No. 1

STUDY ON ECONOMIC DEVELOPMENT OF THE ARGENTINE REPUBLIC

FINAL REPORT

Vol. I: ARGENTINE ECONOMY

III. INDUSTRY

JANUARY 1987

JAPAN INTERNATIONAL COOPERATION AGENCY

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1. INDUSTRIAL SECTOR

This chapter examines the manufacturing sector of Argentina from two aspects: structure and performance, and policies and institutions for industrial promotion. The former is analyzed after the 1970s, while a general view is given to existing policies and institutions for industrial promotion, along with which a brief explanation is offered of the government's opinions on the New Industrial Promotion Law. Attention is also given to the present state of industrial finance, one of the most important factors in industrial promotion.

1-1 Introduction

The actual beginning of industrialization in Argentina was as early as the Great Depression in the 1930s. The industrialization ratio (defined here as the ratio of the added value of manufactured goods to GDP) exceeded 20% in the 1950s, and reached a level of some 30% in the mid-1970s. In Argentina, not only did industrialization advance from early on, but industry can be found to be relatively diversified and sophisticated compared with other countries at a similar income level.

The export of traditional agricultural products, which had supported the basis of the Argentina's economy, was strongly hit by the Great Depression around 1930, and this forced Argentina's economic development strategy to change from outward-looking to inward-looking. Since then, this attitude, though it has fluctuated in intensity depending on the environment, has been maintained for about four decades as a policy in developing Argentina's economy. The promotion of industrialization to substitute for imports, a specific aim of the policy, has accelerated the whole of industrialization in Argentina.

Although the policy of import-substituting industrialization, which has been supported by protectionism, has provided smooth industrial progress and has brought about diversified industrial products on the one hand, it has also caused vulnerability in the industrial sector. In other words, this policy, while effective in the long term, has resulted in low production efficiency, creating few industrial products powerful enough to compete in the international market. Such a long-term outlook can be seen in many Latin American countries, but it has caused serious problems in Argentina because of the country's unique situation involving the early start of industrialization and a relatively small domestic market, both resulting in early product saturation of the domestic market.

Clearly, import-substituting industrialization aims to substitute domestic products for existing imported ones, thus once such a domestic product has fulfilled the domestic demand, it is difficult to expand production further without taking any action to increase the demand. Such limitations cannot be circumvented without increasing exports of the product and strengthening its international competitiveness. Argentina's low growth rate in industrial production indicates clearly

that the goal to replace imports with domestic products was reached at an early stage in the country's industrial history.

A matter of more importance is the fact that the growth rate of manufacturing production has fallen below that of domestic production on the whole since the mid-1970s, indicating that the manufacturing sector has lost its role as the leader of Argentina's industry. The contribution of the industrial sector to economic growth (the proportion of the increase in manufacturing added value to that in GDP) has drastically decreased from 45% in the 1960s to 17% in the 1970s, with a remarkable figure of -2.3% in the second half of the decade. The slump of this sector, which holds the greatest share of both production and employment (25% and 24% respectively in 1980), has been the main reason for Argentina's economic depression since the latter half of the 1970s. Furthermore, the country's economic environment was too uncertain to establish long-term investment plans for industrial capital formation because of long-lasting political instability and the resultant discontinuity in economic policies, high inflation rates, unstable exchange rates and real interest rates, and so on. Accordingly, real investment has been impeded due to an outflow of capital overseas and enhanced liquidity options. Plant and equipment investment has fallen sharply from the beginning of the 1980s, accelerating the deterioration of equipment in every industrial field, and there is considerable retardation in grasping the wave of technological innovation in the world due to the lack of new investment to cope with advanced technologies.

1-2 Structure and Performance

1-2-1 Economic Growth and Role of Manufacturing Sector

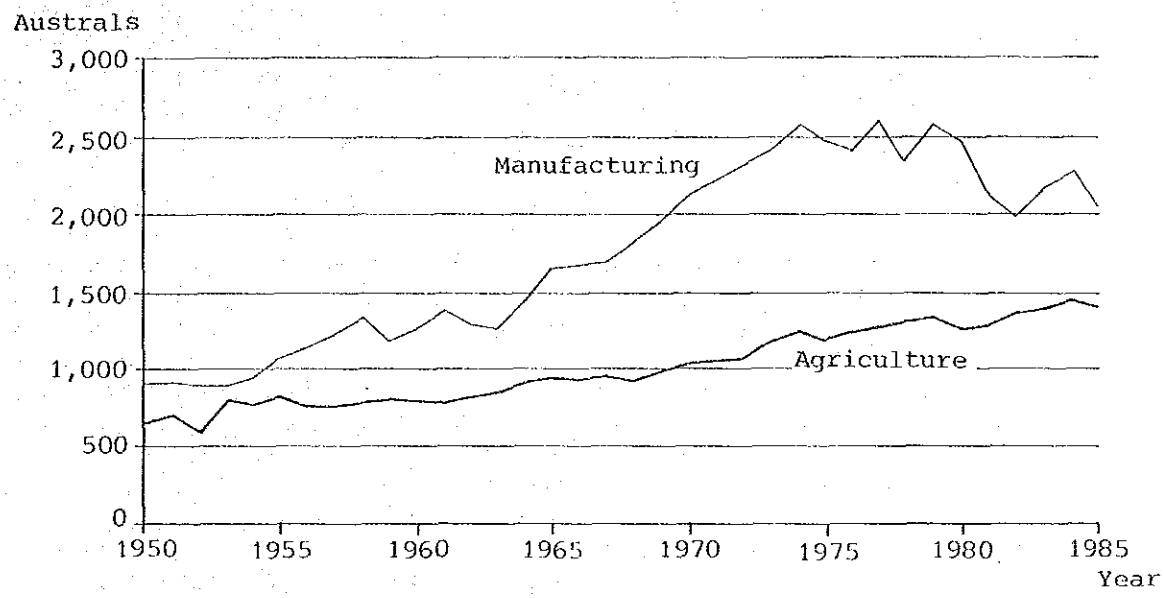
Figure III-1-1 shows the changes in the production (at 1970 prices) of the manufacturing sector. The sector grew relatively smoothly from 1950 to 1974: in this period, GDP grew annually at a rate of 3.4%, while manufacturing production grew by 4.5% (and as high as 4.9% from 1965 to 1974). As a result, the sector's share of the GDP rose steadily from 22.1% in 1950 to 28.4% in 1974.

As seen in the figure, however, the growth of industrial production, after peaking in 1974, showed slaggish trends. Its decline after 1980 is particularly significant. The production level has decreased by 20% from 1974 to 1985, indicating an annual average rate of -2.0%. Particularly dramatic was 1981's production figure, which was similar to that of 1970, which fell by 16.0% from that of the previous year. During the period, GDP also decreased, but the annual rate was only 0.1%, and therefore, the share of the manufacturing sector in GDP dropped to 23.0% in 1985. This figure is similar to that of the mid-1950s.

Table III-1-1 shows Argentina's economic growth and the contributions of the manufacturing and agricultural sectors. Since the latter half of the 1970s, the manufacturing sector contributed negatively, which was one of main reasons for the depression of

Argentina's whole economy. Reactivation of the manufacturing sector, which accounts for a quarter of both production and employment in the country, is essential to activate Argentina's economy.

Figure III-1-1 Trends of Gross Industrial and Agricultural Products (at 1970 prices)



Source: Secretaria de Planificacion

Table III-1-1 Structure, Growth Rates and Contribution to Economic Growth

Sector	Structure (%)			Growth Rate (%)			Contribution (%)		
	1970 -75	1975 -80	1980 -85	1970 -75	1975 -80	1980 -85	1970 -75	1975 -80	1980 -85
Agriculture	13.2	13.4	14.8	2.8	1.4	2.3	12.6	9.1	14.7
Manufacturing	27.9	26.4	23.6	3.4	-0.2	-3.7	32.8	-2.3	-42.5
Others	58.9	60.2	61.6	2.6	3.0	-2.5	54.6	93.2	-72.2
GDP	100.0	100.0	100.0	2.9	2.0	-2.1	100.0	100.0	-100.0

Source: Central Bank of the Argentine Republic

The followings analyze the structural characteristics of the Argentine manufacturing sector from four viewpoints.

The first point is the subsector structure considered from the aspects of production and employment, focusing on changes in the structure after 1970. Second, the structure is analyzed from the viewpoint of geographical distribution. Argentina's production activities are concentrated in Buenos Aires and its vicinity, and manufacturing activities are no exceptions, of course. It is very important for economic development planning to grasp the geographical features, such as which industry is located in which area. Third, the structure is looked at from the viewpoint at activity scale. Details of this issue are described in Section 5 of this chapter, Small and Medium Industries. Here, therefore, only features of each subsector are shown. The fourth viewpoint is the analysis from the aspect of organizational type. In Argentina's key industries, some enterprises are owned by the government, such as SOMISA in iron and steel industry and Petrochemica Bahia Blanca in petrochemical industry, and others are foreign-affiliated firms like those in the automobile industry. Currently, policies are under investigation to shift state-owned enterprises to private management, so the structure of an industry's organization provides important information for studying trends in industrial policies.

Available information for these analyses are very limited. In general, the basic information used to analyze industrial structures is the industrial census conducted in every country. For Argentina, the newest industrial census is that for 1984, but most of the information is still being processed; only the number of enterprises and employees by provinces has been published. The newest information that can be used at present for such analyses is the 1974 industrial census[1], but this is not suitable for studying the current situations includes the results of disindustrialization since 1980. For these reasons, we have used here the statistical index on production and employment of INDEC and the Registro Industrial de la Nacion (RIN) of the Secretariat of Foreign Trade and Industry to investigate the industrial structure and its performance in Argentina. Because of its nature, the RIN data do not cover enterprises that have not been registered. Most of these are small-scale ones, therefore, it has a bias due to poor coverage of small enterprises when compared with comprehensive statistics like the industrial census. Accordingly, care must be taken in using it, though it offers a very useful information on industrial sector.

Now, let us look at the RIN data coverage for reference, which indicates that as of 1984[2], there were 32,315 enterprises, 996,461 employees, and 3,097 million Australs worth of production. On the other hand, interimly published figures from the 1984 industrial census indicate 111,767 enterprises and 1,359,519 employees[3], the RIN data thus corresponding to 28.9% and 73.3% respectively. The RIN's figure

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1) INDEC, Censo Nacional Economico 1974.
2) Direccion General de Informacion Industrial, Secretaria de Industria y Comercio Exterior, Registro Industrial de la Nacion 1985.
3) INDEC, Censo Nacional Economico 1985, Resultados Provisionales, 1986.

then, is much lower for the number of enterprises but not so far off for employees.

1-2-2 Characteristics of Industrial Structure

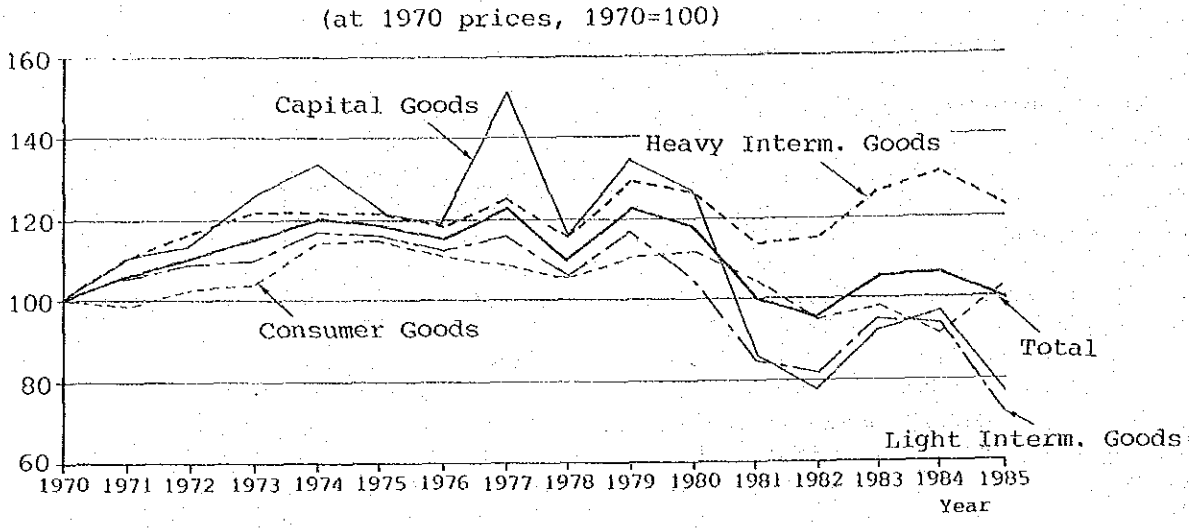
As previously mentioned, the production of the manufacturing sector began to slump in the latter half of the 1970s and has declined since the beginning of the 1980s. The gross industrial product (value added) decreased by 21% in real terms in the three years from 1980 to 1982 (7.7% annually at 1970 prices) , and the production in 1982 dropped below that of 1970. The gross industrial product, after that, improved somewhat, but fell again in 1985 by 6.4%, in comparison with the previous year, down to 1970's level.

Figure III-1-2 shows the changes in production of the four end-use groups including 27 industrial subsectors in the manufacturing sector. All production of all groups has suffered from slower growth since the second half of the 1970s, and from the beginning of the 1980s, remarkable production drops are noted in the capital goods industry (mainly in the machinery field) and the light intermediate goods industry consisting of textiles, leather products, wood products and others. The production levels of these two groups in 1981 stayed under the respective ones of 1970, and in 1985, fell to 78% (the capital goods industry) and 73% (the light intermediate goods industry) of their respective 1970 levels. The consumer goods industry showed a declining trend from 1982 but then recovered somewhat in 1985. By contrast, the production of the heavy intermediate goods industry, mainly consisting of chemical and iron and steel industries, though varying somewhat from year to year, exhibited no remarkable drop.

As of 1985, of the 27 industrial subsectors, production levels in the following 14 fields remained lower than their respective 1970 levels: textiles, clothing, leather products, footwear, wood products, furniture, printing, other petroleum products, clay products, glassware, nonmetallic minerals, nonelectric machinery, electric machinery and transport equipment.

The dull performance of the manufacturing sector since the second half of the 1970s is also clearly shown in the changes in the operating rate of the sector. Figure III-1-3 shows the quarterly changes in the capacity utilization rate quoted from the Survey on Enterprises by FIEL (Fundacion de Investigaciones Economicas Latinoamericanas). The rate, though as high as some 80% in the first half of the 1970s, fell to 70% in the second quarter of 1976 due to the depressed consumer goods industry. It then recovered for a while but took a sharp downturn to 65% in the fourth quarter of 1977 because of sluggishness in the durable household articles, automobile and agricultural machinery industries. After that, the rate rose to 70%, to 75% and progressed at such levels, but dropped again to around 60% in the second quarter of 1981 with marked depressions in consumer durables and capital goods industries - 59% for electric machinery, 11% for agricultural machinery, 49% for automobile, 41% for autoparts, and so on. The rate, starting a recovery trend in the latter half of 1983, worsened again from the beginning of 1985.

Figure III-1-2 Gross Industrial Product by Commodity Group



Source: Central Bank of the Argentine Republic

Notes : Consumer goods = Food Products, Beverages, Tobacco, Clothing, Footwear, Furniture, Printing

Light Intermediate goods = Textiles, Leather Products, Woods Products, Rubber Products, Clay Products, Glassware, Nonmetallic Materials

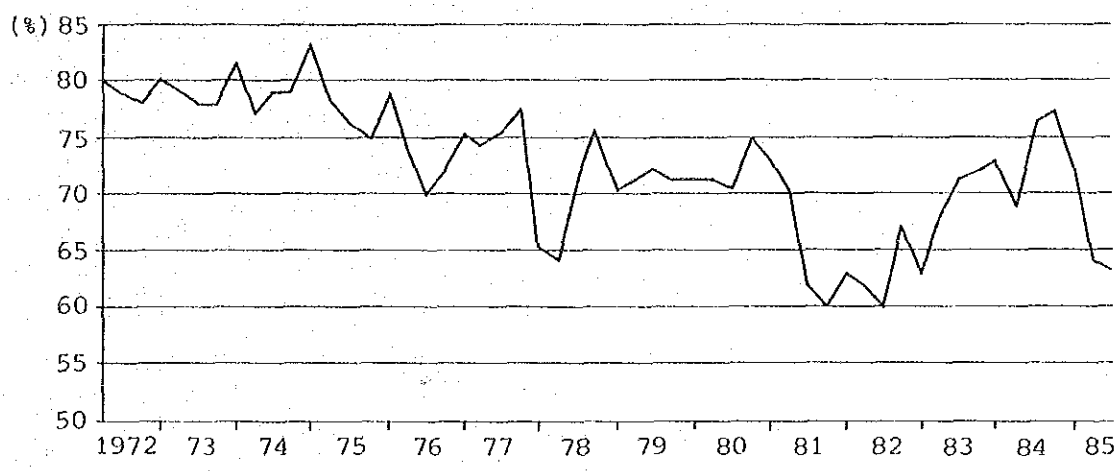
Heavy Intermediate goods = Paper, Basic Chemicals, Other Chemicals, Petroleum Refineries, Other Petroleum Products, Plastic Products, Iron & Steel, Nonferrous Metals, Metal Products

Capital Goods = Nonelectric Machinery, Electric Machinery, Transport Equipment, Scientific Equipment.

