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Japan Report

(FOUO 50/81)

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JAPAN REPORT

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CONTENTS

ECONOMIC

FY-80 BUSINESS PERFORMANCE OF MAJOR INDUSTRIES ANALYZED

Tokyo NIHON KEIZAI SHIMBUN in Japanese 14, 15, 16 Jul 81

[14 Jul 81 p 15]

[Text] Expansion of Direct Financing for Plant and Equipment Investment; Marked Advance in Efficient Management; Internal Reserves Increase to 1.5 Times the Amount of the Previous Year; Switch to Active Posture of Expanding Personnel

If we analyze the FY-80 financial reports of companies listed on the Tokyo Stock Exchange, it is clear that Japanese companies are greatly expanding their plant and equipment investment and they have taken a new direction in using their own funds for this investment. They are not reverting to operations based on outside borrowing. Their operations are characterized by balance, and the overall self-financing rate is increased by obtaining a high level of profit and conducting vigorous direct financing by means such as capital increases. Based on the confidence attained in successfully weathering the second oil shock, they have increased personnel for the first time in 6 years. A switch from "defensive" to "offensive" management can be seen in the attempt to come out ahead in international competition.

The plant and equipment investment of 1,550 listed companies (excluding financial institutions and insurance and securities companies) in FY-80 was 9,001,600,000,000 yen, a 26-percent increase over 1979 and the largest growth since the first oil shock. In addition to increased investment for energy and labor conservation in order to rationalize industry, there has been an increase in forward-looking plant and equipment investment connected with a surge of technological innovation. The overall number of employees in industry has continued to decrease through reduced operations from a peak of 4.33 million in 1974 to a low of 3.87 million in 1979. In 1980, the number increased for the first time in 6 years to 3.907 million persons. Industrial operations are actively being expanded.

The recovery of manufacturing industries is startling. Plant and equipment investment began to grow in 1979, and the rate of increase has expanded from 20 percent in 1979 to 25 percent, going from 4.3 trillion yen in 1979 to a new peak of 4.5 trillion yen. Another important development in the manufacturing industries was the increase in the number of personnel for the first time in 7 years. Also, these industries, which had been concentrating on repayment of long-term loans since 1977, have begun to borrow more.

Long-term borrowing for all industries reached a low point in FY-78 and then began to grow. By FY-80, it had increased 8.9 percent. This is because industries with surplus funds moved from a phase of rushing to repay loans to a more efficient use of funds, and depressed industries increased their borrowing.

This renewed increase in personnel, plant, and funds came about because these companies were able to come through two oil shocks successfully and reach the highest profit levels in history.

The recurring profit rate of total liabilities and net worth for all industry grew to 4.7 percent, more than the previous peak of 4.6 percent (in FY-73) along with improvements in the rate of profit and asset efficiency.

Although the unpaid balance of borrowing has risen, financial conditions continue to improve. The diversification of financial procurement accompanying the internationalization of Japanese industry and the issue of stock at current prices for capital increase brought the amount obtained through direct financing to 1.71 trillion yen, 1.6 times the amount of the previous year. Internal reserves have grown 1.5 times. The amount of self-financing for all industry rose to 9.59 trillion yen, far exceeding plant and equipment investment. The rate of self-financing grew from 102.1 percent (in 1979) to 106.5 percent. The net worth ratio for all industry rose from 18.4 percent in 1979 to 19.6 percent, and in manufacturing industries, from 23.1 percent to 24.6 percent.

The electrical industry is one of the representative industries experiencing this favorable cycle. Active plant and equipment investment is continuing mainly in electronics areas such as semiconductors and VTR. Executive Managing Director Miyauchi of Hitachi Ltd says the company has adopted a policy of "investing without reserve in growth areas," making a plant and equipment investment of 75.9 billion yen. Internal reserves plus depreciation and profit for FY-80 easily exceeded this at 100 billion yen. Looking at the entire electrical industry, we see that total plant and equipment and investments and loans rose 32 percent, to 1.08 trillion yen, breaking the 1-trillion-yen barrier. Funds raised through capital increases and higher income increased by 2.2 times and the amount of self-financing rose to 1.4 trillion yen.

The automobile industry rapidly increased its plant and equipment investment in order to meet the challenge of GM's "world car" and reached a financial turning point. It utilized high profits and liquid assets and increased the emphasis on direct financing to get through the crisis. The Nissan Motor Company liquidated approximately 100 billion yen worth of short-term securities and CD's (certificates of deposit) and avoided borrowing in raising money for a 150-billion-yen investment. All automobile companies have expanded direct financing in Japan and abroad this year by increasing capital and issuing convertible debentures. They are attempting to strengthen their international competitiveness by balanced and vigorous management, not by rushing to rely on borrowing.

On the other hand, the materials industries which are weaker in international competitiveness such as chemicals and paper pulp have again been forced to increase borrowing. They have begun to take the same path as they did during the recession following the first oil shock, when income fell and inventory rose due to poor sales.

The competitiveness of the chemical industry has suffered due to the rising price of naphtha. The obsolescence of petrochemical plants has almost reached the limit. "We have no other choice." (Mitsubishi Chemical Industries) These industries cannot move resolutely in investment and fund procurement because of their slow recovery in performance. Therefore, they are being left out in the current trend of balancing and expanding operations.

(1)主要業種の経営指標

		(8)社数	(2)自己金融比率 (%) (9)55年度	(10)54年度	(3)設備投資額 (6)(百万円) (11)55年度	(12)54年度	(4)手元流動性比率 (7)(月) (13)55年度	(14)54年度	(5)借入金依存度 (%) (15)55年度	(16)54年度
(17)	食品	(86)	143.9	148.6	218.335	215.574	1.23	1.25	25.06	24.73
(18)	繊維	(81)	104.5	183.2	176.937	111.804	1.76	1.87	47.62	46.65
(19)	紙・パルプ	(32)	100.3	94.4	128.311	154.775	1.90	1.93	57.88	53.82
(20)	化学	(127)	115.8	124.8	488.695	456.459	1.65	1.82	47.71	46.31
(21)	製品	(34)	191.0	186.9	90.245	73.849	2.60	2.81	18.79	19.22
(22)	石油	(15)	154.6	122.3	134.367	136.837	0.82	0.81	46.98	46.90
(23)	ガラス土石	(62)	108.6	132.2	211.687	150.385	2.23	2.42	41.73	42.61
(24)	鉄鋼	(60)	165.6	166.9	593.817	584.163	1.79	1.90	48.95	50.63
(25)	非鉄金属	(87)	125.7	135.7	189.082	158.802	1.67	1.65	48.31	47.06
(26)	機械	(159)	181.8	156.5	257.290	176.347	2.51	2.71	31.30	34.34
(27)	電機	(155)	162.2	172.5	829.744	569.094	1.71	1.84	20.06	21.76
(28)	造船	(10)	75.2	116.3	136.400	71.580	3.95	4.31	42.20	45.34
(29)	自動車	(52)	117.1	135.1	737.114	505.852	1.01	1.17	18.20	20.01
(30)	精密機器	(32)	216.6	145.4	101.547	73.210	2.29	2.40	23.85	29.58
(31)	**製造業合計**	**(1071)**	**139.6**	**147.7**	**4,499.813**	**3.585.272**	**1.64**	**1.77**	**36.83**	**38.05**
(32)	建設	(127)	168.4	157.0	174.457	173.167	2.15	2.32	25.15	25.85
(33)	不動産	(20)	83.7	80.4	63.563	55.640	5.14	5.68	61.51	62.08
(34)	商業	(107)	294.3	313.1	115.518	94.063	0.60	0.65	45.23	44.04
(35)	倉鉄	(27)	56.5	54.4	276.871	294.915	3.51	3.98	65.60	65.26
(36)	海運	(27)	58.2	111.3	205.506	137.051	2.14	2.35	53.09	54.45
(37)	電力	(9)	51.5	25.3	2,777.011	2,182.928	0.82	0.81	69.29	71.56
(38)	**非製造業合計**	**(479)**	**73.5**	**59.4**	**4,501,775**	**3.819.228**	**0.97**	**1.04**	**48.53**	**48.44**
(39)	**全業種合計**	**(1550)**	**106.5**	**102.1**	**9.001.588**	**7.404.500**	**1.27**	**1.36**	**42.42**	**43.03**

