0 | 0.709922 | 1,976 | 36.0 | 0.072845 | 5,742 | 19.3 | 0.211698 |
| | 1970 (A) | 21,204 | 32.1 | 1.755318 | 8,936 | 27.4 | 0.739449 | 748 | 33.7 | 0.061902 | 2,300 | 15.8 | 0.190434 |
| | 1975 | 52,443 | 26.9 | 1.636778 | 21,006 | 21.6 | 0.655615 | 4,376 | 40.1 | 0.136592 | 6,584 | 16.8 | 0.205486 |
| | 1975 (A) | 38,913 | 27.5 | 1.652912 | 15,825 | 22.3 | 0.672190 | 2,683 | 37.6 | 0.113986 | 4,967 | 16.2 | 0.210987 |
| | 1980 | 58,719 | 25.5 | 1.674781 | 22,866 | 20.3 | 0.652190 | 4,469 | 37.9 | 0.127458 | 7,648 | 16.0 | 0.218137 |
| Total Final Demands | 1970 | 156,013 | 100.0 | 1.388220 | 77,006 | 100.0 | 0.685209 | 5,483 | 100.0 | 0.048787 | 29,691 | 100.0 | 0.264192 |
| | 1970 (A) | 66,113 | 100.0 | 1.336140 | 32,582 | 100.0 | 0.658470 | 2,221 | 100.0 | 0.044879 | 14,550 | 100.0 | 0.294048 |
| | 1975 | 194,969 | 100.0 | 1.319679 | 97,462 | 100.0 | 0.659686 | 10,924 | 100.0 | 0.073944 | 39,242 | 100.0 | 0.265616 |
| | 1975 (A) | 141,709 | 100.0 | 1.300608 | 70,978 | 100.0 | 0.651435 | 7,135 | 100.0 | 0.065489 | 30,742 | 100.0 | 0.282147 |
| | 1980 | 230,270 | 100.0 | 1.336710 | 112,543 | 100.0 | 0.653309 | 11,797 | 100.0 | 0.068480 | 47,824 | 100.0 | 0.277615 |

Source: Same as Figures 4-5. The figures in the bracket A show nominal one.

tion. Fig. 5-1 shows that the Hokkaido economy eventually heads toward L under present policies which are the result of the direction from I to J increasing public expenditure and the direction from I to K increasing imports. The L direction shows that domestic prices are still higher than international prices, which means an oversupply. Therefore domestic prices must be made close to international prices by controlling public financial expenditure up to N and decreasing imports in the future. Point N also shows where the balance of demand and supply is reached. This direction leads to protection of infant industry.

(2) Expansion of manufacturing industry in the industrial structure serves as a stimulus to service industry, resulting in increases in employment and population.

2) *To abolish differentials in the living environment to achieve a comfortable life.....Welfare policy*

Income growth and welfare policies will not conflict with each other due to technological innovation (Fig. 5-2).

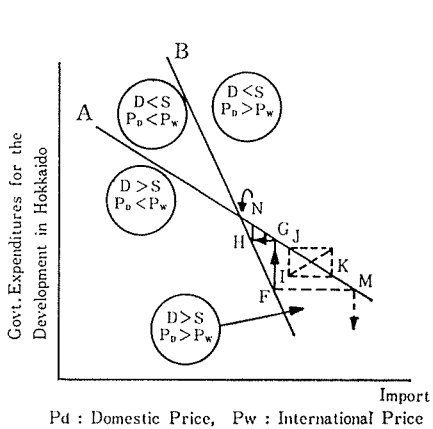


Figure 5-1. Balanced Demand & Supply, Equilibrium price of the product in Hokkaido.

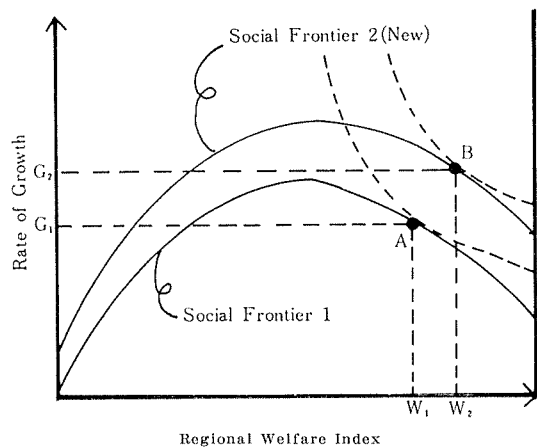


Figure 5-2. Growth and Welfare.

6. Theoretical background to the regional development strategy

At present the most important strategy for development in Hokkaido is to increase local income.