Employment in the manufacturing sector decreased from a peak in 1975 by 37% in the following ten years (an average annual rate of 4.6%). Thus, employment in 1985 was three quarters that in 1970[1] (based on the labor force index by INDEC). In 1985, the number of employees in all industrial fields other than food products, beverages, rubber products, plastic products, iron and steel and nonferrous metals was lower than that in 1970. Particularly remarkable decreases to under 60% of that level were found in the fields of footwear, textiles, clothing, furniture, glassware, nonelectric machinery and electric machinery. In 1978, policies were enacted so that the decrease in employment exceeded the drop in production, which resulted in an upward trend in the labor

1) An alleged reason for the decrease in employment, other than lower production due to the depression, is the establishment of the military regime which altered labor policies to make dismissal easier.

Figure III-1-3 Utilization of Capacity in Manufacturing Sector
(1972.I-1985.II)



Source: FIEL
Note : Capacity utilization rates are based on FIEL's periodical firm survey.

productivity of the manufacturing sector.

Table III-1-2 shows the production shares and their changes for the 27 industrial subsectors since 1970. The food products industry, enjoying the greatest share, accounted for 14.9% of the total value of the manufacturing sector in 1970, and 17.1% in 1985. Industries having large shares following that of food products were transport equipment (8.9%), textiles (8.8%), petroleum refineries (8.0%) and metal products (7.2%) in 1970, while they were petroleum refineries (9.5%) other chemicals (8.3%), metal products (8.0%) and transport equipment (7.2%) in 1985. These changes reflect general trends especially after 1980. During this 15-year period, industries whose shares were raised were those related to chemicals, iron and steel, and metal products; while declining shares were those related to textiles, nonmetallic minerals and machinery other than scientific equipment.

Now let us check the structure and the changes in the end-use groups of the 27 subsectors. The ratio between consumer goods, intermediate goods and capital goods was stable at 3:5:2 throughout the 1970s. This changed early in the 1980s with an increased share for heavy intermediate goods and a decreased share for capital goods. The latter is thought to have become a serious problem in relation to the "technological level" of Argentina's industry.

Table III-1-2 Structure of Manufacturing Sector (at 1970 market prices)

(%)

code	sub-sector	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1	Food Products	14.9	13.5	13.8	13.4	13.0	13.8	14.8	14.0	15.3	14.2	14.7	17.1	16.6	15.5	12.1	17.1
2	Beverages	5.0	4.8	4.7	4.6	5.4	5.2	4.7	3.9	4.0	4.2	4.8	5.1	4.5	4.6	5.4	5.5
3	Tobacco	3.8	3.7	3.7	3.8	4.1	4.2	4.2	3.9	4.4	4.1	4.2	4.6	4.4	4.3	4.8	5.1
4	Textiles	8.8	8.7	8.2	8.3	8.6	8.4	8.1	8.1	7.8	8.0	6.9	6.6	6.9	7.4	7.6	6.2
5	Clothing	2.4	2.4	2.5	2.3	2.7	2.6	2.4	2.1	1.9	2.0	1.8	1.4	1.2	1.2	1.2	0.9
6	Leather Products	0.9	0.9	1.0	0.9	0.8	0.8	0.9	0.9	1.1	0.9	0.7	0.8	1.0	0.8	0.7	0.8
7	Footwear	0.8	0.7	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3
8	Wood Products	1.4	1.4	1.4	1.3	1.4	1.4	1.2	1.1	1.2	1.1	1.1	1.1	0.9	0.8	0.8	0.7
9	Furniture	0.7	0.6	0.5	0.5	0.6	0.5	0.4	0.4	0.6	0.6	0.7	0.7	0.7	0.5	0.4	0.4
10	Paper	2.3	2.3	2.3	2.4	2.5	2.5	2.2	2.1	2.5	2.5	2.1	1.9	2.5	2.5	2.5	2.5
11	Printing	2.8	2.7	2.6	2.6	2.6	2.8	2.5	2.3	2.6	2.2	2.4	2.5	2.3	2.1	2.2	2.4
12	Basic Chemicals	2.6	2.9	3.1	3.2	3.2	3.0	3.0	3.0	3.0	3.3	2.9	3.1	3.9	3.9	4.1	3.7
13	Other Chemicals	5.5	5.9	5.8	6.3	5.4	6.6	6.7	5.9	5.7	5.7	6.2	7.5	6.9	6.7	7.8	8.3
14	Petroleum Refineries	8.0	7.9	7.8	7.7	6.9	6.4	7.1	6.9	7.8	7.4	8.1	9.3	9.6	9.1	8.8	9.5
15	Other Petroleum Products	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.5
16	Rubber Products	2.2	2.4	2.5	2.6	2.4	2.6	2.9	2.7	2.5	2.9	2.8	2.2	2.4	3.0	3.1	2.4
17	Plastic Products	1.0	1.0	1.3	1.3	1.1	1.1	1.0	1.0	1.0	1.1	1.1	1.0	1.1	1.2	1.3	1.1
18	Clay Products	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.2
19	Glassware	1.1	1.0	1.0	0.9	0.9	1.1	1.0	0.9	1.0	1.1	1.0	0.9	0.9	0.9	0.9	0.6
20	Nonmetallic Minerals	3.6	3.8	3.7	3.3	3.4	3.4	3.5	3.4	3.7	3.5	3.6	3.7	3.4	3.3	3.0	2.7
21	Iron & Steel	4.3	4.5	4.7	4.7	4.6	4.6	4.4	4.7	5.0	5.1	4.7	5.0	5.9	5.6	5.3	5.6
22	Nonferrous Metals	1.1	1.2	1.2	1.2	1.2	1.1	0.9	1.0	0.9	1.1	1.3	1.1	1.3	1.3	1.4	1.2
23	Metal Products	7.2	7.7	7.7	7.2	7.5	7.9	7.9	8.4	8.0	8.1	8.0	7.7	7.5	8.3	8.8	8.0
24	Nonelectric Machinery	5.0	5.2	5.1	6.0	6.1	5.8	7.2	8.3	6.8	6.8	6.1	5.1	5.0	4.9	4.7	3.6
25	Electric Machinery	3.8	3.9	3.9	3.8	3.8	3.9	3.2	3.5	3.4	3.3	3.3	3.0	2.9	2.8	3.1	2.9
26	Transport Equipment	8.9	9.5	9.3	9.6	9.4	8.3	7.6	9.6	8.0	8.9	9.5	6.9	6.5	7.6	8.2	7.2
27	Scientific Equipment	0.4	0.5	0.6	0.6	0.9	0.8	0.9	0.8	0.9	0.9	0.6	0.5	0.5	0.5	0.6	0.6
I	Consumer Goods	30.5	28.5	28.5	27.8	28.9	29.6	29.5	27.0	29.0	27.7	29.0	31.7	30.1	28.4	26.5	31.8
II	Intermediate Goods	51.1	52.5	52.6	52.2	50.8	51.7	51.6	50.7	51.9	52.5	51.4	52.6	55.0	55.6	56.9	54.0
II.1	Light Intermediate Goods	18.5	18.6	18.4	17.8	18.1	18.2	18.2	17.5	17.7	17.8	16.5	15.6	15.8	16.7	16.5	13.7
II.2	Heavy Intermediate Goods	32.6	33.9	34.3	34.4	32.7	33.5	33.4	33.2	34.2	34.7	34.9	37.0	39.2	39.0	40.4	40.3
III	Capital Goods	18.2	19.0	18.9	20.0	20.3	18.7	18.9	22.2	19.1	19.9	19.6	15.6	14.9	15.9	16.7	14.2
IV	Manufacturing Industry	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source : Central Bank of the Argentine Republic

Notes : Consumer Goods=code 1-3,5,7,9,11. Light Intermediate Goods=code 4,6,8,16,18-20.
Heavy Intermediate Goods=code 10,12-15,17,21-23. Capital Goods=code 24-27.

1-2-3 Regional Structure of Industry

To know the geographical features of the manufacturing sector, establishments listed in the RIN data were classified by provinces, which is in Table III-1-3. Table III-1-4 shows number of employees and production by region (i.e. Capital Federal, Pampeana, Nordeste, Noroesta, Cuyana and Patagonica). Among the total of 32,315 enterprises, 7,957 are located in Capital Federal and 13,836 in Buenos Aires Province, accounting for 67.4% of the total. Other provinces accounting for relatively high numbers of establishments are Santa Fe (11.2%) and Cordoba (6.5%). This means that 85.1% of the establishments of Argentina's manufacturing sector are concentrated in the capital and these three provinces. Concentrations of employees and production value in these areas are 82.2% (66.0% in Capital Federal and Buenos Aires) and 81.3% (65.3%) respectively, and these two figures, though somewhat smaller than the former 85.1%, indicate that a little over 80% of the country's entire production activity is centered in these areas. For reference, concentrations of population and gross regional product in these areas in 1980 were 66.8% (49.4% in Capital Federal and Buenos Aires) and 71.5% (55.1% in Capital Federal and Buenos Aires) respectively[1]. This data indicates, then, that concentration of production activities of the manufacturing sector in these areas is relatively high.

The geographical structure by industrial type is characterized by the following points. First, as for Capital Federal, the most highly concentrated industries are textiles, apparel and leather (ISIC 32)[2], paper products and printing (ISIC 34), and others (ISIC 39); while the least concentrated are food, beverage and tobacco (ISIC 31), nonmetallic mineral products (ISIC 36), and basic metal products (ISIC 37). Second, as for Buenos Aires Province, all industrial subsectors are concentrated here, especially chemical and chemical products (ISIC 35), basic metal products (ISIC 37), and metal products and machinery (ISIC 38). Finally, food, beverage and tobacco (ISIC 31), and wood and wood products (ISIC 33) are less concentrated in this area (i.e. the capital and three provinces previously mentioned): the former group is concentrated in the provinces of Mendoza, Tucuman, Entre Rios and Jujuy, while the latter group in the provinces of Misiones and Mendoza.

As for industrial subsectors, the highest in the number of establishments and employees is metal products and machinery, followed by food, beverage and tobacco, then textiles, apparel and leather. The largest in terms of production is food, beverage and tobacco, followed by metal products and machinery, then chemicals and chemical products. At any rate, the food products industry and metal and machinery industry bear large shares in Argentina's manufacturing sector.

Geographical distribution of industry features the following points. First, in the Pampeana area centering in Buenos Aires, much weight is given to so-called "heavy industry", which includes metal

1) Population = INDEC, Censo Nacional de Poblacion, Vivienda, 1980.
GRP = Consejo Federal de Inversiones, Producto Bruto Geografico, 1970-1980, Diciembre 1983.

2) ISIC = International Standard of Industrial Classification.

Table III-1-3 Geographical Structure of Manufacturing Sector : Number of Establishments (1984)

Province \ Industry(ISIC)	Total	31	32	33	34	35	36	37	38	39
Total	32.315	7.137	4.677	2.725	1.629	3.357	1.489	652	9.990	659
1 Capital F.	7.957	923	2.072	461	763	825	193	67	2.300	333
2 Buenos Aires	13.836	2.365	1.919	959	494	1.885	594	369	5.022	229
3 Catamarca	52	23	14	2	0	5	4	0	4	0
4 Cordoba	2.111	675	148	162	74	133	157	51	690	21
5 Corrientes	182	128	12	7	6	3	11	1	14	0
6 Chaco	281	100	57	51	6	14	12	3	36	2
7 Chubut	198	46	57	19	5	11	21	3	36	0
8 Entre Rios	567	321	16	47	22	29	40	3	85	4
9 Formosa	118	48	11	34	5	1	8	0	10	1
10 Jujuy	100	32	1	20	8	8	7	11	13	0
11 La Pampa	189	78	2	22	8	14	17	1	45	2
12 La Rioja	91	32	21	2	7	15	2	1	10	1
13 Mendoza	1.058	607	21	78	20	68	52	14	191	7
14 Misiones	607	179	9	302	14	11	35	0	55	2
15 Neuquen	96	32	2	16	4	5	20	1	15	1
16 Rio Negro	255	123	2	40	10	7	21	1	51	0
17 Salta	189	85	4	31	9	16	18	3	22	1
18 San Juan	178	113	5	1	2	15	22	1	18	1
19 San Luis	139	40	27	6	6	20	20	2	14	4
20 Santa Cruz	30	10	3	2	0	4	7	0	4	0
21 Santa Fe	3.621	988	228	420	153	242	193	95	1.257	45
22 Santiago del Estero	97	46	5	16	3	2	14	0	11	0
23 Tucuman	298	138	19	24	10	18	20	5	60	4
24 Tierra del Fuego	65	5	22	3	0	6	1	0	27	1
Capital F.	7.957	923	2.072	461	763	825	193	67	2.300	333
Pampeana	20.324	4.427	2.313	1.610	751	2.303	1.001	519	7.099	301
Nordeste	1.188	455	89	394	31	29	66	4	115	5
Noroesta	827	356	64	95	37	64	65	20	120	6
Cuyana	1.375	760	53	85	28	103	94	17	223	12
Patagonica	644	216	86	80	19	33	70	5	133	2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Capital F.	24.6	12.9	44.3	16.9	46.8	24.6	13.0	10.3	23.0	50.5
Pampeana	62.9	62.0	49.5	59.1	46.1	68.6	67.2	79.6	71.1	45.7
Nordeste	3.7	6.4	1.9	14.5	1.9	0.9	4.4	0.6	1.2	0.8
Noroesta	2.6	5.0	1.4	3.5	2.3	1.9	4.4	3.1	1.2	0.9
Cuyana	4.3	10.6	1.1	3.1	1.7	3.1	6.3	2.6	2.2	1.8
Patagonica	2.0	3.0	1.8	2.9	1.2	1.0	4.7	0.8	1.3	0.3
Total	100.0	22.1	14.5	8.4	5.0	10.4	4.6	2.0	30.9	2.0
Capital F.	100.0	11.6	26.0	5.8	9.6	10.4	2.4	0.8	28.9	4.2
Pampeana	100.0	21.8	11.4	7.9	3.7	11.3	4.9	2.6	34.9	1.5
Nordeste	100.0	38.3	7.5	33.2	2.6	2.4	5.6	0.3	9.7	0.4
Noroesta	100.0	43.0	7.7	11.5	4.5	7.7	7.9	2.4	14.5	0.7
Cuyana	100.0	55.3	3.9	6.2	2.0	7.5	6.8	1.2	16.2	0.9
Patagonica	100.0	33.5	13.4	12.4	3.0	5.1	10.9	0.8	20.7	0.3

Source : Direccion General de Informacion Industrial

Notes :(1)ISIC 31 Food.Beverage.Tabacco 32 Textile.Apparel.Leather 33 Wood.Wood Products
34 Paper Products.Printing 35 Chemicals.Chemical Products 36 Non-metallic Mineral Products
37 Basic Metal Products 38 Metal Products.Machinery 39 Others

(2) Pampeana = 2.4.6.11.21 Nordeste = 5.6.9.14 Noroesta = 3.10.12.17.22.23
Cuyana = 13.18.19 Patagonica = 7.15.16.20.24

Table III-1-4 Geographical Structure of Manufacturing Sector : Number of Employees and Value of Production (1984)

(%)

Industry(ISIC) / Province	Total	31	32	33	34	35	36	37	38	39
< Number of Employees >										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Capital F.	18.6	13.2	30.3	13.1	39.4	21.9	6.9	4.6	16.6	46.3
Pampeana	65.3	58.6	55.0	52.4	48.2	68.7	70.2	80.4	76.3	52.5
Nordeste	3.0	4.4	4.0	19.1	3.6	1.6	1.4	0.8	0.7	0.0
Noroesta	5.8	11.4	4.1	7.9	5.8	3.2	7.7	8.2	1.9	0.2
Cuyana	4.4	9.9	1.7	3.4	1.4	2.9	8.4	1.5	2.3	0.5
Patagonica	2.9	2.5	4.5	4.0	1.5	1.2	5.5	1.9	2.3	0.0
Total	100.0	23.9	15.3	3.1	5.4	12.7	5.8	6.2	26.8	0.8
Capital F.	100.0	16.9	25.0	2.2	11.5	14.9	2.1	1.5	23.9	2.0
Pampeana	100.0	21.4	12.9	2.5	4.0	13.4	6.2	7.6	31.4	0.6
Nordeste	100.0	34.9	20.5	19.9	6.5	6.8	2.6	1.6	5.8	0.0
Noroesta	100.0	47.0	10.8	4.3	5.4	7.1	7.7	8.8	8.6	0.0
Cuyana	100.0	53.7	6.1	2.4	1.7	8.3	11.0	2.1	13.8	0.1
Patagonica	100.0	20.8	24.3	4.4	2.8	5.2	11.0	4.1	21.8	0.0
< Value of Production >										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Capital F.	14.5	8.9	30.9	11.0	27.9	13.4	4.9	9.3	13.3	43.7
Pampeana	68.2	67.2	46.2	66.2	54.6	74.0	74.1	73.9	77.3	55.4
Nordeste	2.3	3.3	5.2	12.4	5.9	0.4	0.5	0.6	0.4	0.0
Noroesta	7.1	14.6	6.7	4.3	9.1	2.7	6.7	2.5	2.8	0.1
Cuyana	3.9	4.7	2.1	4.0	1.8	7.0	7.0	1.4	1.8	0.4
Patagonica	4.0	1.3	8.6	2.1	0.7	2.3	6.8	10.3	4.5	0.0
Total	100.0	28.3	12.2	1.2	5.2	20.5	3.7	6.3	22.1	0.4
Capital F.	100.0	17.2	26.0	0.9	10.0	18.9	1.2	4.0	20.3	1.3
Pampeana	100.0	27.9	8.3	1.2	4.2	22.2	4.0	6.8	25.1	0.3
Nordeste	100.0	40.7	28.4	6.8	13.7	3.9	0.8	1.7	3.6	0.0
Noroesta	100.0	58.5	11.6	0.8	6.7	7.9	3.5	2.2	8.7	0.0
Cuyana	100.0	33.7	6.4	1.3	2.3	36.4	6.5	2.3	9.9	0.0
Patagonica	100.0	9.6	26.7	0.6	1.0	11.9	6.4	16.2	24.9	0.0

Source : Direccion General de Informacion Industrial

Notes : (1) ISIC 31 Food.Beverage.Tabacco 32 Textile.Apparel.Leather 33 Wood.Wood Products
34 Paper Products.Printing 35 Chemicals.Chemical Products 36 Non-metallic Mineral Products
37 Basic Metal Products 38 Metal Products.Machinery 39 Others

(2) Pampeana = 2.4.8.11.21 Nordeste = 5.6.9.14 Noroesta = 3.10.12.17.22.23
Cuyana = 13.18.19 Patagonica = 7.15.16.20.24

products and machinery, and chemicals and chemical products, whereas the food products industry holds large share in other regions. Second, there are many provinces of which industrial structure has not been diversified. For example, the food, beverage and tobacco industry accounts for more than half of the entire production of Entre Rios (80.5%), Tucuman (66.5%), Jujuy (65.4%), Salta (60.0%), Corrientes (58.0%), Santa Cruz (57.3%) and La Pampa (55.9%). On the other hand, textiles, apparel and leather companies account for 61.5% of Chaco's entire production, and metal products and machinery companies make up 73.9% of Tierra del Fuego's.