(40) (注) 自己金融比率は自己金融額を設備投資額で割ったもの。自己金融額は、増資、減価償却実施額、社内留保、特定引当金積み増し額を加えたもの。設備投資額は有形固定資産の増減額と減価償却実施額の合計。手元流動性比率は（現金・預金＋流動資産中の有価証券）＋１カ月当たり売上高・営業収入で算出。借入金依存度は（有利子負債額＋受取手形裏書譲渡高）÷（負債・資本合計＋受取手形割引高・同裏書譲渡高）で算出

1. Management Targets of Major Industries
2. Self-Financing Rate
3. Plant and Equipment Investment
4. Available Liquidity Rate
5. Borrowing Dependence Rate
6. 10,000 yen
7. Monthly
8. Number of Companies
9. FY-80
10. FY-79
11. FY-80
12. FY-79
13. FY-80
14. FY-79
15. FY-80
16. FY-79
17. Food
18. Textiles
19. Paper, Pulp
20. Chemicals
21. Pharmaceuticals
22. Petroleum
23. Glass, Earth, Stone [Building Materials]
24. Steel
25. Nonferrous Metals
26. Machinery
27. Electrical Equipment
28. Shipbuilding
29. Automobiles
30. Precision Instruments

[Key continued on following page]

31. Manufacturing Industries Total
32. Construction
33. Real Estate
34. Commerce
35. Electric Railroads
36. Marine Transport
37. Electrical Power
38. Non-manufacturing Industries Total
39. Total of All Industries

40. Note: The self-financing rate is the amount of self-financing divided by the amount of plant and equipment investment. The self-financing amount is the sum of capital increase, depreciation, internal reserves, and increase in special reserves. The amount of plant and equipment investment is the sum of the increase or decrease in tangible fixed assets. The liquidity rate is determined by the formula:

(cash and deposits + securities included in liquid assets) + monthly sales and operating income

The rate of dependence on borrowings is determined by the formula:

(liabilities with interest + endorsed and transferred notes receivable) + (total of liabilities and capital + discount on notes receivable and endorsed and transferred notes receivable)

[15 Jul 81 p 13]

[Text] U.S.-Japan Earning Power Gap Narrowing; Japan Moves Ahead in Electrical Equipment, Etc; Investment for Rationalization and Increased Production Takes Effect

The gap between the United States and Japan in both earning power (cash flow) and financial position (stock) has rapidly begun to shrink. The deterioration of industrial resilience due to high inflation has caused a drop in the earning power of American industry. In contrast, the competitiveness of Japanese industry, which cut back operations and concentrated on plant and equipment investment for rationalization, has increased markedly. In steel, automobiles, and electrical equipment, Japanese industry has already moved ahead of the United States. U.S. industry has begun expanding plant and equipment investment to regain its lead, but for the time being, this effort is leading to deterioration of its financial position.

Following the first oil shock, the gap in earning power between U.S. and Japanese industry actually widened. In 1975, the recurring profit rate on applied total liabilities and net worth in the United States was 13.2 percent. In Japan it was only one-third that figure, 4.3 percent. Subsequently, however, the earning power of Japanese industry slowly began to recover and the same recurring profit rate in FY-80, following the second oil shock, was 6.7 percent, close to the previous peak of 6.8 percent (1973). The rate for American industry dropped to 13.0 percent from the 14.8 percent of the previous year, so the pattern was opposite that following the first oil shock.

The shift in earning power was particularly dramatic in the auto industry. Until 1978 the U.S. auto industry overwhelmed the Japanese in earning power. However, in 1979, the recurring profit rate on applied total liabilities and net worth for Japan was 8.5 percent, which was in line with the U.S. rate. As the price of oil shot up, the fuel efficiency of Japanese cars became attractive. In 1980, the U.S. auto industry went into the red, and the superiority of the Japanese industry was clearly established. The rapidly advancing electrical industry also moved ahead of the U.S. industry in earning power in 1979 and 1980. In machinery and chemicals, U.S. industry has boasted high earning power, but due to developments in mechatronics technology and other fields, the gap is narrowing.

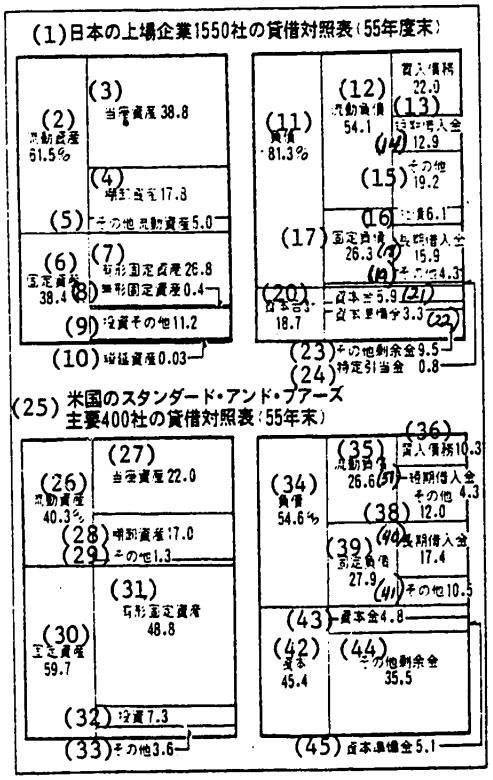
In materials industries such as fibers, paper and pulp, and chemicals, there is no change in the overwhelming superiority of the United States. But even in materials, Japan moved ahead in 1979 to show its strength in international competitiveness.