1) *The strategy for increasing local income by H. W. Richardson*

This strategy aims to increase the ratio of investment and exports to income, and to decrease the ratio of imports to income.

2) *Strategy for increasing local income by Dr. Kenichi Miyazawa*

The strategy aims to increase the added-value ratio of local products and the

self-sufficiency rate of materials for production as high as possible. It also requires an increase in the ratio of income and profit remaining in the region.

7. Details of Development Strategy

1) Product Market

From a questionnaire to municipalities (Fig. 7-1), the main problem in developing local industry is to educate leaders and talented persons for private enter-

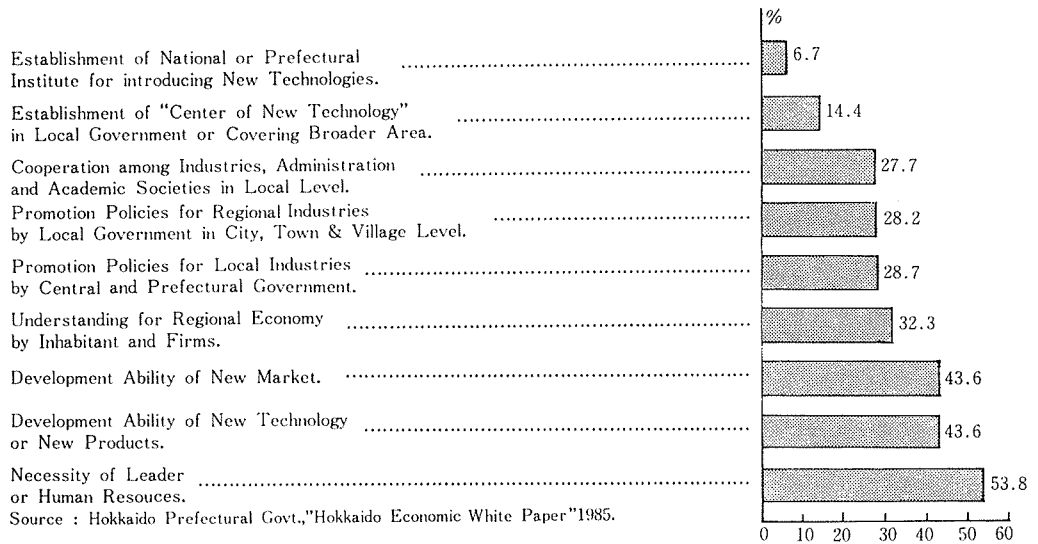


Figure 7-1. Problems of Regional Industries Pointed by Local Government.

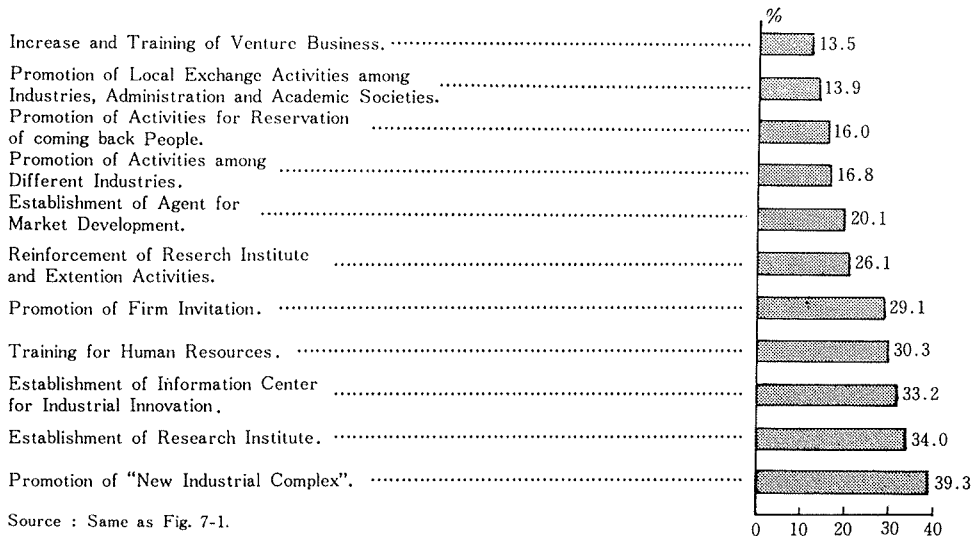


Figure 7-2. The Way to Prosperous Regional Industries Pointed by Manufacturing Firms.

prises and economic groups. Another problem is to develop new products and new markets.

As is shown in Fig. 7-2, persons from manufacturing industry consider that, to develop local industry, it is essential to promote the widest possible range of industries, to establish technological and information centers, and to improve research and development institutions.