As seen above, the current geographical structure in each province is a result of local conditions including existing resources, presence of big consuming markets like Buenos Aires, or governmental promotional measures. In Tierra del Fuego, for example, plants for home electric appliances like radios and TV sets were encouraged. Now, 17 of 27 plants there manufacture home electric appliances, according to the RIN data. Measures for decentralization of industry have to be based on adequate understanding of these geographical features of industry. Especially, to relocate the metal and machinery industry, which requires an industrial skirt area, to local regions, it is necessary to select sites not only for major plants, but also for related parts suppliers and subcontractors.

1-2-4 Size Structure of Industry

Table III-1-5 shows the size structure of Argentina's manufacturing sector, where Table III-1-5 (1) indicates industrial subsector structure by size, with the total of each size division being 100%, and Table III-1-5 (2) presents size distribution by industrial type, with the total production of each subsector being 100%. The table has been prepared using the RIN data, which, as previously mentioned, does not cover all of small establishments. This must be kept in mind in interpreting the table[1)].

As of 1984, small establishments with 50 or less employees accounted for 88.5% of the total number of establishments, employing 28.0% of the total work force and putting out 18.2% of the total production. Medium establishments having 51 to 200 workers correspond to 8.9% of the total, employing 27.4% of the workers and accounting for 25.6% of production. Large establishments employing 201 workers or more account for 2.7%, 44.4% and 56.2% respectively. The number of establishments having over 1,000 employees is 72 throughout the country, accounting for 20.5% of the total production.

Some features of the industrial structure by size comparison are: 1) the food, beverage and tobacco industries and the metal products and machinery industries occupy large shares of both the number of establishments as well as employees, but the chemicals and chemical

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1) Though the coverage of the RIN data is low for smaller-scale establishments, most of them are micro-scale ones, thus the RIN data can be taken to indicate real employee and production levels to some extent. The data, however, must be evaluated when the 1984 industrial census is published.

Table III-1-5 Size Structure of Manufacturing Sector in 1984 (1)

(persons, 1,000 Australs, %)

	total	- 50	51 - 100	101 - 200	201- 500	501-1000	1001-2500	2501-
< Number of Establishments >								
31 Food.Beverage.Tobacco	22.1	21.8	22.5	26.2	25.1	35.8	25.4	23.1
32 Textile.Apparel.Leather	14.5	14.1	17.8	18.2	16.0	10.5	18.6	0.0
33 Wood.Wood Products	8.4	9.2	3.7	2.7	1.3	0.0	0.0	0.0
34 Paper Products.Printing	5.0	5.0	4.6	6.2	5.4	8.0	8.5	0.0
35 Chemicals.Chemical Products	10.4	10.0	13.9	11.9	17.3	7.4	15.3	7.7
36 Non-metallic Mineral Products	4.6	4.4	5.6	6.2	7.1	6.2	8.5	0.0
37 Basic Metal Products	2.0	1.8	3.5	3.1	3.2	4.9	8.5	38.5
38 Metal Products.Machinery	30.9	31.6	27.1	24.8	24.3	27.2	15.3	30.8
39 Others	2.0	2.2	1.2	0.8	0.3	0.0	0.0	0.0
Total	32.315	28.591	1.848	1.012	630	162	59	13
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
< Number of Employees >								
31 Food.Beverage.Tobacco	23.9	18.3	22.9	26.5	24.4	36.6	27.1	15.0
32 Textile.Apparel.Leather	15.3	16.6	18.0	18.1	16.4	10.7	16.8	0.0
33 Wood.Wood Products	3.1	7.3	3.6	2.5	1.2	0.0	0.0	0.0
34 Paper Products.Printing	5.4	5.4	4.6	6.1	5.3	7.6	6.8	0.0
35 Chemicals.Chemical Products	12.7	11.6	14.0	12.1	17.6	7.4	16.7	5.4
36 Non-metallic Mineral Products	5.8	4.9	5.4	6.2	7.0	6.6	8.5	0.0
37 Basic Metal Products	6.2	2.6	3.4	3.2	2.9	4.5	7.5	48.8
38 Metal Products.Machinery	26.8	24.5	27.0	24.5	24.9	26.6	16.5	65.2
39 Others	0.8	1.6	1.2	0.9	0.3	0.0	0.0	0.0
Total	996.461	279.387	130.888	142.765	188.456	111.731	85,152	58082
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
< Production >								
31 Food.Beverage.Tobacco	28.3	23.3	32.5	30.6	28.4	36.4	34.9	6.2
32 Textile.Apparel.Leather	12.2	18.2	16.3	15.4	11.2	6.0	13.4	0.0
33 Wood.Wood Products	1.2	4.1	1.7	1.1	0.7	0.0	0.0	0.0
34 Paper Products.Printing	5.2	5.3	4.7	5.6	5.6	8.5	4.3	0.0
35 Chemicals.Chemical Products	20.5	17.0	18.1	22.1	26.0	15.6	21.0	22.2
36 Non-metallic Mineral Products	3.7	3.0	3.0	3.3	4.9	5.0	4.7	0.0
37 Basic Metal Products	6.3	2.6	4.2	3.2	2.5	2.9	10.5	31.4
38 Metal Products.Machinery	22.1	25.5	18.6	18.1	20.6	25.6	11.2	40.2
39 Others	0.4	1.1	0.8	0.7	0.2	0.0	0.0	0.0
Total	3.096.909	564.566	335.081	457.776	659.351	444.851	374.955	260.329
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source : Direccion General de Informacion Industrial

Table III-1-5 (cont.) Size Structure of Manufacturing Sector in 1984 (2)

(persons, 1,000 Australs, %)

	Total (value)	Total (share)	- 50	51 - 100	101 - 200	201- 500	501-1000	1001-2500	2501-
< Number of Establishments >									
31 Food.Beverage.Tobacco	7.137	100.0	87.2	5.8	3.7	2.2	0.8	0.2	0.0
32 Textile.Apparel.Leather	4.677	100.0	86.3	7.0	3.9	2.2	0.4	0.2	0.0
33 Wood.Wood Products	2.725	100.0	96.2	2.5	1.0	0.3	0.0	0.0	0.0
34 Paper Products.Printing	1.629	100.0	87.7	5.2	3.9	2.1	0.8	0.3	0.0
35 Chemicals.Chemical Products	3.357	100.0	84.9	7.7	3.6	3.2	0.4	0.3	0.0
36 Non-metallic Mineral Products	1.489	100.0	84.8	7.0	4.2	3.0	0.7	0.3	0.0
37 Basic Metal Products	652	100.0	79.6	9.8	4.8	3.1	1.2	0.8	0.8
38 Metal Products.Machinery	9.990	100.0	90.4	5.0	2.5	1.5	0.4	0.1	0.0
39 Others	659	100.0	95.0	3.5	1.2	0.3	0.0	0.0	0.0
Total	32.315	100.0	88.5	5.7	3.1	1.9	0.5	0.2	0.0
< Number of Employees >									
31 Food.Beverage.Tobacco	237.787	100.0	21.5	12.6	15.9	19.3	17.2	9.7	3.7
32 Textile.Apparel.Leather	152.824	100.0	30.3	15.4	16.9	20.2	7.8	9.4	0.0
33 Wood.Wood Products	31.123	100.0	65.9	15.2	11.5	7.4	0.0	0.0	0.0
34 Paper Products.Printing	53.976	100.0	28.0	11.0	16.1	18.6	15.6	10.7	0.0
35 Chemicals.Chemical Products	126.497	100.0	25.6	14.4	13.6	26.2	6.5	11.2	2.5
36 Non-metallic Mineral Products	57.365	100.0	23.7	12.4	15.3	23.1	12.9	12.7	0.0
37 Basic Metal Products	61.427	100.0	11.6	7.2	7.3	9.0	8.2	10.4	46.2
38 Metal Products.Machinery	267.492	100.0	25.6	13.2	13.0	17.5	11.1	5.3	14.1
39 Others	7.970	100.0	57.8	19.3	16.8	6.1	0.0	0.0	0.0
Total	996.461	100.0	28.0	13.1	14.3	18.9	11.2	8.5	5.8
< Production >									
31 Food.Beverage.Tobacco	876.325	100.0	15.0	12.4	16.0	21.3	18.5	14.9	1.8
32 Textile.Apparel.Leather	379.174	100.0	27.1	14.4	18.6	19.5	7.1	13.3	0.0
33 Wood.Wood Products	38.487	100.0	60.0	14.7	13.0	12.4	0.0	0.0	0.0
34 Paper Products.Printing	161.576	100.0	18.4	9.7	15.8	22.9	23.3	9.9	0.0
35 Chemicals.Chemical Products	634.964	100.0	15.1	9.6	15.9	27.0	10.9	12.4	9.1
36 Non-metallic Mineral Products	114.342	100.0	14.8	8.9	13.3	28.1	19.6	15.3	0.0
37 Basic Metal Products	193.779	100.0	7.7	7.3	7.6	8.5	6.5	20.3	42.2
38 Metal Products.Machinery	685.247	100.0	21.0	9.1	12.1	19.8	16.6	6.1	15.3
39 Others	13.015	100.0	46.5	21.3	23.9	8.2	0.0	0.0	0.0
Total	3.096.909	100.0	18.2	10.8	14.8	21.3	14.4	12.1	8.4

Source : Direccion General de Informacion Industrial

products industry is heavily weighted toward production. The basic metal products industry occupies a large share of the 1,001 workers-or-more size division.

Some features of the size distribution by subsector comparison are as follows. In both number of employees and amount of production, the small industry (100 employees or less) is led by the wood and wood products industry and others, accounting for 81.1% and 77.1% of all employees of the sector, and 74.7% and 67.8% of all production respectively. These figures greatly exceed the industrial averages of 41.4% for employees and 29.0% for production. By contrast, the chemicals and chemical products industry and nonmetallic mineral products industry account for a large number of establishments in the medium scale. The basic metal products industry does the same for the large scale industry, and establishments having 1,001 employees or more in this industrial type support 56.6% of all employees and 62.5% of all production. The food, beverage and tobacco industries and the metal products and machinery industry, occupy large shares of all size of industry, indicating nearly uniform distribution.

1-2-5 Legal Organization

Table III-1-6 shows the features of Argentina's manufacturing sector, as of 1980, as seen from an organizational point of view. As seen in the table, there are 12 types based on the laws from which they have been established. The highest in number is the unipersonal enterprise, accounting for 12,547 of the total 39,020 or 32.2% in 1980. This is followed by the corporation, 11,064 establishments (28.4%), and these two types make up over 60% of the total. In the aspects of number of employees and amount of production, however, the unipersonal enterprise accounts for only 4.9% and 2.5% respectively, while the corporation occupies 74.7% and 79.2%.

Of the total, establishments under governmental control number 78: 12 corporations with major state participation, 6 mixed economic associations, 40 state companies, 14 corporations and 6 other enterprises. Though not so large in number, they make their presence known in relief, accounting for 4.4% of total employees and 8.2% of total production. Comparing the average number of employees indicates that the government-controlled enterprises are larger than others.

Some features of organization-by-subsector are as follows. For the food, beverage and tobacco industries, unipersonal enterprises, cooperative associations and foreign enterprises hold shares higher than the average. Unipersonal enterprises and limited liability companies are heavy in the textile, apparel and leather fields, and even heavier in wood and wood products. Temporary associations also hold a relatively high position in the latter. Government-controlled enterprises, like state companies, show a preponderance in the chemicals and chemical products field.

Some features of industrial structure by organization type are as follows. Many unipersonal enterprises, the highest number among organizations, belong to the food products (21.9% of the total), metal

products (16.2%) and wood (7.9%) industries. Temporary associations have high shares of the food products (21.0%) and metal products (17.3%) industries; while partnerships and limited liability companies are abundant in the food products (14.8% and 10.6% respectively), metal products (14.5% and 14.7%) and non-electric machinery (10.3% and 10.2%) fields. By contrast, corporations are relatively uniformly distributed among all industries, with 12.4% (the highest) in food products, 10.7% in metal products, 9.5% in non-electric machinery and 8.2% in textiles. The distribution of 40 state companies is as follows, with the highest number in the fields of petrochemical and metal products & machinery.

food products	4	ceramics and cement	1
beverage	3	iron and steel	1
wood and wood products	3	non-ferrous metal	1
paper products	1	metal products	2
printing	1	non-electrical machinery	3
basic chemicals	4	electrical machinery	1
other chemicals	5	transport equipment	3
petroleum refinery	6	other equipments	1

The 23 subsidiaries of foreign enterprises are distributed as follows: food, beverage and tobacco 3, wood 1, chemicals and chemical products 11, non-metallic minerals 2, and metal products and machinery 6. Of these businesses, the most numerous are chemicals and chemical products companies. However, in the food, beverage and tobacco fields, three companies account for 45.7% of the total production of foreign enterprises.

Table III-1-6 Legal Organization of Manufacturing Enterprise (1980)

	No. of establishment	No. of employees	Value of production
(Value, units, persons, millions of peso)			
TOTAL	39,020(78)	1,077,473(46,948)	123,826,565(10,208,464)
Unipersonal	12,547	52,930	3,040,053
Temporary Association	6,160	33,517	2,069,701
Partnership	873	9,674	621,972
Limited Liability Company	6,829	92,079	6,122,495
Joint-stock Company	1,023	20,229	1,524,745
Cooperative Association	399	17,917	1,933,987
Corporation	11,064(14)	804,508(4,662)	98,091,316(473,650)
Corp. with Majority State Participation	12(12)	8,270(8,270)	765,660(765,660)
Mixed Economic Association	6(6)	11,904(11,904)	1,717,653(1,717,653)
State Company	40(40)	19,250(19,250)	7,054,844(7,054,844)
Foreign Enterprise	23	3,348	637,243
Others	44(6)	3,847(2,862)	246,896(196,657)

	No. of establishment	No. of employees	Value of production
(Share, %)			
TOTAL	100.0(0.20)	100.0(4.36)	100.0(8.24)
Unipersonal	32.2	4.9	2.5
Temporary Association	15.8	3.1	1.7
Partnership	2.2	0.9	0.5
Limited Liability Company	17.5	8.5	4.9
Joint-stock Company	2.6	1.9	1.2
Cooperative Association	1.0	1.7	1.6
Corporation	28.4(0.03)	74.7(0.43)	79.2(0.38)
Corp. with Majority State Participation	0.0(0.03)	0.8(0.77)	0.6(0.62)
Mixed Economic Association	0.0(0.02)	1.1(1.10)	1.4(1.39)
State Company	0.1(0.10)	1.8(1.79)	5.7(5.70)
Foreign Enterprise	0.1	0.3	0.5
Others	0.1(0.02)	0.3(0.27)	0.2(0.16)

Source: Direccion General de Informacion Industrial, Organization Juridica de las Emprosas Manufactureras, 1982.

Note : Figures in parenthesis indicate data of enterprises under the government's control.

1-3 Industrial Policy and Institutional Support

1-3-1 Industrial Policy

In order to assess the perspective of industrial development as well as the possibility of development of specific industrial sectors, in particular those selected for our study, it is crucial to review the general framework of industrial policy and concrete measures to implement it.