What is behind this narrowing of the gap? Before the first oil shock, Japanese industry, especially the materials industries, invested heavily in plant and equipment. This resulted in increased depreciation and interest burden and slowed down earnings. However, as this burden lightened, plant and equipment investment for rationalization and increased production moved ahead, especially in manufacturing industries such as the automobile industry, and this caused a steady improvement in earning power. In U.S. industry, on the other hand, management emphasized quick profits and made little plant and equipment investment in the late 1960's and early 1970's. In the late 1970's, obsolescence hit U.S. plant and equipment, causing a drop in labor and equipment efficiency and a weakening in international competitiveness.

In order to overcome this, U.S. industry has recently begun giving more attention to plant and equipment investment. Beginning in 1977, U.S. investment in plant and equipment has increased and companies such as GM have launched large-scale investment programs to regain lost ground. However, because of the drop in U.S. earning power, dependence on borrowing has increased. As a result, the owned capital rate, an indicator of financial position, has been dropping since 1976. In 1979 it was 45.4 percent. This is still far ahead of the rate in Japanese industry (19.6 percent) but the gap is narrowing.

Of course, there is no telling whether the gap between Japan and the United States will continue to shrink in the years to come. Some see the present situation as resulting from the plant and equipment investment cycle. As U.S. investment increases and begins to take effect, the gap may widen again, putting the U.S. in a more favorable position. In view of this situation, the Japanese auto industry is clearly carrying out a policy of vigorous investment to compete with GM. It will be very important for Japanese industry to conduct vigorous, bold, and effective investment in research and development as well as plant and equipment in order to move ahead of the United States.

Note: The data used in the analysis below was obtained from 1,550 companies in NEEDS (the Nippon Keizai Shimbunsha Comprehensive Data System) and 400 companies in the Standard and Poors Index. The data by industry for the United States was taken from 1,516 companies listed in Standard and Poors.



1. Balance Sheet for 1,550 Listed Companies (end of FY-80)
2. Current Assets 61.5 percent
3. Deposits 38.8
4. Inventory 17.8
5. Other Current Assets 5.0
6. Fixed Assets 38.4
7. Tangible Fixed Assets 26.8
8. Intangible Fixed Assets 0.4
9. Investments, etc 11.2
10. Deferred Assets 0.03
11. Liabilities 81.3 percent
12. Current Liabilities 54.1
13. Purchasing Debt 22.0
14. Short-term Borrowing 12.9
15. Miscellaneous 19.2
16. Debentures 6.1
17. Fixed Liabilities 26.3
18. Long-term Borrowing 15.9
19. Miscellaneous 4.3
20. Total Capital 18.7
21. Capital 5.9
22. Capital Reserves 3.3
23. Other Surplus 9.5
24. Special Reserves 0.8

[Key continued on following page]

25. Balance Sheet for Standard and Poors Major 400 U.S. Companies (end of FY-80)
26. Assets 40.3 percent
27. Deposits 22.0
28. Inventory 17.0
29. Miscellaneous 1.3
30. Fixed Assets 59.7
31. Tangible Fixed Assets 48.8
32. Investment 7.3
33. Miscellaneous 3.6
34. Liabilities 54.6 percent
35. Current Liabilities 26.6
36. Purchasing Debt 10.3
37. Short-term Borrowing 4.3
38. Miscellaneous 12.0
39. Fixed Liabilities 27.9
40. Long-term Borrowing 17.4
41. Miscellaneous 10.5
42. Capital 45.4
43. Capital 4.8
44. Other Surplus 35.5
45. Capital Reserves 5.1

Comparison of U.S.-Japan Earning Power in Major Industries

(Recurring Profit Rate on Applied Total Liabilities and Net Worth, expressed as a percentage)

		FY-72	FY-74	FY-76	FY-78	FY-80
Automobiles	Japan	7.7	3.3	8.1	6.9	8.1
	U.S.	16.7	6.0	15.2	14.5	5.6
Electrical Equipment	Japan	8.9	7.0	7.2	7.1	9.2
	U.S.	7.1	6.7	8.1	8.1	7.6
Machinery	Japan	5.7	7.4	5.0	4.2	7.3
	U.S.	12.6	14.4	14.7	16.5	15.1
Steel	Japan	6.6	8.5	5.2	6.2	8.4
	U.S.	5.7	15.4	5.9	7.2	5.9
Chemicals	Japan	5.7	9.0	5.2	5.0	6.5
	U.S.	10.2	15.8	13.6	12.0	10.4

[16 Jul 81 p 15]

[Text] Changing Structure of Plant and Equipment Investment; Shift to Manufacturing Leadership; Support for Higher Added Value

The structure of plant and equipment investment by Japanese industry has changed a great deal. Materials industries such as steel and chemicals which played a major role in the late 1960's and early 1970's are receding, and manufacturing industries such as electrical equipment and automobiles are rapidly increasing their plant and equipment investment. This change supports the move toward

higher added value in Japanese industry occasioned by the two oil shocks. The industrial structure seems to be changing in a way appropriate to a national economy based on a high degree of processing and trade.

In the high growth period of the 1960's and early 1970's, the raw materials industries were highly motivated to invest. The plant and equipment investment of all industry in 1976 was 5,143,700,000,000 yen. Of that, 3,045,800,000,000 was invested by production industries. Among the production industries, an overwhelming 60 percent of investment was made by major materials industries (six major industries: steel, chemicals, fiber, paper and pulp, petroleum and nonferrous metals) and 29 percent by manufacturing industries (six major industries: electrical equipment, automobiles, machinery, precision equipment, shipbuilding, and pharmaceuticals). The materials industries were the leaders in plant and equipment investment.

This structure began to change markedly in the late 1970's. Under the influence of the rapid planned increase in electrical power investment, there was a drop in the relative weight of plant and equipment investment in the production industries. But even within the production industries, the investment motivation of the materials industries has fallen off rapidly in comparison to that of the manufacturing industries. In 1978 the share of the six major materials industries in total production industry investment fell below 50 percent, to 48 percent. In 1979, when the economy began to recover, the plant and equipment investment of the materials industries rose for a short time to 45 percent, but in 1980, affected by the second oil shock, the six major materials industries' investment was 1.71 trillion yen, compared to 4.5 trillion yen for all production industries, a drop to 38 percent.

In their place, the manufacturing industries began to invest actively. In 1971 the six major manufacturing industries accounted for only 29 percent of the total production industry investment. However, in the late 1970's there was steady growth. In 1978, their share grew to 44 percent, exceeding the 42 percent of the six major materials industries. This trend speeded up in 1980, rising to 48 percent. The structure of Japanese industry had clearly shifted in favor of the processing and manufacturing industries.