Details of the strategies are given below with the results from the questionnaire.

- (1) To invite high tech industries from other prefectures and enlarge local industry
 - A. High tech industry is mainly considered to be (a) precision and general machine industry (ex. optical fiber, video cameras, robots, solar cells, aircrafts, rocketplanes, (automobiles), (b) chemical industry (ex. new materials, carbon fibers, drugs such as anti-cancer drugs), and (c) electrical appliances (ex. IC, computers, VTR, office automation equipment, audio equipment).
 - B. Conditions for inviting high tech industries are as follows; (a) For producing high added value and increase employment (b) To provide good establishment conditions such as water, (c) Low land prices, (d) Closeness to airports, (e) Favorable living environment including educational and cultural facilities, (f) To have public research and development institutions.
 - C. Cities that meet these requirements are Sapporo, Ebetsu, Asahigawa, Kushiro, Obihiro, and Kitami.
 - D. It is advantageous to invite central industries including related enterprises and subcontractors when possible.
- (2) To add high value to agricultural, forest, and marine products (Formation of Industrial Complexes)
 - A. The production system established in Denmark is to be introduced. In Denmark, goods of high value are made from primary products for export. Pigs are an example, toothbrushes are produced from the bristles, shoes from the skin, insulin from the pancreas, hormones from the pituitary gland, and cosmetics from the blood.
 - B. Therefore, like with the Danish system, an aim is to add high-value to agricultural, forest, and marine products in Hokkaido. A healthy industry can be developed considering that consumption of the aged and young women is increasing.
 - (a) Clothing products are characterized by sports wear, including sports shoes. The fur industry may be combined with the fashion industry.
 - (b) Agricultural and marine products used as raw materials to produce health foods, drugs (for adults), and cosmetics. For example, cultivation of mushroom is being increased, as they help checking cancer-causing substances. Further, new foods are made from

a mixture of butter and marine products, where the marine product serves to decrease the abundant cholesterol in the butter.

- (c) For forest products, new building materials have been made from chips of larch and cement, this is a good idea that can be further applied.
- C. High value added products made from agricultural, forest, and marine products must be promoted.
 - (a) Silicon and organic fertilizers made from rice hulls.
 - (b) Concentrated fodder made by enzymes and vitamins.
 - (c) Organic fertilizer made from rice and wheat straw, compost, wood chips, and shells.
 - (d) Artificial diamonds have been made from sake and there can be used to produce semiconductors, drill edges, and glasses.
 - (e) New ceramics are made from agricultural, forest, and marine products.
- D. Production prices are expected to come down by applying biotechnology to the production of raw materials (for B, C), by introducing robots, small aircrafts and remote sensors.

2) *Factor Market*

Results of questionnaire by the Hokkaido Government (Fig. 7-1, 7-2).

- A. To educate and settle enterprising businessmen and technical experts.
 - (a) To establish identity and to train in foresight, creativity, and decisionmaking.
 - (b) To cultivate a sense of production price and investment limits.
 - (c) To train in thinking of goal achievement not just directly but in different ways.
 - (d) Information of management and sales policy must be approached from the viewpoints of other industries.
 - (e) To educate brilliant leaders in industry.
- B. To improve research and development and especially educational institutions.
 - (a) To invite educational institution related to art and design and to educate in creativity and fashion sense.
 - (b) To establish industrial and technological centers especially for northern areas.
 - (c) It is important that industrial complexes should be promoted by cooperative projects between technological experimental stations and agricultural or marine experimental station.
- C. New media should be fully utilized to receive information from the world and propagate the information in Hokkaido.
- D. To simplify administrative procedures by decentralizing government authority.

- E. To improve social overhead capital
- (a) To internationalize Chitose Airport, relieving congestion at Narita International Airport, and to introduce jet-planes to small airports.
 - (b) To construct a network of expressways and a systematic local traffic network.
 - (c) To use commuter aircraft between central cities and advanced high speed trains between the central Hokkaido area and central city areas.
 - (d) To improve truck terminals and freight distribution terminals.

8. Conclusion

To improve the relatively depressed conditions in the Hokkaido economy to the national level, it is essential to accumulate capital inside Hokkaido, not only by inviting enterprises from other prefectures to Hokkaido but by developing local industry.

Therefore original and not stereo-type concepts are required. One is, for industrialization of Hokkaido, to target industries peculiar to Hokkaido. For example, clothing, food, and housing industries have the common aim of inducing healthy industry.

Another is, additional to healthy industries, to add high value to primary products.

To achieve this industrialization it is indispensable to educate and settle highly talented persons in Hokkaido.

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