Nevertheless, any comprehensive industrial policy is not announced yet under the Alfonsin Administration, and the content of the new Industrial Promotion Law to be promulgated towards the end of this year is still unknown.

Under these circumstances, our approach to review the industrial policy is the following: first, basic aspects and effects of different industrial promotion schemes are examined in order to assess the nature and effectiveness of industrial policy applied so far in Argentina. Second, we would try to summarize basic principles and strategies concerning industrial policy announced by high level officials of the present government in various occasions. Third, we would refer to major concrete measures which were adopted recently in order to understand, in more specific terms, what the principles and strategies announced by the government officials.

(1) Basic framework of industrial policy

The basic framework of industrial policy which still remains in force was established by the Industrial Promotion Law (Ley de Promocion Industrial, Law No. 20560) enacted in December 1973. This Law was promulgated with basic principles contained in the Three Year Plan for National Reconstruction and Liberation (Plan Trienal para la Reconstruccion y Liberacion Nacional) and aimed at the following objectives which were consistent with the Plan:

1) priority to growth of production and full employment;

2) favorable treatment for national industries;

3) support to small and medium enterprises and those firms which adopt such modalities that permit the participation of employees in their management;

4) promotion of such sectors that contribute import-substitution and export-promotion;

5) geographical decentralization of industries, etc.

Under the Law, a series of decrees became effective, such as decrees for petrochemical industry (1973 and 1974), for steel industry (1974) and for wood products industry (1974) in terms of sectoral promotion of industries and decrees for province of San Juan (1973), for provinces of Northeast and for provinces of Patagonia.

The scheme of industrial promotion based on the 1973 Law and decrees established specific incentives for promoted firms and their investors such as exemption, reduction, suspension, deferred payment of taxes for period of less than 10 years, exemption and reduction of import duties, subsidies to compensate high local costs, preferential credits, technological assistance, etc.

Under the new economic policy of the military government which came into power in March 1976, a new Industrial Promotion Law (the Law 21608) was introduced in July 1977. One of the most important features of the Law was the fact that it stressed the efficiency of industries. The Law established its basic criterion of promotion of industries in the following terms: to promote the improvement of efficiency through modernization, specialization, integration, merger, economy of scale, structural changes.

As from 1976, the government modified the industrial strategy considerably, changing the import-substitution pattern that was in force since 1930 for an export-promotion pattern, with the aim of orienting the national industry towards the world market, so that it may operate at a more reasonable scale, without being conditioned by the variable and narrow limitations of the purchasing capacity of the domestic market.

On the other hand, the new Law reduced the incentives for industrial promotion. In particular, from 1980, the benefit consisted of the reduction of value added tax was suspended, which affected substantially the preferential treatment for promoted industries. Another important change introduced under the new Law was that foreign investment became entitled to receive incentives.

Under this scheme of industrial promotion, 616 projects were approved between 1973 and 1983, of which 307 projects were approved under the Law 20560, 241 projects were approved under the Law 21608 and 68 projects were approved under the decree 1239 of 1976 (favorable treatment for existing industries in the Patagonia region). According to detailed studies on the effects of these laws, they have not been significant for macroeconomic development[1].

The new employment created by the establishment of the 548 plants corresponded to 3.2% of the total occupied persons of the manufacturing sector of 1974. The total investment of these projects was equivalent of 25 to 30% of the total value-added of the sector of one year. Nevertheless, as far as some of the specific regions are concerned, projects approved under the Industrial Promotion Laws had certain importance for their development. On the other hand, as the major part of the incentives consist of exemption or reduction of taxes, it is not possible to make cost-benefit analysis of the measures under the Laws of Industrial Promotion.

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1) CEPAL, La Promocion Industrial en la Argentina, 1973-1983: Efectos y Implicaciones Estructurales, Buenos Aires, 1986.

(2) Basic principles and strategy of industrial policy of the government

Although the government has not announced any comprehensive industrial policy and it is informed that a new Industrial Promotion Law is going to be approved towards the end of 1986, basic principles concerning industrial policy have been referred to in various occasions by high-ranking officials of the Ministry of Economy. Among others, the followings seem to be most important:

1) In short and medium terms the industrial sectors are considered to be of prime importance since the agricultural and energy sectors are affected by unfavorable price levels of their products in the world market.

2) In this context, the new industrial policy of the Argentina should be explicitly characterized by its export orientation.

3) Given the limited availability of financial resources, it is likely that the following two considerations are to be basic guidelines to determine the sector-wise priority: a) adjustment in basic intermediate industries such as steel and petrochemical products and b) promotion of selected industries identified by certain criteria which are most appropriate for Argentine economy such as high-technology industries, etc.

One of the recent addresses of the Secretary of Foreign Trade and Industry has been highly relevant to these points. He confirmed more systematically the principles and strategy of "new industrial policy" mentioned above and explained basic lines of thoughts behind them. The most important part of the addresses could be summarized as follows:

1) A re-industrialization process should be carried out combining both the recovery and modernization of Argentine industrial assets. It should be done in the area of mature industries with the incorporation of new high-technology sectors which are able to generate an increase in production and productivity.

2) It should be a more open industrialization, combining the advantages of the internal market with those of the international market. It should re-launch the process of expansion of exports which had started in the first years of the 1970s, but was later halted due to the policy unfavorable for industry which began in 1976.

3) This export expansion process must be selective. It should take into account possibilities of associations with other countries whose state of development and level of income are compatible with Argentina's. Clearly, an association to expand the national market must preferentially take into account progressive and cautious agreements with Brazil.

4) Part of the re-industrialization process must take place in those items which are directly supplementary of agricultural activity and allow the agricultural sector to obtain a substantial increase in productivity and in production. In turn, this rise in production requires not only improvements in the conditions in which exports are made, but an industry which can supply the essential raw materials in internationally competitive conditions. Technology is thus linked to the advancement of the agricultural sector in the medium term, and is the joining link between decidedly complementary industrial and farming sectors.

(3) Recent actions in concrete policy measures to implement the industrial policy

The following recent actions, among others, can be considered as the preliminary policy measures adopted to implement the basic strategy of the industrial policy mentioned above.

1) The industrial promotion schemes are now under consideration in order to give priority to newer projects, and to file or reject projects presented in the past five years. These schemes include, moreover, priority for high-impact-regional projects with a relatively intense use of regional labor and raw materials, with clear technological improvements, and incorporating the idea of exporting a part of the production.

2) New promotional credit lines for the modernization of the small and medium industry have been launched. These credit lines are fundamentally for the purchase of machinery, with a supplement for small enterprises, of working capital.

3) External credits available to the country have been mobilized: the World Bank credit line for national and foreign capital goods, the Inter-American Development Bank credit line for foreign capital goods or imported raw materials, Argentine-Italian joint credit line for capital goods and etc.

4) The actualization of the promotional schemes for petrochemical industry has been proposed, and a scheme for the informatics, communication and robotics sectors has been proposed.

5) The program to liberalize the trade with Brazil, particularly in the field of capital goods has been promoted and the basic agreement on the program among Argentina, Brazil and Uruguay was signed recently by presidents of these countries.

6) Agreements with all the provinces to establish a comprehensive data network, and to train qualified personnel to make use of the data net work were made.

1-3-2 Institutional Support for Technology Development

(1) Importance of technology development

Technological innovation is one of the determining factors in economic development. Activities which generate it should be given enough attention and the government's participation to them is very important.

The demand for the improvement of industrial technology has been limited in Argentina, due to its economic environment. Before the liberalization programs in the late 1970s, the import substitution measures such as high tariffs and quantitative restrictions, ensured profitability in industry. To a large degree, entrepreneurs had few incentives to be cost- or quality-conscious or to exploit economies of scale. They had become accustomed to operating on a low volume-high margin basis. They were mostly unconcerned with innovation, given the lack of sufficient external or internal competition.

Under the military government which came into power in March 1976, the liberalization process was initiated in 1978. In this process Argentine industry faced to severe competition by foreign enterprises. The liberalization attempt itself aimed, in the short run, to cope with the economic crisis left by the previous government. And in the longer run it aimed to restructure the economy, most notably reactivate the industrial sector through the working of internal and external market mechanisms. However the most serious industrial recession occurred in Argentina's history (see III-1-2). Under these circumstances, many entrepreneurs reduced their operations and research and development (R&D) expenditures.

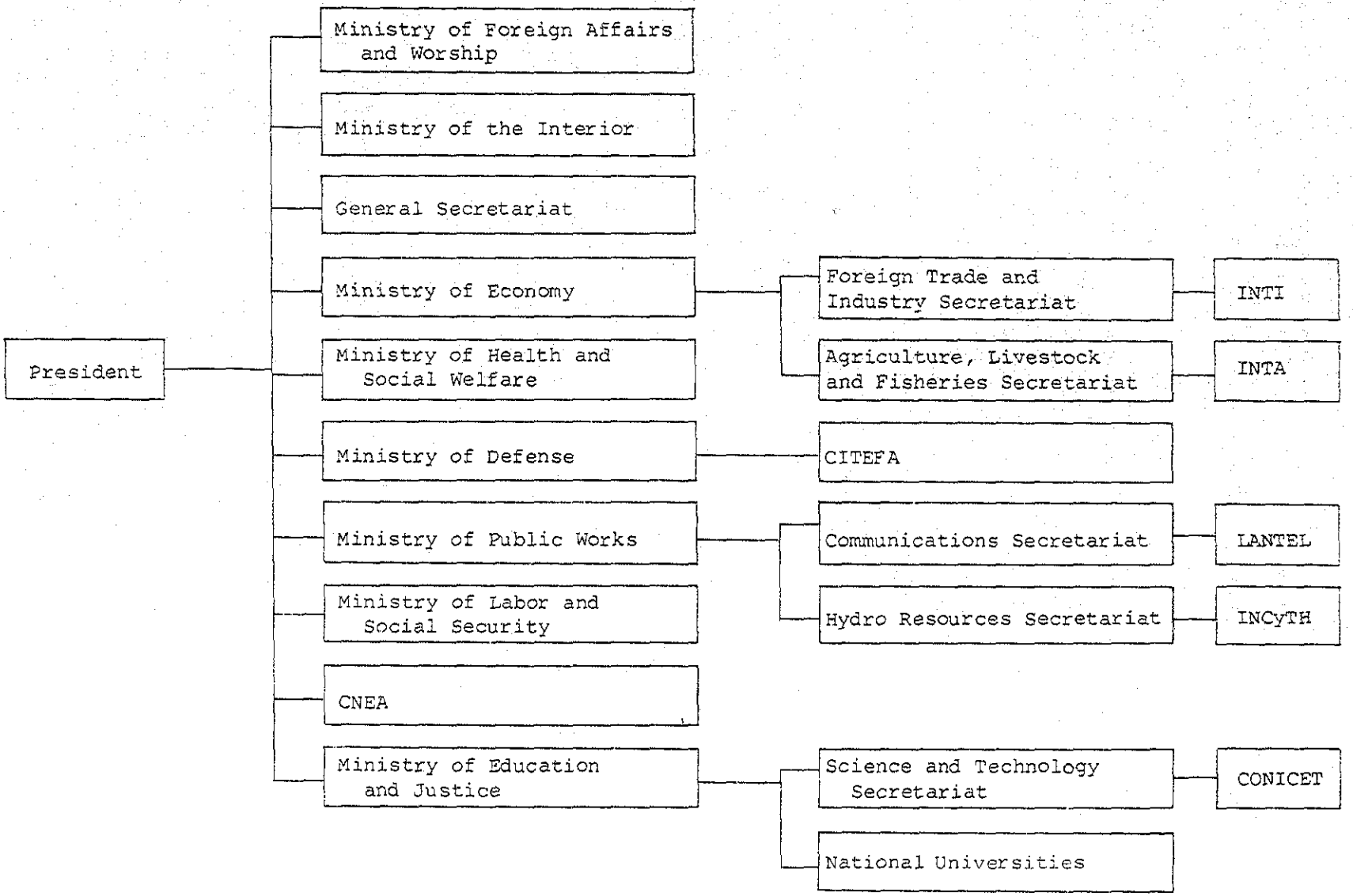
If this situation continues, technological level of Argentina's industry will be left behind the global trend of development. From the viewpoint of reactivation of industry, especially through export expansion, it is crucial to strengthen its international competitiveness.

One of the most important elements for reactivation of Argentine industry would be technology development. It is necessary for Argentine industry to close the technological gaps with its international competitors, which were exacerbated during the last several years of industrial recession.

(2) Institutions for technology development

It is very important in this area for the public sector to prepare research and development infrastructure which would facilitate private sector's activities in development of industrial technology. This includes support to industry in updating its technologies, in making available metrological services and other technical services including industrial standards, and in helping to improve quality assurance and technology adaptation processes. Another area of concern is the availability of adequate facilities to provide technical training, and retraining to skilled workers.

Figure III-1-4 Principal Bodies of Science and Technology



Source: INTI

Figure III-1-4 shows major public institutions in the field of science and technology. The principal public institution working for industrial technology development is National Institute for Industrial Technology (Instituto Nacional de Tecnologia Industrial: INTI), which was established in 1957 and operates as an autonomous public institution affiliated with the Secretariat of Foreign Trade and Industry.

As for budget distribution in 1981 (Table III-1-7), National Council for Science and Technological Research (Consejo Nacional de Investigaciones Cientificas y Tecnologicas : CONICET) is allocated the largest amount of budget in the field of science and technology followed by National Institute for Agricultural Technology (Instituto Nacional de Tecnologia Agricultura : INTA) and National Commission for Atomic Energy (Comision Nacional de Energia Atomica : CNEA). INTI has share of only 6% ranking sixth among those public institutions.

Table III-1-7 Science and Technology Budget Distribution (1981)

Institution	Share (%)
CONICET	21.5
INTA	18.6
CNEA	17.3
Ministry of Defence	8.6
Universities	8.2
INTI	6.0
Secretariat of Mining	3.7
INCYTH	3.4
Air Forces	3.2
SECYT	3.2
Others	6.3
Total	100.0

Source: INTI

Notes: CONICET = Consejo Nacional de Investigaciones Cientificas y Tecnologicas (National Council for Scientific and Technological Research)
INTA = Instituto Nacional de Tecnologia Agricultura (National Institute for Agricultural Technology)
CNEA = Comision Nacional de Energia Atomica (National Commission for Atomic Energy)
INTI = Instituto Nacional de Tecnologia Industrial (National Institute for Industrial Technology)
INCYTH = Instituto Nacional de Ciencias y Tecnicas Hidricas (National Institute for Water Science and Technology)
SECYT = Secretaria de Ciencia y Tecnica (Secretariat of Science and Technology)

(a) National Institute for Industrial Technology (INTI)

INTI was established in 1957 as the public institution to serve the industrial sector. It has been the largest governmental institution for development and diffusion of industrial technology. Partly because its activities are quite wide-ranging, INTI is in need of re-identifying its central strategy, and selectively concentrating its manpower and other resources to strategic program objectives, including promising fields of advanced technologies. This is especially important, if INTI is to play a key role in the anticipated industrial activation and export promotion of manufactures.

The Board of INTI is composed of nine members including representatives of the Secretariat of Foreign Trade and Industry, the National Development Bank (BANADE), private chambers of industry, and well known industrialists. The purpose of this Institute is to carry out and promote applied researches contributing to the technical and economic development of the national industry, particularly small- and medium-scale industries.

INTI's research functions and service activities are carried out through 8 central laboratories and 21 research centers (10 located in Miguelete Industrial Park, Province of Buenos Aires, 3 in Province of Buenos Aires, 4 in Capital Federal and 4 in other provinces, see Table III-1-8). The central laboratories are organized by field (e.g., chemistry, physics and thermodynamics), and carry out applied research and provide services to industrial firms which are not specific to any particular subsector, e.g., calibration of instruments and materials testing. The research centers are, on the other hand, specializing in industrial subsectors such as dairy products, meat products, rubber, machine tools, plastics and pulp, etc.

Total staff of INTI is 1,544 at the end of August 1984, 64% of whom are professionals and technicians engaged in research activities. The major portion of INTI's facilities are located in Buenos Aires, although there are research centers located in Cordoba, Mendoza, Rosario (Santa Fe Province) and Mar del Plata (Buenos Aires Province).

Total operating budget of INTI has been reduced from US$45 million to about US$20 million in 1980 because it no longer receives the earmarked funds from the government[1)]. It now gets about 10% of its budget from its services to industry (mainly materials and product testing) but relies upon government budgetary support for the remaining 90%.

The research centers are more closely connected to each industry from the viewpoint of both activities and finance. According to INTI officials, all of the annual budget for central laboratories are financed by the government while in the case of research centers about 85% of them are financed by the government. About 15% of the budget of research centers are provided by private sectors in the form of

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1) Since its creation and up to 1980, INTI was financed with the 0.25% contribution on bank credits granted to industrial enterprises. However, this system was eliminated in 1980.