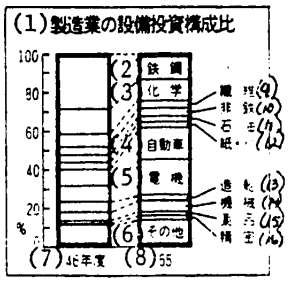
The second oil shock speeded up the structural change in plant and equipment investment. While the materials industries were trying to survive through operational cutbacks as raw material costs rose, the manufacturing industries undertook a policy of vigorous expansion under conditions of greater international competitiveness. This difference appears clearly in the plant and equipment investment of the two industrial sectors. A wave of technological innovations in fields such as electronics and mechatronics is surging through the electrical equipment and machinery industries. They are doing some streamlining, but at the same time they are actively investing in plant and equipment. New products are appearing, such as VTR and numerically controlled machine tools, and this leads to a more favorable environment with greater earning power and further growth in plant and equipment investment.

For example, the recurring profit rate on applied total liabilities and net worth of the electrical equipment industry in 1980 was 9.2 percent, close to the peak figure of 9.5 percent (1973). The machinery industry is also up to its previous maximum standard. The recurring profit rate on applied total liabilities and net worth for automobiles and pharmaceuticals exceeded the peak figure of the late 1960's and early 1970's.

On the other hand, the materials industries have all been slow in responding to the oil shock. Excluding steel, which has tightened up on production and is making progress in coping with market changes, industries such as chemicals, paper and pulp, and fibers suffered from poor domestic demand caused by the deflationary effect of the oil shock and their income fell. Naturally, they have no motivation for investment.

These materials industries have excess equipment and their international competitiveness is weak because of the current raw materials situation. There are those who believe that a recession will continue in the medium range in the chemical and paper and pulp industries. All companies streamlined their operations after the first oil shock, but they are now at the stage of streamlining operations on an industrywide basis by making structural improvements.

While Japanese industry has problems in such areas as paper and pulp and chemicals, overall it is moving toward more efficient management and greater international competitiveness. Plant and equipment investment is becoming more active and a financial structure is being built which is suited to a national economy based on trade in processed goods with high added value.



1. Comparison of Plant and Equipment Investment in the Production Industries
2. Steel
3. Chemicals
4. Automobiles
5. Electrical Equipment
6. Miscellaneous
7. FY-71
8. FY-80
9. Fibers
10. Nonferrous Metals
11. Petroleum
12. Paper and Pulp
13. Shipbuilding
14. Machinery
15. Pharmaceuticals
16. Precision Instruments

(1) 主要業種の経営指標

(2) 売上高経常(3) 実質自己資本 (4) 使用総資本
(2) 利益率(%) (3) 比率(%) (4) 回転率(回)

	(5) 社数	(6) 55年度	(7) 54年度	(8) 55年度	(9) 54年度	(10) 55年度	(11) 54年度
(12) 食品	(80)	5.97	5.80	34.23	32.84	1.83	1.84
(13) 繊維	(81)	5.18	5.94	25.26	22.45	1.09	1.04
(14) 紙・パルプ	(32)	5.90	6.22	14.04	13.76	1.01	0.98
(15) 化学	(127)	5.70	6.69	20.44	19.51	1.14	1.10
(16) 医薬品	(34)	13.03	13.55	45.41	43.70	1.02	1.01
(17) 石油	(13)	2.33	4.59	9.15	8.00	2.00	1.99
(18) ガラス・土石	(62)	7.45	7.92	27.86	26.77	1.04	0.99
(19) 鉄鋼	(60)	9.79	11.78	16.69	15.50	0.86	0.81
(20) 非鉄金属	(87)	5.30	6.14	17.26	15.69	1.35	1.22
(21) 機械	(159)	7.53	6.56	28.50	25.74	0.97	0.93
(22) 電機	(155)	7.14	7.30	33.81	32.00	1.28	1.23
(23) 造船	(10)	3.06	0.46	9.23	10.03	0.55	0.53
(24) 自動車	(52)	4.28	4.69	38.46	37.26	1.90	1.81
(25) 精密機器	(32)	9.30	9.61	41.07	34.18	1.22	1.22
(26) **製造業合計**	**(1071)**	**5.94**	**6.61**	**24.57**	**23.08**	**1.22**	**1.17**
(27) 建設	(127)	4.15	3.89	16.08	16.28	1.00	0.97
(28) 不動産	(20)	19.12	17.36	16.86	17.19	0.35	0.34
(29) 所得業	(107)	0.85	0.81	8.05	7.24	3.32	3.10
(30) 鉄道	(27)	15.00	14.50	11.59	11.45	0.30	0.30
(31) 海運	(27)	4.30	4.94	20.08	20.95	1.11	1.02
(32) 電力	(9)	19.75	9.25	15.32	13.98	0.55	0.42
(33) **非製造業合計**	**(479)**	**3.68**	**2.73**	**14.15**	**13.41**	**1.67**	**1.58**
(34) **全業種合計**	**(1550)**	**4.88**	**4.47**	**19.58**	**18.43**	**1.44**	**1.36**

1. Operating Indexes of Major Industries
2. Recurring Profit Rate on Sales. (%)
3. Actual Owned Capital (%)
4. Turnover Ratio of Applied Total Liabilities and Net Worth
5. No of Companies
6. FY-80
7. FY-79
8. FY-80
9. FY-79
10. FY-80
11. FY-79
12. Food
13. Fibers
14. Paper and Pulp
15. Chemicals
16. Pharmaceuticals
17. Petroleum
18. Glass, Earth and Stone [Building Materials]
19. Steel
20. Nonferrous Metals
21. Machinery
22. Electrical Equipment
23. Shipbuilding
24. Automobiles
25. Precision Instruments
26. Production Industries Total
27. Construction
28. Real Estate
29. Commerce
30. Electric Railroads
31. Marine Transport
32. Electrical Power
33. Nonproduction Industries Total
34. All Industry Total

9651
CSO: 4105/207

SCIENCE AND TECHNOLOGY

FY 81 PROJECTED SALES OF COMPUTER INDUSTRY

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 16 May 81 p 7

[Text] FY 1981 computer related sales forecasts have firmed up for the four domestic general-use computer companies (Fujitsu, Hitachi Mfg., Nippon Electric, and Mitsubishi Electric). Each company wants to maintain its growth rate in the market (estimated to be approximately 15 percent), and aims for another increase of more than 15 percent over FY 1980 sales projections. Specifically, Fujitsu is the first of the domestic computer makers to record [sales] at the level of 400 billion yen, while Hitachi and Nippon Electric, at the level of 280 billion yen, seem to be developing fierce competition for second place. In addition, Mitsubishi is at the 70 billion yen level and aims to record [sales] at the 100 billion yen level in FY 1983. The competition for shares of the market for general-use super-large and large machines became dormant because of the market's maturity. However, the companies are pitted against each other more aggressively than before both in domestic and export areas due to the rapid expansion of the office automation (OA) market for office computers, various types of peripheral and terminal equipment and financial systems and due to the decentralization of processing systems. It appears that competition will become even more intense in the information processing field, centering on the OA market.