Table III-1-8 Number of Staff in INTI (1984.8.31)

	Professional	Technician	Administration	Services	Total
President Office	17	2	56	19	94
Vice President Office	7	4	4		15
Board of Directors	17	5	11		33
Finance Dept.			86		86
Others	4	24	95	176	299
Administration Subtotal	45	35	252	195	527
Projects and Prototypes	2	7	1		10
Computation and Data Processing	18	15	1		34
Biotechnology	5		1		6
Applied Electrochemistry	17	6	1		24
Physics	57	46	7		110
Chemistry	32	25	3		60
Construction	36	48	3		87
Mechanics	24	23	8		55
Thermodynamics	15	11	3		29
Food Processing	21	20	3		44
Central Laboratories subtotal	227	201	31	0	459
CITIL(Milk)	18	17	4	5	44
CITEP(Fish, Mar del Plata)	32	6	4	1	43
CIME(Small & Medium Compa.)	3	2	1		6
CITIC(Rubber)	5	8	1		14
CITEC(Leather)	14	18	3		35
CIIM(Mineral)	14	21	2		37
CID(Library)	1	18	6		25
CIMETEL(Telecommunication)	7	10	3	1	21
CIDI(Design)	3	4	2		9
CIM(Materials, Cordoba)	55	25	7	1	88
CIIA(Environment)	15	9	1	1	26
CICEPA(Paper & Pulp)	11	14	2	1	28
CITEF(Fruits, Mendoza)	10	6	1	1	18
CICIHA(Housing)	4	1	3		8
CIT(Textile)	9	11	1		21
CITIP(Plastics)	13	6	2		21
CITECA(Meat)	14	9	2	1	26
CIMHER(Machine)	4	4	2	1	11
CITEMA(Timber)	8	8	2	1	19
CIRSOC(Security Regulation)	7	3	5		15
CITSAFE(Rosario)	8	11	4		23
CIATI(Fruits, Rio Negro)	9	5	3	3	20
Research Center Subtotal	264	216	61	17	558
INTI Total	536	452	344	212	1544

Source : INTI

association fees and/or service fees. Such difference comes from the basic difference of the philosophy of establishment of central laboratories and research centers. Research centers are more oriented to the service of the industry while central laboratories are for basic research.

INTI's activities are quite diversified and each research center's budget is controlled automonously. It is said that past figures of budget allocation are not grasped by the INTI head office. Because of the shortage of the funds after 1980, each research centers and central laboratories are inclined to find the job of service for fees to industry with rather short range perspective.

Two types of activities are existing in INTI as follows:

1) Activities related to public services: regulation, standardization and several services such as testing and metrological measuring to industry,

2) Research and development activities: strategical research work for the development of science and technology of Argentina.

In the past, INTI's main activities have been limited in the first area and could not provide major technological impact to Argentine industry. Another aspect of activities in second category is to watch the worldwide trends of advanced technology and try to introduce them to Argentina. However their activities regarding advanced areas such as electronics have not been so active. Research regarding the electronics is performed in the laboratory of Computation and Calculation. According to Table III-1-8, number of professionals and technicians in this laboratory is 33. The number is increasing in these two years but are not enough in order to catch up to advanced countries in this field. Also in the case of Physics Department that holds the largest number of research professionals, their activities are measurement and research for the regulations and not so much involved in the research for technological development.

Based on our study, the following problems can be pointed out about the activities of INTI.

1) Because of its diversified nature, there has not been well management which shows the clear direction of INTI. Even the past budget allocations are not grasped by the central office. Also the unstable economic policy made it impossible for INTI to formulate the long term research plan.

2) Most of the INTI activities are limited to services to the industry for fees and INTI has not enough time for the strategic R&D activities.

3) There has not been paid enough attention to the most advanced area of technology such as electronics.

4) INTI has suffered from the severe shortage of fund especially after the abolishment of the earmarked fund system.

5) INTI does not have a good grasp of the domestic industry's needs of technology development in industry.

6) Activities on regional or provincial levels are quite limited because facilities of INTI are chiefly concentrated on Buenos Aires.

(b) National Council for Science and Technological Research (CONICET)

CONICET is the organization under the Ministry of Education and Justice in charge of the development of science and technology. It has the strong power being responsible to allocate huge size of research fund in Argentina. According to CONICET, their basic policy for the allocation of fund is to allocate rather evenly. In fact, as Table III-1-9 shows, except the social science and humanity, funds are allocated to all of the sections evenly.

There are new movement appeared regarding their activities to connect their research with private sector such as joint research and open sale of their research results. Those activities can be well evaluated from the viewpoint of transfer of research result to private sector for actual application. However efficient coordination with INTI for the technology application area will be a issue in future.

Table III-1-9 Budget of CONICET (1985)
(Australs, %)

Field	Budget	Share (%)
Agriculture	692,310	7.9
Biology	970,182	11.1
Philosophy	140,014	1.6
Physics & Mathematics	811,842	9.3
History	247,425	2.8
Engineering & Technology	1,749,102	20.0
Medicine & Pharmacy	1,228,068	14.0
Sociology & Economics	218,597	2.5
Chemistry	1,543,470	17.6
Earth & Atmosphere	1,158,951	13.2
Total	8,759,961	100.0

Source: CONICET

(c) Secretariat of Science and Technology (SECYT)

While CONICET is the organization to allocate the fund rather evenly, the Secretariat of Science and Technology distribute the funds more strategically selecting several areas being considered important such as biotechnology and computer science.

One of the important movement worth mentioning is the establishment of Escuela Superior Latinoamericana de Informatica (ESLAI) in March, 1986. It was established by the fund from Intergovernmental Bureau of Information in Rome and UNESCO. The establishment was accomplished through the active and persistent coordination of Secretariat of Science and Technology. ESLAI is aiming at the Atomic Energy Commission in Argentina which is regarded keeping the high level of technology and working quite independently. Now nine professors are teaching thirty two students who finished junior college level of education. Out of thirty two, eight comes from other Latin American countries.

The idea of the establishment should be well evaluated. However, the problem is that their concern is pure academic research rather than technical training or diffusion of computer in industry. There is the possibility that after the education most of the student will work outside of Argentina and the educational investment will never be paid back from the Argentina's point of view. There must be some systems in which those education will benefit for the reactivation of Argentine industry.

Another issue is the relationship with INTI. For the development of industry, every fruits of the research should be utilized for the industry to increase the competitiveness in international market. In that sense, it is hoped that ESLAI will take regular contact with INTI or industrial sector and exchange information for the utilization of their research results.

Although the Secretariat of Science and Technology is working well under the limitation of budget, it is better, from macro viewpoint, to have more close coordination with INTI or other related organization to utilize the limited budget efficiently.

(d) National Council for Technical Education (CONET)

One organization which can not be neglected to consider about the science and technology is CONET (Consejo Nacional de Education Tecnica). It is responsible for the training of graduates of primary school.

It has 362 schools, which hold 50,000 teachers and 300,000 students. Duration of training is 6 years (3 years for basic course and 3 years for advanced course). The Board of CONET is composed of 8 members including representatives of the Ministry of Education and Justice (3), the Ministry of Labor (1), CGT (1), the Teacher's Union (1) and private sector (2). CONET has training contract with about 100 private companies and latter 3 years all the student are supposed to work there.

CONET is the quite important organization which sustain the activities of industry in Argentina through the education of middle class engineer.

In general, quality of middle class engineer plays crucial role in the production of manufacturing firms because they are middleman to connect the management and labor. Without proper and through understanding of the direction of management by the middle class manager, the management can not implement their decision in actual production. To increase the communication between management and labor they are also very important.

Looking at the Japanese experience, high quality of labor force has contributed very much to the high rate of economic growth. Especially the effort of the middle class labor has been great. The high quality of graduates of technical high school gave good effects on the increase of productivity and quality of products of industry in Japan.

(e) Companies

The R&D activities of private companies are very important which usually occupies about 60-70% of total R&D expenditure in developed countries. In the case of Japan, the share of private companies in total R&D expenditure was 58% in 1980. In Argentina, no data is available regarding the R&D expenditure in private companies. Therefore general tendency is discussed here.

There are such three categories in large companies which have influence on technology development in Argentine industry as 1) state companies, 2) private companies (national capital), 3) private companies (foreign capital).

Generally the attitude of state companies to R&D is the mixture of the introduction of advanced technology from foreign countries and minor R&D activities of their own technology. However recent financial problems of Argentina, the state companies do not have enough fund for even those R&D. In the case of private companies of domestic capital, situation is not so bad as state companies. However, because of the instability of economic policy in the past, most of them are unconcerned with long term R&D activities. Companies of foreign capital usually perform their R&D at their head offices and just transfer the results for the production in Argentina.

Here it should not be neglected the technological impact to Argentine industry by large size multinational corporation such as IBM. Those companies have been imposing the much higher standard of quality against the parts they are procuring and that behavior finally gives good impact to upgrade the technological level of the subcontractors. This is the result of implicit R&D for practical purposes and further encouragement for this by government is hoped.

1-3-3 Industrial Finance

(1) Necessity of Introducing Long-term Financing for Promoting Industrial Development

(a) Private risk capital

Industrial reactivation is currently the major issue for the Argentine economy. The Argentine government expects the private sector to take the initiative as the principal "locomotive" in industrial revitalization by expanding investment. The Guidelines published in January 1985 emphasize that the "new regime of (industrial) promotion requires a major participation of "private-risk-capital" in order to avoid repeating the inefficient (public) undertaking of the past[1)].

It is, of course, quite understandable that the Argentine government attach special importance to private initiative, given the present economic circumstances of the nation. Due to its foreign debt and heavy financial deficit, the public sector is unable to initiate new industrial investment. Also, we have noted a certain growing skepticism, even among high government officials, toward the management of public enterprises as a principal means of industrialization. It is needless to emphasize that the prior heavy investment by public companies saddled the Argentine people with an intolerable burden. As a result, industrial development by private initiative with sound and efficient management is being viewed with increasing favor.

However, it seems to us that the government is stressing the necessity of private investment without showing how to raise these investment funds. In other words, we can pinpoint no clear concept of "Industrial Financing" in the government's industrial policies.

The stabilization of the economy, especially that of the price of goods and labor costs as a result of the Austral Plan, created the fundamental basis for investment. After many interviews in Buenos Aires, we have come to realize that the Argentine entrepreneurs have now started to think about their own future in longer terms than before. But, in order to put these ideas into practice, a reliable forecast of the country's economy, as well as stable and adequate funding conditions for a relatively long period, are indispensable.

Some positive progress in financial reforms was made in 1985, especially in the second half of the year: elimination of the detrimental indexed transactions; positive interest rate in real terms; greater monetary control; tighter monitoring of financial entities; and legal termination of extra-institutional markets such as swaps and securities.

Though these financial reforms will probably help to directly or indirectly improve the financial management of private companies, it

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1) Secretaria de Planificacion, Los Lineamientos de una Estrategia de Crecimiento Economico 1985-89, p.94.

is essential to have some other special financial programs to promote investment. Financing for private enterprise should be set up in two major ways: short-term financing (usually used as working capital) and long-term financing for investments in plant and equipment.

In order for a private company to invest continuously over a long period, it must obtain funds at a relatively low, stable interest rate with a repayment schedule geared to the return on the investment; the repayment must furthermore be free from sudden fluctuations in foreign exchange rates. The challenge Argentina now faces is how to provide this kind of financing.

(b) Foreign capital investment

There is a certain expectation among the Argentine people that "foreign-private-risk-capital" may reappear once the stabilization of the economy has occurred. There is no question that Argentina is blessed with natural resources more than sufficient to attract such foreign investment.

It seems, however, clear that foreign private risk capital, including from Japan, will not start to invest in Argentina for the long haul unless the domestic private sector demonstrates its credence to its brief in the future by initiating investment. Moreover, it is important for the national economy that domestic private capital take the initiative in forming joint ventures with foreign capital.

(c) Long-term financial institutions

We should not overlook the important role to be played by specialized long-term financial institutions of the Argentine government. In most capitalistic economies - except for the United Kingdom and the United States, where direct financing through capital markets developed at earlier stages - governmental or semi-governmental institutions played the main role in supplying long-term industrial funds.

In Japan, "seisaku-kin-yuu", literally translated as "policy financing" or "policy credit", has been one of the principal vehicles for the rapid postwar economic recovery. The Japanese government supplies funds directly through the Fiscal Investment and Loan Program (FILP)[1], or indirectly through such institutions as the Japan Development Bank, the Small Business Credit Insurance Corporation and the Credit Guarantee Corporation.

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1) It is a part of the government's fiscal activities and one of policy measures with which the government tries to achieve the immediate policy needs and targets by government loans to the designated special institutions and letting them either undertake directly the public works or finance to encourage the private investment in the projects which are important from national economic standpoint. The funds are raised through the postal savings system, plus others such sources as government-run pensions, postal life insurance and government-guaranteed bonds.

It is likewise true in the case of Argentina that the National Bank of Development (Banco Nacional de Desarrollo, BANADE) continues to be one of the predominant sources of medium- and long-term industrial funding (even though such funds are inadequate) for private companies, especially for small and medium industries (see III-5). Due, however, to governmental financial constraints, BANADE is unable to supply additional funds for the revitalization of industries unless it receives some financial cooperation from abroad.

(d) Saving-Investment circuit

From these initial observations, it seems clear to us that:

1) financial reform and liberalization do not suffice to promote investment; long-term financing measures are indispensable; and

2) funds must be raised in the domestic market; additional contributions from the government cannot be expected.

Therefore, it is essential to establish specific measures to mobilize not only big investors but also the country's small depositors for long-term industrial financing. To this end, a Saving-Investment circuit, enabling the transfer of domestic savings into industrial investments, should be established. The relationship between savings and investments is not significant in Argentina, and it receives little political attention.

Of course, it has been held in recent years that the rate of savings in Argentina is low (domestic savings rate in 1985 is 19.3% of GDP based on data of the Central Bank) and inadequate to finance industry. But if we consider the overall amount of funds that the Argentine people possesses, perhaps the financial sources are in fact adequate. Though exact data is unavailable, the volume of the parallel dollar market and other non-institutional financial markets such as inter-business transactions, along with the total amount of capital flight, give us an indication of the significant funds the Argentine people possesses.

It is the ultimate responsibility of the monetary authority to design a master plan for a Saving-Investment circuit that is acceptable to both creditors and users of the funds, and that also satisfies financial intermediaries' such as commercial banks. One possible option will be presented later from the viewpoint of Japanese experiences.

(2) Major Characteristics of Private Corporate Finance in Argentina

(a) Self-financing attitude of Argentine entrepreneurs

Before dealing with the main purpose of this section — an analysis of the major characteristics of corporate finance in Argentina — it is essential to point out that there is a lack of basic information about the financial activities of private companies.

We could locate neither data on consolidated financial statements of industrial corporations (except for a brief analysis made by Bolsa de Comercio de Buenos Aires of 42 companies listed at the Securities Exchange), nor major corporation data on sources and uses of funds on a consolidated basis. Perhaps this lack of information is mainly due to the high inflation of the past, which made the calculations difficult.

According to a study done by Bolsa de Comercio de Buenos Aires[1], the debt/equity ratios of the 42 major companies listed show an exceptionally high proportion of equity for a developing country. Based on the 1985 fourth-quarter balance sheets, the average debt/equity ratio is 0.38. Only textile companies (3 companies) had a total debt amount exceeding the equity (1.08). Moreover, the average fixed debt (fixed liabilities)/equity ratios of these 42 companies is 0.09.

This does not, however, imply that raising funds from the stock market is the primary funding method. Rather, it demonstrates the prudent and passive attitude of private entrepreneurs: they preferred not to take the risk of borrowing. These figures demonstrate the self-financing attitude of the Argentine private entrepreneurs. They tend to invest within the limit of their earnings and reserves, partially using a special tax exemption plan called "diferimiento impuesto", as provided for under the Industrial Promotion Law.

(b) Direct financing

Figure III-1-5 illustrates the conceptual flow of private corporate financing. This figure demonstrates, first of all, the immatureness of institutional fund sources, and, consequently, the importance of informal financial markets, that is, non-institutional sources.

The financial instruments provided by insitutional sources are limited, especially instruments of direct financing (direct procurement of funds from capital markets). Many Argentine business leaders mentioned to us the virtual nonexistence of capital markets. In fact, the number of companies listed at the Buenos Aires Securities Exchange is not only small but is actually falling: it counted 414 in 1970, but only 227 in 1985.

The daily operations of the stock market in recent years have remained stable at "around US$200 to 300 thousand, which is barely 1% of what was considered to be operated in the money market. Dullness of the daily dealings reflects the low profile of the issue market.