Each Company Is Also Eager for Exports: Mitsubishi Also at the 70 Billion Yen Level

In the FY 1981 sales forecasts for the three companies excluding Mitsubishi, concrete figures are not disclosed but [the companies] have published target growth rates in terms of estimated performance for FY 1980. Figuring with straight line extrapolation in this case, Fujitsu has 380 billion yen as its estimated performance for FY 1980, and sets as its goal for FY 1981 an increase of 15 percent. Figuring a growth of over 15 percent, the projected performance for FY 1981 comes to almost 440 billion yen.

Figuring likewise for Hitachi, the FY 1980 estimated performance is 250 billion yen (yen-dollar exchange rate at the time of sales). Adding to this amount the same company's 14-15 percent goal, [the projection for FY 1981] comes within the range of 285 billion to 290 billion yen. Again, at Nippon Electric, an increase of over 18 percent is being predicted for FY 1981 over an estimated performance of 241 billion yen in FY 1980. By straight line extrapolation, [projection for FY 1981] comes to approximately 285 billion yen. For the past 4 years, Hitachi has

steadily recorded growth rates of more than 20 percent in comparison with recorded performance of preceding years; however, this year [Hitachi] is making a cautious forecast on the level of 10 percent.

Meanwhile, Mitsubishi projects [sales] in FY 1980 at 62 billion yen, and, as may be expected, an 18 percent increase in FY 1981 to 73 billion yen.

Changes in Computer Sales Receipts of the Four Companies
(Unit: 100,000,000 Yen--FY 1980 Projected Performance)

	FY 1978	FY 1979	FY 1980
Fujitsu	3,030	3,268	3,800
Hitachi Mfg.	1,900	2,160	2,500
Nippon Elec.	1,669	2,007	2,410
Mitsubishi Electric	450	530	620

Thus the information processing-related fields of the four companies are growing larger, along with the semiconductor and communications fields, among business enterprises, as fields of strategic importance for the 1980's. Fujitsu widened the gap between its sales and those of IBM Japan, and Fujitsu's determination to solidify its place at the top has emerged clearly. Both Hitachi and Nippon Electric, while competing for second place among domestic makers, are eager to close in on IBM Japan in 2 to 3 years.

Also, the items sold come to include, as a result of the conversion of general-use machines such as super-large and large models into the decentralized processing system and large-scale system large numbers of peripheral and terminal equipment. In addition, the spread of minicomputers and the proliferation of such OA related machineries as office computers, personal computers, and Japanese language word processors have come to have considerable importance.

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SCIENCE AND TECHNOLOGY

MITI GUIDELINES, INDUSTRY BIOTECHNOLOGICAL ACTIVITIES LISTED

Government Policy

Tokyo NIHON KEIZAI SHIMBUN in Japanese 22 Jun 81 p 7

[Text] MITI has decided to begin formulating guidelines such as equipment standards, operational safety standards, etc, for biotechnology practical application plants. To that end, it will soon inaugurate a "discussion group on biotechnology problems" (tentative name) comprised of responsible officials from MITI, industrialists, and scholars, and is hurrying with personnel selection. Since biotechnology such as gene splicing has now moved from the stage of basic research to the level of commercialization, it has been decided to indicate in advance the standards necessary for the practical biotechnology plants. Because of the rapid pace of progress in the biotechnology field, the ministry has deemed it appropriate to use a guideline system that can promptly cope with changes in the situation rather than stipulations by law.

Plants subject to MITI guideline regulations include chemical plants, fermentation plants, food plants, and pharmaceutical bulk plants using biotechnology. In addition, the plan is to include in the regulation by the guidelines not only the full-scale commercial plants but also experimental plants aiming at development of a mass production technique.

Currently, guidelines for basic research on recombinant DNA are set by the Ministry of Education and the Council for Science and Technology (Prime Minister Suzuki, chairman) but no regulatory standards exist for mass production plants. This is because previously, research in biotechnology remained at a stage of basic studies and there was no plant subject to regulation. However, applied biotechnological research by industrial firms has recently become active in Japan also. In addition, MITI will also begin applied research in biotechnology this year as the next generation basic industrial technology development project, and there is the prospect of a large-scale experimental plant to appear in 1-2 years. Therefore, it was decided to begin with the formulation of guidelines in order to assure safety in the application of biotechnology.

Since there have been no standards for the practical application of biotechnology, the Science and Technology Agency, the Ministry of Health and Welfare, and the Ministry of Agriculture, Forestry, and Fishery, which control the food industry, have recently begun to examine the need for regulation within themselves. In

addition, on the industry side, the Life Science Committee (chairman, E. Suzuki, president of Mitsubishi Chemical) of the Federation of Economic Organizations has begun formulating autonomic regulation codes for practical application. In such circumstances, MITI, which is promoting research for the practical application of biotechnology in its next generation project, has been pressed to respond to outside criticism of "only promotion, but no regulation." At the same time, another objective of MITI seems to be to urgently establish guidelines and take the leadership in affairs dealing with biotechnological applications.

Toyobo Co Ltd

Tokyo NIHON KOGYO SHIMBUN in Japanese 1 Jun 81 p 1

[Text] The top major firm in the cotton textile industry, Toyobo Co (O. Uno, president) has decided to venture into the field of genetic engineering, which has recently been in the limelight, as the first firm from industrial circles. According to a related source, it has already begun construction of the P-III level experimental facility required for research and development of recombinant DNA in the general research laboratory at Honkatadacho, Otsu city, based on the above policy, and it is scheduled for completion this fall. The specific subject has not been revealed, but as soon as the experimental facility is in order, the plan is to begin full-scale research. It seems certain that in the near future the firm will aim for commercialization of pharmaceuticals by genetic engineering. As part of the nontextile application, its decision on the entirely new venture into genetic engineering is likely to have great reverberations in industrial circles in the future.

The firm is currently advancing a long-term plan "Vision 85" with an outlook to 1985, in which the goal is to increase the weight of the nontextile sector in sales by 20 percent and in profits by 30 percent. To this end, it is moving toward nontextile applications at a rapid pace, beginning with a strengthened plastics business, and the recent conversion of its wool factory in Shiohama (Mie Prefecture) into an assembly plant for home appliance products.

As one of these efforts, it established a biochemistry research laboratory in its general research laboratory in November of last year, and it has been hastily studying its move into the field of biotechnology. In particular, the company has experience in handling enzymes in the production process of textiles, and has already commercialized some enzyme reagents. Thus, it has long been aiming at the application of this enzyme technology. Besides, compared with the textile business, genetic engineering with a broad prospective application not limited to pharmaceuticals seems to have confirmed its judgment that this is a venture into a business having a high growth potential.

To conduct recombinant DNA research, a safe research facility based on the government guidelines for recombinant DNA experiments is necessary. Therefore, the general laboratory is hurrying with the construction of a P-III level facility having extremely high safety for biological containment. It is planned that this

will be completed as early as this fall, and the research structure will be established for it to begin full-scale research.

The firm has not revealed the detailed subject of its recombinant DNA research. However, it has already begun collaborating with research organizations such as universities and apparently has some prospects for developing several kinds of restriction enzymes, which are required for gene splicing to cut DNA chains. In addition, to train personnel, technologists have been sent to research organizations not only in Japan but also in the United States. Based on these facts, the firm's R&D pace is expected to increase rapidly in the future. However, it is unlikely that the aim is to mass produce interferon, growth hormone, insulin, etc, by gene splicing, which is becoming increasingly common. Rather, it is expected to develop other unique merchandise based on the broad application of recombinant DNA. Since president Unc has been stating, "we would like to plan for the development of pharmaceuticals by sowing the seeds now," its full-scale participation in the pharmaceuticals field through recombinant DNA is expected to be relatively early.

Takeda Chemical Industries

Tokyo NIKKEI SANGYO SHIMBUN in Japanese 2 Jun 81 p 10

[Text] Takeda Chemical Industries newly established a biotechnology research laboratory as of the first [of June] to unify the R&D structure for biotechnology and increase efficiency. Its objectives include the concentration at this laboratory of biotechnological research such as recombinant DNA, cell fusion, mass culture, etc, which have previously been studied in various departments, in particular, in order to accelerate the commercialization of interferon (virus growth-inhibiting factor) which is being jointly developed with Hoffmann-La Roche.

The biotechnology research laboratory was established in the central research laboratory (Yodogawa-ku, Osaka) of the company. The central research laboratory consists of seven laboratories--pharmaceuticals, chemistry, fermentation products, biology, prepared drugs, crude drugs, and drug safety. Three laboratories--pharmaceuticals, chemistry, and biology--were reorganized at this time, and four laboratories--biotechnology, chemistry, biology, and pharmaceuticals--were newly started. Mr Y. Sugino, director of the biology laboratory in the central laboratory, became the director of the biotechnology research laboratory, starting off with a research staff of approximately 20. Besides basic research in molecular biology and biochemistry as before, research in biotechnology such as recombinant DNA and cell fusion will be advanced.

Because of the accumulated research expertise in pharmaceuticals development in the past, Takeda is leading others in the use of microorganisms and fermentation; and in recombinant DNA, interferon will be the commercialization project for the moment.

Asahi Chemical Industry

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 9 Jun 81 p 8

[Text] Asahi Chemical Industry (A. Miyazaki, president) is constructing a P-III level experimental facility for recombinant DNA at the laboratory in the Fuji plant in Shizuoka with a completion date in August, and it will begin a full-scale undertaking in genetic engineering. By about September or October, the facility is expected to be operating full-scale, and in line with this, the technologists studying abroad at various university laboratories in the United States will be returning to begin research activities. On the other hand, without revealing details, it is studying the technical importation of interferon with several overseas manufacturers as candidates.

Asahi Chemical converted its production of chemical seasonings to a fermentation process jointly with its subsidiary Toyo Jozo in 1960, and has since accumulated fermentation technology expertise. In the pharmaceuticals field also, it has developed bulks of inosine, etc, using nucleic acid derivatives, anticancer agents, intermediates for antibiotics, etc. Based on this accumulated technology, it has begun to undertake biotechnology, which has rapidly come into the limelight recently.

In October of last year, when the "biotechnology symposium" was inaugurated as the next generation basic industrial technological research and development system sponsored by MITI, the company joined the symposium along with Sumitomo Chemical Co Ltd, Mitsubishi Chemical Industries Ltd, Kyowa Hakko Kogyo Co Ltd, Mitsui Toatsu Chemicals Inc, and others, and announced it would undertake biotechnology research.

The P-III facility being completed at this time has the most strict standards as a private facility, and the advance group of firms in the field of genetic engineering, such as Mitsubishi Chemical, Meiji Seika, Ajinomoto, etc, are already equipped with such a facility.

Conceivable directions to take in biotechnology include 1) recombinant DNA, 2)bioreactors, 3) mass culture, etc. However, the company is said to have already discovered a new enzyme related to bioreactors, and it is expected to undertake recombinant DNA and genetic engineering for interferon, etc.

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SCIENCE AND TECHNOLOGY

TOYOTA-FORD TIE-UP TALKS UNFRUITFUL

Tokyo TOYO KEIZAI in Japanese No 4309, 18 Jul 81 pp 98-99

[Text] "The negotiations that have been carried on since last June have been rejected for the time being." On 2 July, at the unveiling of this year's new models, the president of Toyota Motor Company, Eiji Toyota, seemed relieved when he made it clear that the proposed collaboration between Ford and Toyota had been called off.

The Toyota president's response (?!) to questions was unlike his usual clearly reasoned answers. It fully conveyed his concern to express Toyota's true feelings to reporters without misunderstanding.

Many Obstacles to Successful Negotiations

The idea of a Ford-Toyota collaboration was presented by the president of Toyota to president Peterson of Ford when the latter visited the Toyota headquarters on 24 June last year. The first proposal for discussion was ambitious: "20,000 compact cars per month to be produced by a joint subsidiary formed by equal investment from the two companies." Since this occurred during the trouble over automobiles between the United States and Japan, it was only natural for MITI to be delighted.

However, once the proposal became known, most observers were pessimistic. One reason was that this project was handled exclusively by the two owners, the president, and vice president Shoichiro Toyota (now president of Toyota Motor Sales Company). And there were many obstacles such as a problem of conflict with the U.S. antimonopoly law and danger of an Arab boycott.

Another obstacle was the structure of the Ford Motor Company, where Henry Ford II had a great deal of pride and wielded great power even though he had retired from an active management position and made it difficult for the new president, Peterson, to carry out his own wishes.

The thinking of both companies was essentially "different dreams in the same bed," and this made realization of the project impossible. Toyota thought that the most effective way to reduce friction between the American and Japanese auto industries would be to extend a hand to Ford, which was dropping in sales and, at the same time, was the toughest critic of the Japanese. It felt that joint

production with Ford would involve little risk. A base could be established in America and the market could be stabilized.

However, when the 2-liter class FF (front-wheel drive) car newly developed by Toyota was proposed as the car for joint production, Ford requested Toyota's better known Corolla or Tercel. The proposals of the two companies did not agree, and after last fall, the discussions retreated to a cab-over van to be produced under license from Toyota.

An agreement on the cab-over van was almost reached at the working level, but Ford ultimately rejected it.

Recently, Ford attempted to recreate a honeymoon mood with Toyota, but at the same time protested to the ITC that "the recession in the U.S. auto industry is due to the rapid increase in Japanese imports," greatly upsetting Toyota. Irritation at the "overlong spring" led to doubt. "We do not know what Ford is thinking" (Toyota executive).

Then further attacks were made. When Minister of International Trade and Industry Tanaka visited Saudi Arabia at the end of June, Minister of Commerce Sulaym warned: "If Toyota ties up with Ford, the 22 countries of the Arab League will boycott Toyota." (This was the second warning; the first was made to the Japanese ambassador to Saudi Arabia, Mr Nakamura, on 22 May.)