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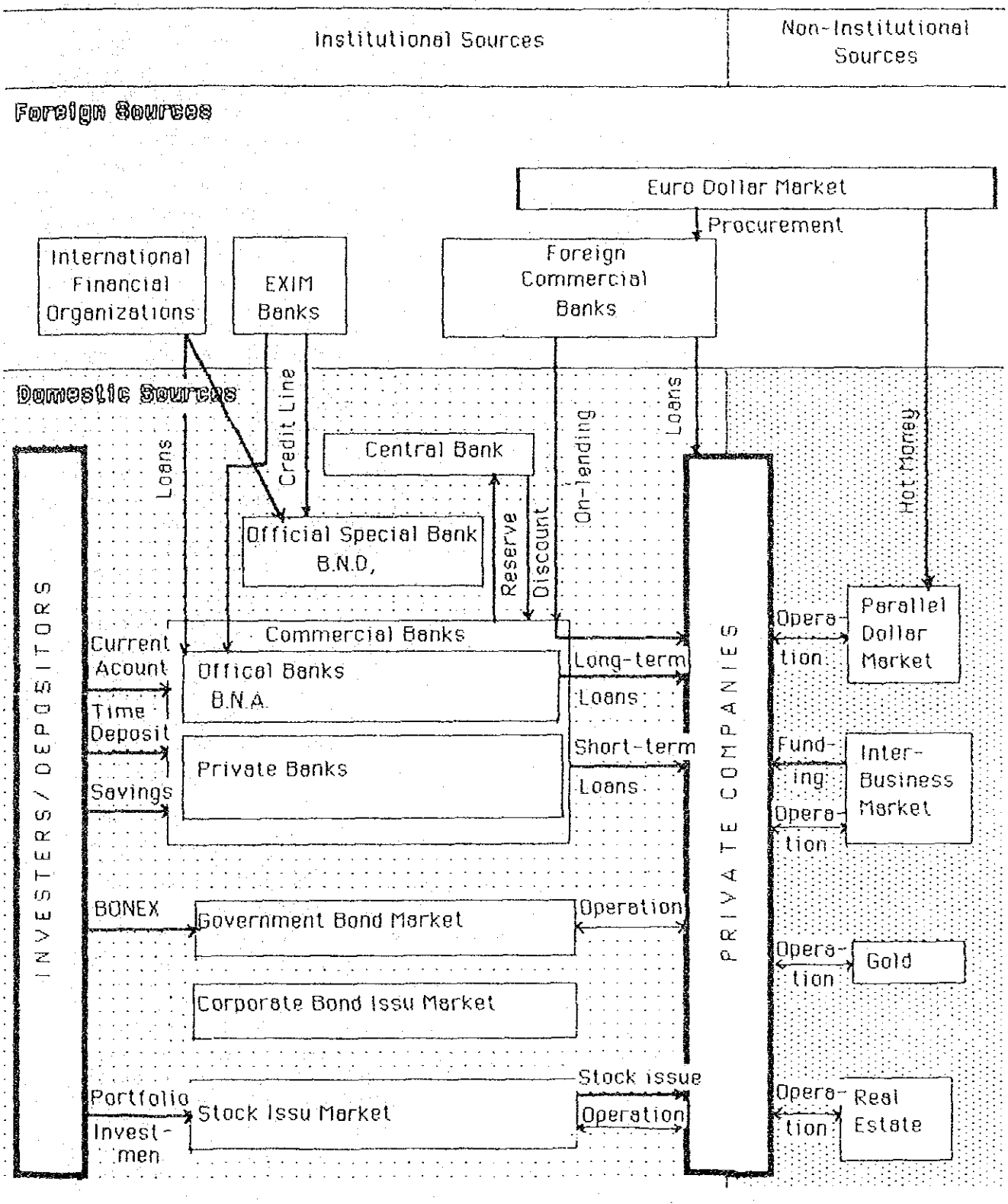
1) Bolsa de Comercio de Buenos Aires, Anuario Bursatil 1985 and Informe Bursatil Trimestral, Octubre-Diciembre 1985.

Figure III-1-5 Flow of Private Corporate Financing in Argentina



Source : Study Team

After the June 1985 stabilization plan (the Austral Plan), daily sums handled by the stock market increased almost tenfold. However, in order for the stock market to become an important channel for corporate financing, it is essential to have new ways and means of attracting both issuers and investors.

Another direct financing instrument — the corporate bond market, which is quite common in developed countries — does not exist in Argentina. It is said that one textile company tried to issue a corporate bond a few years ago, but failed because of the low liquidity of banks at that time. Only two government bonds — the Argentine Republic External Bonds (BONEX)[1] and Treasury Bills, commonly known as "letras telefonicas" — are currently traded on the market.

(c) Indirect financing

The major financial institutions that most commonly provide corporate financing are, therefore, commercial banks, finance companies, and specialized government banks including BANADE. In other words, most companies, except for self-financing, are indirectly financed (borrowing from financial institutions).

In Argentina, there are 190 commercial banks; 31 official banks including 2 federal, 24 provincial and 5 municipal banks; 128 domestic private banks; and 31 foreign banks. These 190 commercial banks accounted for 69.5% of loans in the banking system in late September 1985. In addition, the 2 official development banks (federal and provincial) accounted for 23.4% of loans; 73 finance companies accounted for 0.8%.

It is estimated that the commercial banks provide about 3/4 of their loans to the private sector; 10.8% of their loans, including loans to the public sector, goes to primary production, 39.7% to manufacturing industry, 21.1% to finance and services, 8.7% to commerce, 5.8% to construction, and 13.9% to other activities respectively, as of late June 1985.

The dominant role of commercial banks therefore becomes apparent. However, loan portfolios of the commercial banks are totally conditioned by the extremely short term of time deposits, which are the main sources for the banks (they account for 47% of total private deposits). Time deposits in Argentina are classified according to their term of deposit: 7, 15, 23, 30, 44, 60, 180, and 365 days. The 7-day term is most common.

The Central Bank's rediscount window is another major source of credit for the commercial banks. High reserve requirements, however, have been imposed to enable the monetary authorities to gain greater control over bank loan portfolios. Bankers interviewed in this study claimed the high percentage of reserve requirements on deposits had then reached 85% on the average — offset in part by rediscounts.

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1) Bonos Externos (government bonds denominated in US dollars and bearing international interest rates).

Under these circumstances, private commercial banks cannot supply long-term financing for private companies. Likewise, inter-business transactions on the non-institutional market also cannot be sources of long-term investments. Inter-business markets now show brisk activity, and compete effectively with banks; they mainly deal in 7-day terms.

Private sector ways and means for raising long-term funds are quite limited: BANADE medium- and long-term credit programs, especially for small and medium industries, technological development projects and support for purchasing national capital goods; credit lines from international and foreign government organizations for imports of capital goods; and on-lending programs provided to the private sector within the Financing Plan (rescheduling plan for the international debt), as agreed on between the government of Argentina and the international banking community (the international creditors) in August 1985.

1-3-4 Suggestions

The followings are suggestions for industrial policies based on this study. Treating the industry as a whole, they may sometimes appear to be too abstract. More specific suggestions will be found in the analysis of individual industrial subsectors and small and medium industries in the next sections in this chapter.

(1) Guidelines in industrial policy

Reactivation of industries is one of the most important objectives for the present government. To achieve this, the government is now preparing for a new Industrial Promotion Law. However, it is impossible for the government to promote all industries under the limitation in financial and human resources. It would be recommended that the government should give, as soon as possible, an order of priority among industrial subsectors from the viewpoint of the best and the most efficient utilization of national resources and select several industries to be promoted based on the priority. It is important that the government informs the Argentine people of its decision and promotional measures.

In Japan, there were little available resources during the postwar restoration period, and especially foreign currencies were quite limited. The country was suffering very much from this lack of foreign currencies because it was largely depending upon foreign countries for most part of raw materials and capital goods it needed. The Priority Production System was one of industrial policies carried out at that time under such "limited resources" conditions. The policy defined the "increase in coal & steel production" as the precondition for recovery of production in whole the industry, concentrated then all the resources available in these two industries and finally succeeded in it (see Vol. II, Chapter III, 1-2-1).

Another example of guidelines in Japanese industrial policies was observed during the High Economic Growth Period of the 1960s. The government introduced two criteria for a desired industrial structure

to attain higher economic growth: "income elasticity criterion" focusing attention on the demand aspect, and "productivity increase rate criterion" focusing attention on the supply aspect. Applying these criteria the path of heavy and chemical industries was chosen at the most desirable (see Vol. II, Chapter III, 1-2-2).

Selection of criteria depends on each country's conditions and its environment such as availability of natural resources and manpower, or economic environment of the world economy. For Argentina, the criterion of "efficient utilization of domestic resources not only natural resources but human resources" would be important.

Argentina is very abundant in natural resources such as fertile land, petroleum and natural gas. The question now is how to make the best use of these resources. One of the possibilities is the promotion of agroindustry, utilizing the internationally competitive agricultural products, it is necessary to increase the degree of process for them and to expand their manufactured products. It can be achieved only by individual enterprises' efforts to improve the competitiveness of their products such as quality and price of products and to develop their international market. It is important for the government to provide promotional measures for these enterprises' efforts.

Another possibility is the promotion of petrochemical industry utilizing resources of petroleum and natural gas. Argentina will be able to substitute more domestic production of petrochemical products for import. Here, it is important to produce them at international competitive price in the case of import substitution: if petrochemical products are supplied at higher price, so will be all other products, since they are used as basic materials in many sectors including agriculture.

Argentina has also abundant human resources as compared to other Latin American countries. Therefore, it would be advisable to promote "knowledge-intensive industries" such as electronics industry and bioindustry. From the viewpoints of possibility of technological innovation and its effects, the microelectronics industry appears the most promising. Remarkable microelectronics innovations have been made in these years in the world. The innovations effect not only on the industry itself, but also all other fields of industry. With the abundant qualified manpower, Argentina has necessary basic conditions to enjoy the fruits of the innovation in this field. Besides, other industries would not catch up the world technology level without utilizing microelectronic technology. Promotion of microelectronic technology development would probably be a key factor to succeed in the reactivation of Argentine industry in future.

(2) Promotion of competitive market

Technological progress is indispensable for industrialization. It is difficult to promote technological progress without competition between enterprises. In an oligopolistic market where there is not enough competition, enterprises are hardly interested to improve their own technology.

The situation was a little similar in Japan in the early years of the High Economic Growth period. Japanese government protected domestic manufacturers from foreign competitors. In the most part of the heavy and chemical industries, the market was oligopolistic in the sense that it had only few competing enterprises. Japanese manufacturers, even if they were in oligopolistic market, competed each other severely. Moreover, each of them was making every effort to develop their technology, to improve their competitiveness in the world market, preparing to the expected liberalization of trade (the government announced in advance each step of program, indicating the timing and the extent of the liberalization).

Argentine manufacturers have been accustomed to the lack of competition in the highly protected oligopolistic market. This tendency appears in their reaction to the foreign investors. If the orientation of Argentine industrialization is purely for domestic market and Argentine people never complain the more expensive manufactured goods produced by local manufacturers in highly protected market, "competitive mind" may not be necessary. But if Argentina seeks to make best use of national resources and to advance into foreign markets, it would be indispensable for the government make efforts to introduce more "competition" in the domestic market. In Japan, the Anti-Monopoly Law was enacted in 1947 and revised in 1953. In order to enforce the Law the Fair Trade Commission was established. The Law and the Commission have worked a help to the promotion of competition in Japanese market.

Of course, it would not be very easy to change the non-competitive market structure to which Argentina has so long been accustomed. Besides, since the failure of liberalization policy launched in the late 1970s, a certain antipathy to "liberalization" may have been formed in the country. But now the selective liberalization policy is inevitable for Argentina.

What is important in the liberalization is to well inform the people in advance of the manner, the time, and the step to be taken in the process. We are not suggesting to abolish the protection policy. We understand the protection is not always bad, but is necessary in some phase of industrial development. Gradual shift from protection to open policy is desirable. It takes time to change the competitive structure of each manufacturer in order to face with severe international competition.

(3) Coordination with the private sector in policy-making

Industrial policies should always be made in consultation with the private sector. Not only to settle general guidelines for the whole industry, but also to make any major decisions, it is advisable that the government consults the industries concerned, organizing councils for the discussion between the government and the private sector.

It is very important to design industrial policies considering the real situations of the industries concerded. The industrial policy which is formulated without taking the opinions of private

sector concerned is often non-operational and sometimes has negative effects for the development of the industry.

In Japan, various councils are organized in the Ministry of International Trade and Industry as advisory bodies to the Minister, where opinions are exchanged between leaders in the industrial circles concerned, general consumers, leaders in financial circles, and experts from a wide stream of society, such as labor union leaders, university professors, journalists and ex-government high officials, etc. The Industrial Structure Council, for example, aims to discuss long-term basic policies on industrial structure in Japan. This council has committees for individual industries such as Iron and Steel Industry Committee, Machinery Industry Committee, Textile Industry Committee, etc., or cross-industry committees such as Investment Finance Committee, Industrial Location Committee, etc., where members study and deliberate on each problem in order to advise the Minister.

The importance of these councils lies not only in the reports they submit, but in the process of discussion before it is prepared, in which opinions are exchanged between members in different positions to know what is the problem, what the government plans to do, how the industry concerned will react, what influence the problem has on laborers, etc. As the result of all these discussions, comes out an orientation, or a policy. When members reach common understanding, for example, that an industrial adjustment is inevitable, then, the industry can prepare itself to the coming production adjustment or equipment adjustment well before the policy is put into operation, or switch itself to more advantageous business aided by the government.

We are fully aware that we can not simply apply a country's experience to another's problem. But when we examined Argentine industrial policies launched so far, we could not find a trace of sufficient exchange of opinions between the government, industry, and labor union people. It is advisable that the government organize at least a common table for the discussion between these parties as to what is the problem of the country.

(4) Foreign capital policy

To reactivate Argentine industries, it is necessary, first of all to activate investment by local enterprises. At the same time, it is also important to introduce foreign capital into the country, which introduces capital, management know-how and technology. They come with their advanced new technology and management system which would have a great effect in stimulation of Argentine industries.

"The Argentine market is always open to all the foreign companies" tell us governmental officials in charge of foreign investments. In principle, the market may be open, but in reality, many conditions discourage foreign capitals from coming to the Argentine market. Introduction of foreign capitals has always an impact on the local market, so it is natural to put some conditions to their entry. But in Argentina, this restriction turns out to be a too many conditions required to foreign enterprises wishing to come. If Argentina wants participation of foreign companies, it must win their

confidence at first. To win their confidence, the followings would be important:

a) To give a guarantee for continuity of law and regulations related to foreign capitals,

b) In administrative procedures, to provide consistent treatments of coming investors,

c) To treat foreign capitals in a manner as fair as to domestic capitals (protection may be necessity in some phase of development, but is to disappear in the long run).

(5) Institutional support for technology development

As discussed in 1-3-2, the followings are observed in the field of technology development activities:

1) Because of the unfavorable economic environment and instability of economic policy, private enterprises are hesitant to be active in the field of R&D which require long time to be paid back.

2) On the other hand, because of the fiscal problem of the government, every public research institutions and state companies is suffering from the shortage of fund for R&D activities.

3) In the high-technology industry such as computer-related industry foreign affiliated companies have the initiative in Argentina. In that case R&D activities tend to be centralized in their parent companies located in major advanced countries.

In order to solve those issues, it is important for the government to take firm and persistent action for a considerable period. It is necessary to consider the following points.

1) There must be good coordination among several governmental research organization such as INTI, CONICET and SECYT to avoid the overlapped R&D and to use the limited governmental fund efficiently.

2) In order to promote R&D investment of private sector incentives for R&D activities must be strengthened.

3) Establishment of system for training to middle class engineers must be introduced for the promotion of more practical application of R&D to actual production.

(6) Industrial finance - introduction of long-term savings and investment instruments

In order to strengthen corporate finance, it is necessary to consolidate capital markets. The monetary authorities, the National Securities and Stock Commission (Comision Nacional de Valores), the Buenos Aires Stock Exchange and the banking community in Argentina are studying various measures intended to reactivate the stock market.

Listing of the major public companies (none of them are listed at present), as well as creation of secondary markets for small- and medium-size companies are being discussed. Strengthening of stock companies, institutionalization of the corporate bond market and creation of institutional investors also appear to offer advantages.

It should be kept in mind, however, that the consolidation of well-developed capital markets is historically the result of the growth and modernization of private companies. Large enterprises are sometimes reluctant to be listed to avoid disclosure of their financial statements. Capital markets cannot be strengthened overnight. Thus, the role of indirect financing is extremely important, especially in the process of rapid economic growth.

This was also the case of Japan. In the eight years following the end of World War II, Japan plunged into an intense period culminating in the attainment of economic independence, and required massive funding for modernization of production plant and equipment, primarily in large enterprises. In 1955, for example, the statistics of the Central Bank of Japan show that only 14% of industrial funds were supplied by stock issues and 4% by corporate bonds. In 1970, the portion of funds provided by stock issues and corporate bonds dropped further to 7.5% and 3%, respectively. Instead of stocks and corporate bonds, Japanese financial institutions such as banks have served as the source of industrial funds. Loans provided by private financial institutions amounted to 68% in 1955, and were on the rise during the 1960s (81.5% in 1970). Government banks, such as the Japan Development Bank, provided 11% in 1955 (7% in 1970) of the total industrial funds, in addition to 3% (1%) in the form of the Fiscal Investment and Loan Program by the Trust Fund Bureau.

In this process the long-term credit bank system was created in Japan as an alternative to the underdeveloped capital market; issuance of bank debentures provided the financial needs. This is a system we think the Argentine government might look into as a method of providing long-term financing while also encouraging savings.[1)]

Long-term credit banks were established in 1952 under the Long-term Credit Bank Law when the Reconstruction Finance Bank, which had been the main supplier of long-term funds in the postwar period, discontinued operations (1949). Since the capital market was then perceived as too underdeveloped to ensure a reliable flow of long-term funds to meet all industrial demands, the need for banks specializing in long-term credit was keenly felt. According to the Federation of Bankers Associations of Japan, one of the purposes of the system was to draw a proper boundary line between long-term and short- term financing, thereby relieving the pressure of long-term financing on ordinary banks.