Toyota had planned to hold thorough preparatory talks with the Arab League after the project had solidified. However, the project was blasted by the minister in charge before the product had even been determined, so there was no possibility of tricky maneuvering to avoid a boycott.

Also, if Ford were to be saved, it was not possible to throw away the Middle Eastern market, which absorbs almost 260,000 imported automobiles a year.

Ford Clinging to Hope

Although the collaboration was off in reality, the Toyota president's attitude was evasive. He said it had been "rejected for the time being." The most recent proposal had been made by Ford, so he could not cut it off with finality.

Even after Ford rejected the cab-over van, it tenaciously returned to the starting point, stating: "We are still carrying on negotiations over a 2-liter class passenger car." Toyota rejected this. "That means repeating the same moves endlessly" (a Toyota executive).

However, since this tie-up discussion has attracted so much attention in both America and Japan, technological collaboration or supply of components between the two companies is possible. This is to "save the face of both companies" in a way that will not hurt Toyota even if an accident occurs.

Also, Toyota had eagerly hoped, through Ford, to establish a base in the United States or to move into the EC countries through collaboration with West German Ford. Now it will have to reformulate its world strategy.

Specifically, this will take the form of local production of small trucks in the United States by expanding its subsidiary TMM, which now assembles and finishes 1-ton trucks and beds in Long Beach, California.

With respect to its EC strategy, Toyota has reached an inform agreement on joint production and sales of a specialty car with the British firm Lotus. The next move will be to join hands with influential manufacturers such as Mercedes Benz and BMW to drive a wedge into the West German market.

A strong foundation has already been laid in Southeast Asia. The Taiwan national project in which Toyota is competing with Nissan is going ahead favorably (annual production of 200,000 passenger cars), so its strategy toward the advanced countries, where it clearly lags behing Nissan, has become an urgent issue.

In the tie-up negotiations, says Toyota chairman Masahachi Hanai: "Ford saw right inside our underwear" (drawings for models to be developed were submitted). And there were other side effects. "Because this tie-up proposal was used for political dealing, we are afraid of a reaction of renewed friction" (industry source).

Some cynical observers believe that Sumitomo Bank and Toyo Kogyo were overjoyed at the negotiations being called off. Sumitomo Bank was afraid that "if Toyota and Ford formed a close relationship, the position of Toyo Kogyo, which has a capital relationship with Ford, would weaken," and Toyo Kogyo was extremely worried about "smoldering embers blazing up again" in connection with the Arab boycott.

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SCIENCE AND TECHNOLOGY

BUSINESS IN SEAMLESS STEEL PIPE FOR DRILLING BOOMING

Tokyo TOYO KEIZAI in Japanese No 4309, 18 Jul 81 pp 100-101

[Text] "It is nice to be operating at a full 100 percent these days, but it doesn't seem normal not to be able to take a rest."

"Sumitomo Metal is making 100 billion yen a month on pipe alone."

The steel industry is cutting production of raw steel and operating at a level of 70 percent. But success stories can be heard from one division: needless to say, it is the seamless pipe division.

Second Boom Underway

Strictly speaking, the kind of seamless pipe that is experiencing a spell of prosperity right now is designed for use in the oilfields in drilling for oil. Another type of oilfield pipe is electrically joined pipe which is high-frequency welded. Therefore, it is more accurate to say that the present boom in seamless pipe is a boom in oilfield pipe exports, including electrically joined pipe. Seamless pipe has emerged as the leading edge of the boom.

A boom in oilfield pipe also occurred after the first oil shock. It is reported that in America even doctors were buying up seamless pipe. Then, following the second oil shock, the present boom in seamless pipe occurred.

When crude oil reached $36 to $40 a barrel, even oil extracted from a depth of 10,000 feet or more became profitable, and small-scale wells that only produced 10 barrels a day became able to pay for themselves. The number of oil drilling rigs in America soon topped the 4,000-mark. The Reagan administration took a soft line on the environment and made oil drilling easier. This triggered a tremendous boom in oil drilling. At the least active times, 1,600 rigs were in operation.

The oilfields are gradually going deeper. Recently, the average depth of American wells has reached 4,700 to 4,800 feet. The volume of all oilfield pipe--the drilling pipe used in initial drilling, the casing pipe used to keep the well open, and the tubing pipe used to extract the oil--increases proportionately with the depth of the wells. The United States imported 1.3 million tons (1 million tons from Japan) of such pipe last year. This figure is expected to reach 1.5 to 2 million tons this year.

Price Also Spiraling Upward

A shortage of oilfield pipe is likely to continue for some time, and the major oil companies are beginning to panic. Until recently, the majors used only American seamless pipe, but the United States does not have the capacity for expanded production and they were not able to be fussy.

In Europe, the supply capacity was low, so it was only natural for the majors to turn to Japanese manufacturers with a supply capability. In the latter half of last year, the majors began making the rounds of pipe manufacturers, seeking a long-term stable supply of seamless pipe. This occurred to such a degree that the majors would come running whenever the newspapers reported an expansion of seamless pipe manufacturing facilities.

Reflecting the favorable demand, the price is rapidly spiraling upward. U.S. Steel is the price leader in the United States, and it raises prices almost every quarter. Exports from Japan are made in line with the U.S. Steel pricelist. Last March the average price was $670 per ton. It had grown to $950 by the end of March and continued to rise. It is now more than $1,000. The export price of ordinary steel is about $400 a ton, so the pipe price is more than double. The buyers are the rich major oil companies, so the seamless pipe manufacturers cannot stop smiling.

Capacity To Grow by 60 Percent

Because of this boom, all of the seamless pipe manufacturers are expanding their facilities. Of course, there are only four of them--Sumitomo Metal Industries, Nippon Kokan, Nippon Steel Corporation, and Kawasaki Steel Corporation.

The making of seamless steel pipe (by rolling) is not a difficult technological problem in itself. However, the aftertreatment processes such as threading the couplings, heat treatment, and inspection are complicated, and the cost is surprisingly high. Strict international standards (API standards) are set for the threaded couplings as well as for the strength of the pipe, and the pipe cannot be used unless it meets them. If a company is to consistently manufacture seamless pipe in a full range of sizes, an investment of 300 billion yen is necessary and the risk is great, so it is a difficult market to enter. This situation is made clear by the fact that U.S. Steel is receiving funding from the major oil companies in order to expand its facilities for pipe production.

Sumitomo Metal has three plants--in Kainan, Wakayama, and Amagasaki--with a monthly capacity of 120,000 tons. It invested 40 billion yen in the Kainan plant to expand facilities by 50,000 tons per month. Initially, expanded facilities with a capacity of 20,000 tons per month will be finished in January 1983. Then the company plans to make successive expansions as warranted by circumstances.

The second largest manufacturer of seamless pipe, Nippon Kokan, has a capacity of 100,000 tons per month. Its goal is to invest 90 billion yen and expand facilities by 50,000 tons per month for medium-diameter seamless pipe by September 1983. The capacity will grow by 50 percent at completion.