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1) We would like to express our thanks to the Long-Term Credit Bank of Japan for this kind offer of technical information about bank debentures.

Today three banks are listed in this category: the Industrial Bank of Japan, the Long-Term Credit Bank of Japan and the Nippon Credit Bank. They are authorized to issue debentures up to 30 times the combined total of capital and reserves (until 1982 this amount was limited to 20 times) in order to maintain sound management of institutions and to protect debenture holders. While they are authorized to issue and sell bank debentures to the general public, they are only allowed to receive deposits from qualified clients.

Bank debentures are classified into discount debentures (one-year term) and coupon debentures (five-year term). As of late March 1983, the outstanding balance of bank debentures issued by the three long-term credit banks amounted to 22,086 billion yen; according to the Federation, this corresponded to about 9% of total bank deposits in Japan. Of this total, about 70% are coupon debentures.

Besides these long-term credit banks, the Bank of Tokyo, as a specialized foreign exchange bank, is authorized to issue coupon bank debentures (three-year term) and discount debentures (one-year term) up to 10 times its capital and reserve.

In the case of long-term credit banks, as of March 1985, 77% of outstanding loans to companies listed on the stock exchanges (1,666 companies) are long-term loans. While in the case of "city banks", generally based in large cities, and operating on a nation-wide scale with a network of branch offices widely distributed throughout the country, these city banks accounted for 25.4% of outstanding loans for long-term credits.

The advantages of bank debenture financing can be summarized as follows:

1) For the public

   a) Diversifies savings opportunities.

   b) Yields a higher interest rate than deposits. Since bank debentures are transacted over the long-term, costs such as labour are lower than for deposit operations, and banks can offer higher interest rates to creditors. This encourages people to make long-term savings.

2) For banking systems

   a) Avoids the risk of mismatching the term of loans. Since the procurement of long-term financing is guaranteed, banks can manage long-term lending so as to avoid the risks of mismatching the terms between short-term procurements and long-term loans.

   b) Converts short-term funds into long-term funds with setting up of the secondary market for dealing in debentures, holders of the debentures can easily convert them into cash. This permits the banks to raise long-term funds while investors enjoy short-term investment. For this purpose, debentures must be nonsubscribed.

c) Increases the capacity of the banks to analyse the financial conditions of private companies and the soundness of their investment and borrowing.

3) For borrowers (private companies)

a) Increases the borrowing opportunities for long-term financing.

b) Increases the possibilities of long-term planning.

In this way, long-term financing using bank debentures could be an effective instrument to reactivate a Saving-Investment circuit, enabling domestic savings to be transmuted into industrial investments.

2. PETROCHEMICAL INDUSTRY

2-1 Introduction

(1) Objectives and scope of study

The objectives of this section is to analyze the long-term development possibilities of Argentine Petrochemical industry, and to offer basic informations for establishing efficient policies for realizing development of Argentine petrochemical industry. The main subjects are as follows:

- Analysis of Argentine petrochemical industry from international viewpoint.
- Evaluation of Argentine petrochemical industry
- Preparation of preliminary master plan for the future development of Argentine petrochemical industry

Outline of scope of the study is shown in Figure III-2-1. Actual scope of the study is covering the following items.

- Petrochemical products utilizing gaseous and liquid hydrocarbons as raw materials.
- Argentine petrochemical industry including existing equipment and future projects.
- Recent trends and future prospects by 1995.
- The 65 petrochemical products to be analyzed are as follows:

1) Ethylene and its derivatives

Ethylene, Low density polyethylene (LDPE), High density polyethylene (HDPE), Ethylene oxide (EO), Ethylene glycol (EG), Polyester, Ethylene dichloride (EDC), Vinyl chloride, Polyvinyl chloride (PVC), Ethylbenzene, Styrene, Polystyrene, SBR, ABS, Ethylacetate, Vinylacetate, Acetaldehyde

2) Propylene and its derivatives

Propylene, Polypropylene, Propylene oxide, propylene glycol, Acrylonitrile (AN), Acrylic fiber, Isopropanol, Oxo-alcohol, n-Butanol, Octanol, Cumene, Phenol, Acetone, Oligomer, MIBK, Acrylic acid

3) Aromatics and their derivatives

Benzene, Toluene, p-Xylene, o-Xylene, Cyclohexane, Adipic acid, Caprolactam, Nylon 6, Nylon 66, Maleic anhydride, TDI, DMT, Terephthalic acid, Phthalic anhydride, Aromatic solvent, Alkylbenzene

4) C_4 fractions and their derivatives

Butadiene, Butylene, Polybutadiene, Polychloroprene, Nitrile rubber, Butyl rubber, MTBE, Sec-Butanol, MEK

5) Natural gas derivatives

Methanol, Formaldehyde, Acetic acid, Fumaric acid, Urea, Urea resin, Ammonia

(2) Procedures and methods of the study

(a) First homework

This stage was a preparation for second field work, and the following study was made during this period.

1) Analysis and evaluation of data and informations about petrochemical industry, collected in Argentina during the first field work.

2) Analysis and evaluation of data and informations about international petrochemical industry, available in Japan.

3) Summary of Japanese experience about petrochemical industry.

4) Preparation for the second field work.

- Questionnaires
- Comparison of incentive policies for industrial development among various countries
- International cost competitiveness in petrochemical industry
- Forecasts of demand of petrochemical production in Argentina
- Others

(b) Second field work

The second field work in Argentina began on June 2 to last until June 27. The petrochemical team interviewed and discussed with public and private organizations in Argentine petrochemical industry, on the basis of informations prepared during the first homework. Moreover, the petrochemical team visited major petrochemical complexes, Bahia Blanca, San Lorenzo, Ensenada. Visited organizations are listed below.

1) Public organizations

- Secretariat of Industry, Yacimientos Petroliferos Fiscales (YPF, National Petroleum Corporation)
- Gas del Estado (GDE, State Gas Compnay)
- Direccion General de Fabricaciones Militares (DGFM, Arsenal Unit)
- Petroquimica Bahia Blanca (PBB)
- Petroquimica General Mosconi (PGM)
- Atanor

2) Companies of foreign capital

- Ducilo (Dupont)
- Monsanto
- Duperial (ICI)

3) Other organizations

- Chamber of Chemical Industry
- Instituto Petroquimico Argentino
- Provincia de Neuquen
- INDUPA
- Petroquimica Argentina S.A.
- COGASCO
- Petroquimica Austral

4) Major petrochemical complexes and gas field

- Bahia Blanca
- San Lorenzo
- Ensenada
- Loma de la Lata (Neuquen)

(c) Second homework

The second field work was followed by this homework. During this period, the data and informations collected in Argentina are examined together with data and informations about international petrochemical industry, available in Japan. As a result, this Report is prepared. Main items in this report are as follows;

1) Analysis of international petrochemical market conditions
2) Analysis of Argentine petrochemical industry's conditions
3) Selection for prospective petrochemical products in Argentina
4) Pre-feasibility study of prospective petrochemical products in Argentina
5) Preliminary masterplan for development of Argentine petrochemical industry
6) Several suggestion

(d) Study items in the second field work

The team had prepared questionnaires during the first homework. On the basis of the questionnaires, we had collected necessary data and informations in the second field work. Major items regarding to the second field work are as follows;

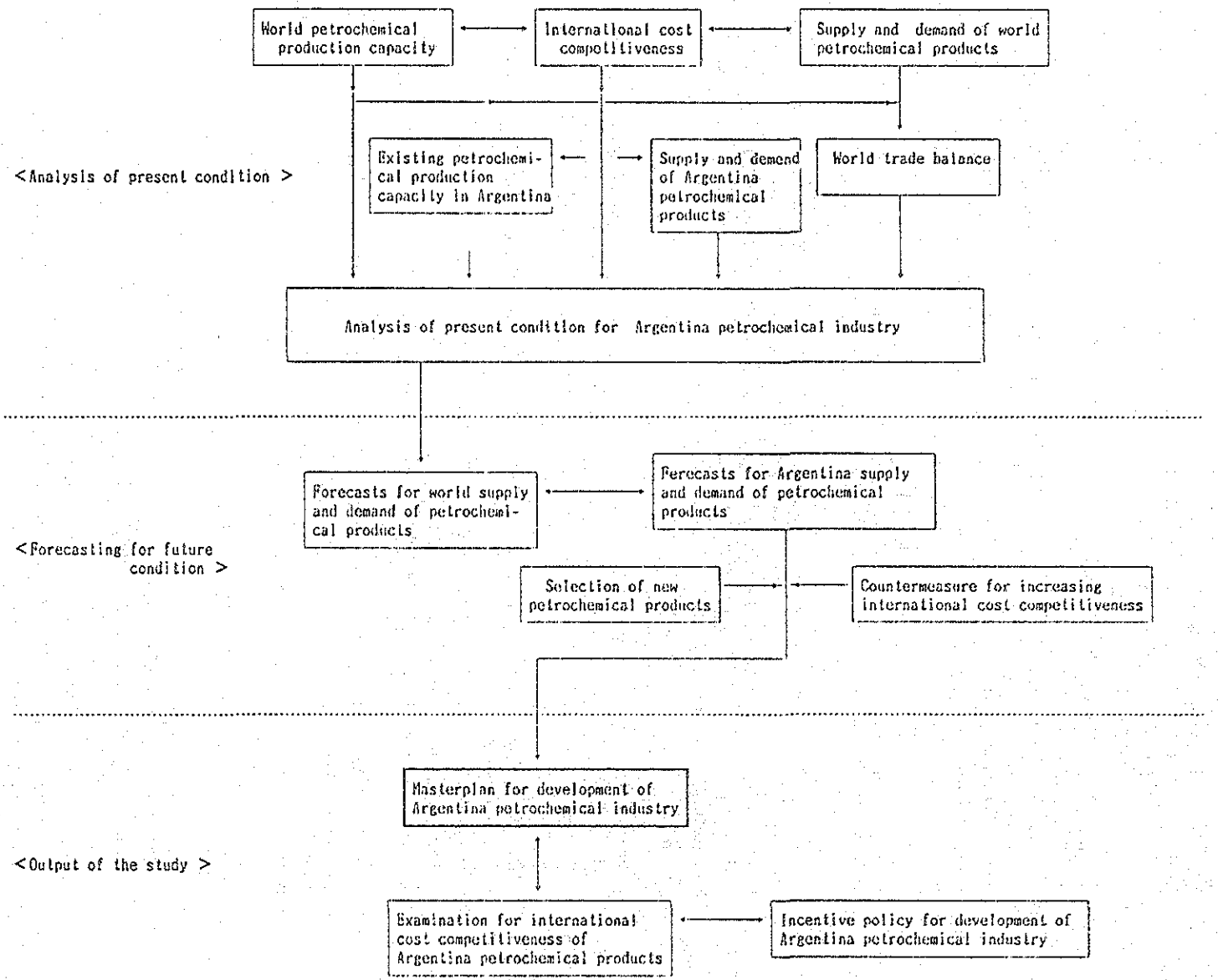
1) Activities of petrochemical industry

a) Investigation of locational conditions
b) Natural conditions
c) Production of petrochemical products
d) Feedstocks and energy
e) Transportation of feedstocks and products
f) Demand and supply of petrochemical products
g) Sales and foreign trade
h) Regulations and standards

2) Policies in relation to petrochemical industry

a) Industrial development policies
b) Economic conditions
c) Preliminary analysis of projected plan

Figure III-2-1 Flow Chart of Study (Petrochemical Industry)



2-2 Recent Trends and Future Prospects of International Market

The objective of this study is to analyze the long-term development possibility of Argentine petrochemical industries from an international viewpoint. Accordingly we made analysis and evaluation of the recent international market trend and future prospects.

2-2-1 Past Trend

(1) Change of production capacity

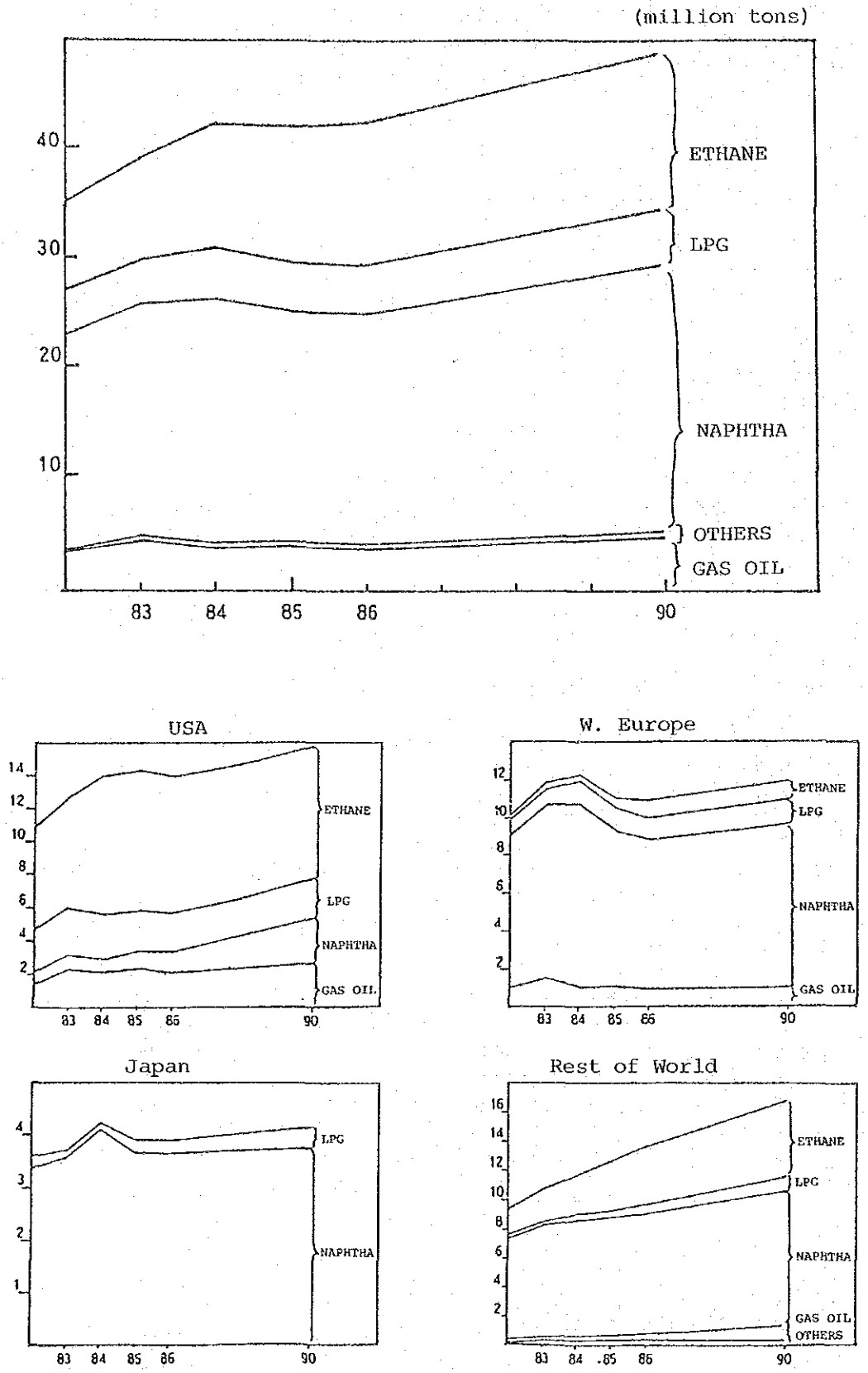
The petrochemical industry, which requires enormous amount of capital investment and advanced technology, developed rapidly in the USA and other industrialized nations. They became the major producer in the world. Since the industrialized nations in Western Europe (except U.K.) and Japan do not have their own petroleum resources, they imported raw materials to supply products to the rapidly expanding domestic markets, then made further volume-wise expansion of capacity by exporting surplus products.

In Japan, production capacity of ethylene, a basic petrochemical products, has reached as much as 5 million tons/year in only 15 years from 1957, and exports of petrochemical products continued at a level equivalent to 800,000 tons/year in terms of ethylene. The two oil crises which took place in 1973 and 1979, put petrochemical industries in Western European nations and Japan in serious situation due to quick price hike of the raw materials and serious damage to the international competitiveness. That resulted in negative attitude of the industry towards new expansion programs.

Nations like Saudi Arabia, having their own natural resources, took advantage by utilizing increased earning due to rapid increase of petroleum price. Those countries made announcements for aggresive plans for the development of petrochemical industry with objectives of effective utilization (improved value added) of their surplus natural ethane gas, and realized them one after another. The industrialized nations took countermeasures such as the reduction of production capacities to overcome the threat from those countries. Also they put emphasis on special chemical products of higher value added.

As shown in Figure III-2-2 it is obvious that production capacity of countries of Western Europe and Japan using naphtha as the raw material is not increasing while production in nations using ethane as the raw material blessed with natural resources is expanding. Table III-2-1 shows change of ethylene production capacity which is the most basic petrochemical product. The share of industrialized nations has dropped from 93.2% in 1974 to as low as 80.6% in 1984.

Figure III-2-2 World Ethylene Production by Feedstock



Source: 1984 Papinelli TECNON, World Petrochemical Feedstocks Survey.

Table III-2-1 Capacities of Ethylene Production in the World

(1,000 tons/year, %)

	1974		1984		Annual Growth Rate
	Capacity	Share	Capacity	Share	1984/1974
Western Europe	11,915	40.1	14,780	33.1	2.1
USA	10,529	35.4	16,863	37.8	4.8
Japan	5,245	17.6	4,285	9.6	-2.0
Subtotal	27,689	93.2	35,928	80.6	2.6
Latin America	762	2.5	2,865	6.4	14.1
Others	1,233	4.1	5,736	12.8	16.6
Subtotal	1,995	6.7	8,601	19.3	15.7
Total	29,684	100.0	44,529	100.0	4.1

Source : Stanford Research Institute

(2) Change of demand

Plastics, which is typical product of petrochemical has rapidly substituted other materials such as metals, wood, paper. The demand to those products expanded due to its light weight, high performance, easy workability under the situation of low prices of raw materials. However, because of saturation in demand for substitution except some plastics such as engineering plastics and effect of increased prices after the oil crisis, plastic industry has entered in the matured stage in industrialized nations. On the other hand, nations having their own resources made steady growth. Table III-2-2 shows the reduction of share of industrialized nations from 94.2% in 1974 to 84.5% in 1984, using demand of ethylene in the same manner applied showing production capacity.

(3) Change in export and import

Construction of petrochemical plants requires an enormous amount of capital investment and a long construction period. Therefore, it is advantageous to construct a large scale plant. The scale of a plant is determined normally based on forecast of future demand but tends to be greater than the scale for domestic market in order to pursue scale of economy. That results in surplus capacity for a while after startup of the plant which makes it necessary to export the surplus products. Usually export price is set at the level of variable cost plus some margin. Because fixed cost for petrochemical plant applies to all the plant facilities which is constant regardless the rate of operation. In the past, industrialized nations continued the export in the course of steady expansion of production capacity.

Table III-2-2 Demands of Ethylene in the World

(1,000 tons/year, %)

	1974		1984		Annual Growth Rate
	Demand	Share	Demand	Share	1984/1974
Western Europe	10,380	38.5	12,155	33.0	1.5
USA	10,823	40.1	14,620	39.7	3.0
Japan	4,176	15.5	4,345	11.8	0.3
Subtotal	25,379	94.2	31,120	84.5	2.0
Latin America	536	1.9	2,196	5.9	15.1
Others	1,017	3.7	3,471	9.4	13.0
Subtotal	1,553	5.7	5,667	15.4	13.8
Total	26,932	100.0	36,787	100.0	3.1

Source : Stanford Research Institute

However, the drastic increase of oil price changed the position of those industrialized nations from export position to import position.

On the other hand, petrochemical industries in newly developed nations, having their own natural resources, require export to realize economy of scale which drastically changed trade of petrochemical products in the world. The situation is shown in Table III-2-3, using low-density polyethylenes (LDPE and LLDPE), as typical bulky petrochemical products. The same shows that the share of export of industrialized nations decreased from 96.2% in 1974 to 64.9% in 1984.

2-2-2 Analysis of Current Situation of World Petrochemical Industry

(1) Influence of rapid drop of oil price

The oil price which has been raising since 1973, under the initiative of OPEC, started to drop in 1983. This price drop was caused by the market principle determined by the balance of demand and supply. Factors which caused the weak market were efforts and countermeasures of industrial nations by means of energy saving and industrial structure conversion, the use of non-oil energy mainly of nuclear and coal power, and increased production of oil by non-OPEC nations.

Saudi Arabia, playing the role of swing producer in OPEC, has been annoyed by decreased oil income caused by decreased production. Thus, Saudi Arabia was forced to increase their oil production, which resulted in rapid drop of oil price to a level of 10 dollars per barrel in 1986. The price of naphtha, the Japan's major petrochemical raw material, is now dropped to 27% of the peak price, as shown below.

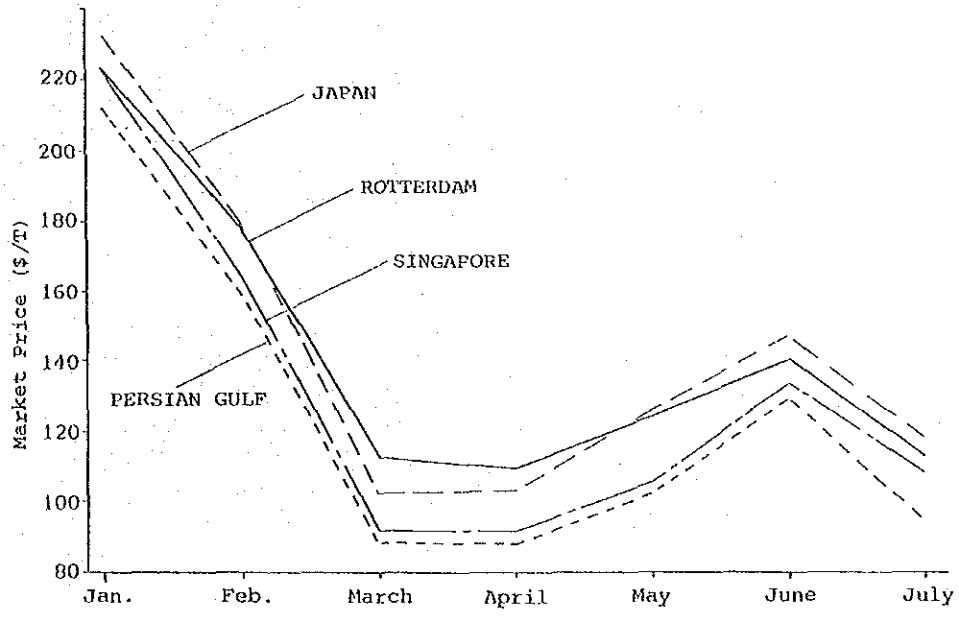
Table III-2-3 Exports of LDPE in the World

(1,000 tons/year, %)

	1974		1984		Annual Growth Rate
	Export	Share	Export	Share	1984/1974
Western Europe	436	49.8	455	30.0	0.4
USA	182	20.8	380	25.0	7.6
Japan	224	25.6	150	9.9	-3.3
Subtotal	842	96.2	985	64.9	1.6
Latin America	18	2.1	252	16.6	30.2
Saudi Arabia	-	-	-	-	-
Canada	5	0.6	160	10.5	41.4
Others	10	1.1	122	8.0	28.4
Subtotal	33	3.8	534	35.1	32.1
Total	875	100.0	1,519	100.0	5.7
World Demand	8,021		11,114		
Exporting Ratio		10.9		13.7	

Source : Stanford Research Institute

Figure III-2-3 Naphtha Price (Spot Market) (1986. 1 - 1986. 7)



Period	Naphtha		Crude Oil (Arabian Light) (US$/BBL)
	¥/k liter	US$/k liter	
Before 1973	9,000	53.6	2.59 (Jan. 1973)
After first oil crisis (1975)	29,000	172.6	10.46 (Jan. 1975)
After second oil crisis (1981)	60,000	357.1	34.00 (Sep. 1981)
June 1986	16,000	95.2	(28.00)

Figure III-2-3 shows the spot market price of naphtha from January 1986 through early July 1986. The price of ethane in Saudi Arabia being ¢50 per million BTU as raw material for petrochemical industry used to correspond to one tenth of the raw material price of Japan. That is now about one third. This rapid price drop of petrochemical raw material caused drop in the price of petrochemical products, thereby worsening the profitability for new petrochemical project.

Meanwhile, low-priced petrochemical products are expected to increase the volume of consumption by improving its competitive relationship with other materials by taking full advantage of the low price.

(2) Effect of petrochemical projects in Saudi Arabia

Table III-2-4 shows details of petrochemical projects in Saudi Arabia. Saudi Arabia, with its low priced raw material, started the business of a total of 1,600,000 tons per year ethylene production and the sales of its products in 1985. Since Saudi Arabia introduced joint ventures with various organizations of advanced industrial nations, it can participate in the international market using marketing channels of its partners. The share of new petrochemical project in Saudi Arabia is only 4% of the world demand (about 40 million tons per year of ethylene), but has a great impact on the world's petrochemical market because most of the products are exported.

As countermeasures, Western Europe and Japan started to dispose their production facilities, and Japan's disposal reaches as high as two million tons per year capacity of ethylene. In 1985, an explosion accident occurred in the ethylene plant in ENI, Italy, and Saudi Arabian products were exported mainly to Western Europe. Table III-2-5 shows the export breakdown during January through November 1985, where no export to Latin America is observed and little export in the future is excepted.

Table III-2-4 Petrochemical Projects in Saudi Arabia

Company and Organigation	Location	Products	Capacity (1.000T/Y)	Starting-up year	Remarks
1. Saudi Yanbu Petrochemical Co. (YANPET)	Yanbu	Ethylene	455	1984	SABIC-Mobil Chemical Co.
		Ethylene glycol	222	1984	*These LDPE are L-LDPE and they can produce HDPE in the same plants.
		Low density polyethylen *	206	1984	
		High density polyethylen	90	1984	
2. Saudi Petrochemical Co. (SADAF)	Al-Jubail	Ethylene	656	1984	SABIC-Shell Oil Co.
		Ethylene dichloride	454	1985	
		Styrene	295	1985	
		Ethanol	281	1985	
3. Arabian Petrochemical Co. (PETROKEMYA)	Al-Jubail	Ethylene	500	1985	SABIC
		Polystyrene	100	1985—1988	(Dow Company has withdrawn)
4. Al-Jubail Petrochemical Co. (KEMYA)	Al-Jubail	Low density polyethylen *	270	1984	SABIC-Exxon Chemical
5. Eastern Petrochemical Co (SHARQ)	Al-Jubail	Low density polyethylen *	130	1985	SABIC-Japanese Consortium
		Ethylene glycol	300	1985	(Mainly Mitsubishi Group)
6. National Plastics Co. (Ibn Hayyan)	Al-Jubail	Vinyl chloride	300	1986	SABIC-Lucky Group
		Polyvinyl chloride	222	1986	(Korean Company)
7. Total	Saudi Arabia	Ethylene	1.611		Feedstock is Natural gas-ethane
		Ethylene glycol	522		
		High density polyethylen	90		
		Low density polyethylen	606		
		Styrene	295		
		Ethylene dichloride	454		
		Vinyl chloride	300		
		Polyvinyl chloride	222		
		Ethanol	281		
		Polystyrene	100		

Source: Chemical Marketting Reporter, January 1985.

Table III-2-5 Export from Saudi Arabia

(1,000 tons, %)

	Europe & Africa		Asia		North America		Total	
	Quantity	Share	Quantity	Share	Quantity	Share	Quantity	Share
EG	22.1	60	10.9	30	3.9	10	36.9	100
HDPE	19.5	89	1.4	6	1.2	5	22.1	100
LDPE	142.6	96	6.7	4	0	0	149.3	100
SM	2.1	4	49.9	96	0	0	52.0	100
Total	179.3	84%	29.4	14%	3.3	2%	212	100%

Source: *Chemical Intelligence Service*
Note : Total is on Ethylene basis

(3) Current situation of petrochemical industries in the world

Current situation of petrochemical industries in the USA, Canada, Western Europe, Japan, Mexico and Korea are as follows;

(a) The USA

1) Petrochemical firms in the USA made positive restructure last year. For example, Dow Chemical, Monsanto Chemical and U.C.C. disposed unused assets and retired from unprofitable business.

2) *There are differences of business performance among each firm,* depending on strategies for down-stream business and diversification to heavy feedstock, as well as market condition of their products.

3) Ethylene price is ¢18/gal in March, 1986. Table III-2-6 shows current prices of various feedstocks. As a result, heavier feedstock (Naphtha, Gas oil) are having advantages in manufacturing ethylene.

4) Current ethylene capacity of the USA is 15,000,000 tons and expected plant operating rate will reach 90% in 1986. The US market will be able to absorb the offshore ethylene from Saudi Arabia and South America.

5) Propylene production in North America and Western Europe is increasing due to increase of ethylene production, as well as shifting to heavy feedstock.

Table III-2-6 Prices of Ethylene Feedstocks

Feedstock	Feedstock Cost (¢/gal)	C2 Incremental (¢/lb)	Cash Cost (¢/lb)
Ethane	14.50	6.10	8.59
Propane	24.25	5.31	7.91
Butane	27.25	3.43	6.30
Naphtha	30.75	1.27	4.88
Gas oil	43.50	2.99	6.72

Source: Japan Petrochemical Industry Association

6) 53% output Of propylene in the USA is from steam crackers and the rest is from refineries. The prices of refinery propylene are ¢5 /lb for gasoline and ¢11/lb for chemical use, in March, 1986. It seems that the difference of cost between two uses is large, but final price of chemical grade propylene is ¢15/lb and enough to absorb the pricing level.

7) Ethylene glycol

Table III-2-7 shows trends of domestic demand. Domestic demand of ethylene glycol in 1984 marked high level, reflecting strong recovery of the US economy. Demand in 1985 were as same as 1984's demand although details of demand were changed. That is because there is an increase of demand in P.E.T. and film although demand from anti-freezer decreased. It is predicted that tendency will still continue in this year. Table III-2-8 shows trends of prices by sector.

Table III-2-7 Ethylene Glycol Demand in the USA

(1,000 tons/year)

Use	1984	1985	1986 (estimate)
Fibres	590	590	590
P.E.T.	120	140	160
Film	90	110	110
Industry	140	150	150
Anti-freezing	970	890	850
Total	1,910	1,880	1,860

Source: Japan Petrochemical Industry Association

Table III-2-8 Trends of Ethylene Glycol Price in the USA

(¢/lb)

Sector	4Q/'85	1Q/'86	2Q/'86 (estimate)	Remarks
Fibres	18-19	18.5-19	17.5-18.5	FOB GULF
Anti-freezing	17.5-18.5	17.5-18.5	17.5-18	FOB GULF
Industry	22-23	23-24	22-23	Delivered Price

Source: Japan Petrochemical Industry Association

8) Vinyl Acetate Monomer

Production in 1985 was 960,000 tons, increasing 4% from 1984. Export volume was 260,000 tons and the ratio to production was 27%. This ratio is extremely high among the US petrochemical products. Average utilization ratio in 1985 was 84%. The price level in domestic market is likely to go down, on account of efforts of producers, due to the decrease of raw material price and weak demand.

9) Aromatics

Market condition was tight and prices of aromatics were raised remarkably last year, due to the restriction of lead contained gasoline. However, the prices of aromatics are decreasing rapidly in this year reflecting the decrease of crude oil price, although demand including aromatics derivatives are still steady.

10) Styrene Monomer (SM)

There were two big sales of styrene plants announced in the latter half of 1985, American Huechst sold their SM plants to A Huntsman Co., Monsanto Chemical sold their SM plants to Stirling Group. As a result of these movement, styrene price in the US market have been plunging since then. It is explained that other styrene suppliers are offering low price in order to get A. Huntsman Co. and Monsanto's customers. Current styrene price is 21¢/gal and it is likely to go down less ¢20/gal in the near future.

11) Polyethylenes (LDPE , LLDPE , HDPE)

Domestic production of polyethylenes in 1985 rose as much as 90% than that of 1984, supported by strong demand and export. The total shipment reached 7.25 million tons/year, and plant operating rate was more than 90% at the end of 1985. It is predicted the production in 1986 will be more than 1985's volume due to the following background. Some authorities in the USA are forecasting that polyethylene's supply in the US market will be shortfall in 1987. Following are reasons.

- The US economy will be still in favorable condition and domestic demand will be still strong.
- Due to cheap price of crude oil, prices of polyethylenes can be lowered enough to take some shares of other inorganic materials.
- Due to weak US dollar, import of plastics are expected to decrease, therefore domestic production will be likely to increase.
- There are no big projects of polyethylenes both in the USA and Canada.

12) Polypropylene

Demand of polypropylene has been increasing and achieved the highest growth rate among polyolefins. The growth rate in 1985 was 7% and the volume of shipment reached 2.4 million tons. It is expected that demand of polypropylene will be still growing due to favorable economic condition. Furthermore, the recent effort for developing polypropylene with higher performance will result to get a new market in the near future. Thus, future demand of polypropylene expected to increase steadily. Some optimistic authorities in the USA are forecasting that polypropylene demand will grow more than 40% in next five years.

(b) Canada

1) Decontrol of energy price

Canadian government announced the decontrol of energy price in September, 1984. According to this policy, charges and taxes of crude oil were cancelled in April, 1985, and the decontrol of gas price followed it in July, 1985. By introducing these policies, oil and gas prices in the Canadian market are going to link the international market prices in the near future.

2) Restructure of Canadian petrochemical industry

The restructure for petrochemical industry in Eastern Canada is initiated by private sector. Canadian petrochemical industry is making effort to keeping international competitiveness of the existing plants, and not to consider the plan of new projects for some years.

Export oriented petrochemical industry in Western Canada seems to keep international competitiveness due to lowering of feedstock prices. On the other hand, petrochemical industry in Eastern Canada should continue its effort to restore and improve its structure.

(c) Western Europe

1) Ethylene

Actual capacity is 14,300,000 tons/year and production was 12,100,000 tons/year in 1985. It had forecasted that the production in 1986 would be 11,000,000 - 11,300,000 tons/year, affected by Saudi Arabian petrochemicals in the exporting market. However,