The top Japanese steelmaker, Nippon Steel Corporation, is already behind Sumitomo Metal and Nippon Kokan in seamless pipe. It has created a new steel pipe division and invested 80 billion yen for expanded facilities at Yahata Steel Plant with a goal of producing 100,000 tons of steel per month. In March 1983, the capacity will be created for 50,000 tons of small-diameter pipe and 47,000 tons of medium-diameter pipe, a total of 100,000 tons per month.

Compared to these three companies, Kawasaki Steel has a surplus, 110,000 tons of rolling capacity, in its Chita plant, so it can expand its production capacity simply by equipping its aftertreatment finishing line. It is in the process of a first and second facility expansion with an investment of 37 billion yen. By March 1982, its capacity will have grown from the present 42,000 tons per month to 69,000 tons per month. So its expansion of facilities will be completed a year ahead of the other companies. The plans for the third and further facility expansions are now taking shape.

Thus, the present production capacity of these four companies, 300,000 tons per month, will grow to 500,000 tons by 1983, and there is some fear of an excessive supply being created. However, Japanese manufacturers have always avoided competition with U.S. manufacturers and have focused on producing a high-grade pipe. Therefore, the recent trend toward high-quality products is a stroke of luck. The market position of seamless pipe in Japan can only grow stronger. It will not weaken. In fact, most observers believe that it will become an arena for showing off our strength from now on.

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SCIENCE AND TECHNOLOGY

GOVERNMENT-INDUSTRY DISCORD SEEN IN JAPAN-SAUDI PROJECT

Tokyo TOYO KEIZAI in Japanese No 4309 18 Jul 81 pp 102-105

[Text] At the 22 May meeting of the cabinet, the OECF (Overseas Economic Cooperation Fund) investment in the Saudi petrochemical project was abruptly cut from the 50 percent originally planned to 45 percent.

"The problem is not the size of the cut. The problem is that the relationship of trust--you give some and I give some--is being undermined," said an executive of the Mitsubishi group. He expressed great regret that the government's "promise" had been broken at the last moment.

After 10 hard years, Mitsubishi has finally managed to obtain a joint venture contract, setting up Eastern Petrochemical at the end of June as a joint venture with the Saudi Arabian Basic Industrial Company (SABIC), and making preparations to start up. This should be a very desirable project.

However, there is no unrestrained excitement to be seen among the Mitsubishi people who form the nucleus of the project. Rather, a feeling of powerlessness emanates from them. What is it that has made Mitsubishi so depressed?

Government Guarantee Scrapped

This project was affected by special historical circumstances differing from those surrounding the Mitsui group's Iran petrochemical project. When a petrochemical project was proposed by the Saudis, MITI selected Mitsubishi for it. Mitsubishi began a study under the leadership of Mitsubishi Petrochemical and the Mitsubishi Corporation. The feasibility study was contracted out to the Lumas [phonetic] Company of the United States.

The feasibility study concluded that the project would be "deep in the red for 5 years," so in August 1971 the Saudis were asked for an unlimited postponement. The Saudis were enraged. They pressed the Japanese Government harder for cooperation in the petrochemical project. The prime minister at that time, Fukuda, felt that it would be catastrophic to lose a stable source of crude oil, so he again asked Mitsubishi to cooperate.

In effect, the government got down and begged Mitsubishi to do this for the national good. As a result of these discussions, Mitsubishi got MITI to make "two

promises"--that OECF would put up 50 percent of the cost and that the products of Mitsui's Iran petrochemical project and Sumitomo's Singapore petrochemical project would, in principle, not be brought into Japan.

From Mitsubishi's point of view, this was the same as having obtained a "government guarantee." Subsequently, MITI thoroughly laid the groundwork in the petrochemical industry concerning the influx of foreign products into Japan. A research company, the Saudi Petrochemical Development Company (SPDC), was formed in January 1974, and it continues to function.

Considering these developments, it is no wonder that Mitsubishi is angry at the government's last-minute change of mind. Why did such a thing happen so suddenly?

The position of MITI, as represented by former deputy minister Yano (now a consultant), is fairly consistent, although there is some difference between the Basic Industries Bureau and the Economic Cooperation Department. "We held out for 50 percent right up to the end, but the deadline for signing the joint venture agreement was closing in and we were unable to achieve it. However, Saudi Arabia is a country upon which we must depend for oil from now on. From the point of view of the national welfare, we do not think there is anything wrong with the ratio of investment being different from other economic cooperation proposals."

The response of the Ministry of Finance is somewhat different. "With a 50-percent investment, it becomes a half-public, half-private enterprise. This would not be right in terms of the concept of private leadership. The government should give help only from the sidelines. In addition, we are having financial problems." (International Finance Bureau)

There have been other projects in the past where the OECF put up 50 percent. The Indonesian Asahan aluminum project was a 50-percent proposal. So the argument that "there is no precedent" will not wash.

There is no clear rule on OECF investment ratios in the Economic Planning Agency, which is the supervisory agency for OECF, nor in the Ministry of Finance or MITI. In practice, MITI and the Ministry of Finance have repeatedly argued over each individual proposal. The Iran petrochemical project and the Singapore petrochemical projects were no exception.

Therefore, some observers supposed that the Ministry of Finance was not aware of the promise made by MITI to Mitsubishi. But this is entirely off the mark. Also, the Ministry of Finance says: "The 5-percent cut was not made after seeing the SPDC feasibility report at the end of March." (International Finance Bureau) Thus it is not conceivable that they had doubts about the profitability of the Saudi petrochemical project.

In short, there is no basis for the 5-percent cut. Financial trouble is given as one reason, but this also misses the mark. The budget for international cooperation actually rose last year to 420 billion yen. And even though there are plenty of overseas proposals, only 70 percent of the budget has actually been used.

The OECF investment amount has become established in practice at 40 percent. However, because of the history of the Saudi petrochemical project, "40 percent would have meant a total loss of face, so the cut was kept to 45 percent." (an informed source) This is probably the actual situation.

Sweet Attraction of Bonus Petroleum

The 5-percent cut is simply a product of political compromise. "We respect MITI's position," says Mitsubishi Vice Chairman Keizaburo Yamada. However, Mitsubishi is completely unable to understand and accept the government's decision.

SPDC has the immediate problem of filling the gap left by the 5-percent cut. Although it is unconventional, MITI leaders are working together with SPDC in a "leading role" to do this. Three kinds of businesses are involved--banks, steel, and automobiles.

Bank arrangements seem to have been taking shape recently, but the steel and automobile industries are maintaining a reserved posture. A steel industry executive said: "There is the example of Iran. Even if we responded, we must consider the problem of balance vis-a-vis Mitsui." This is not a flat rejection, but the response is very reserved.

SPDC has taken on an excessive amount of trouble, but looking at the process leading to the cabinet decision, one sees that MITI also was rather hasty. The thing that led to MITI's haste was the existence of bonus oil expected from this project.

The joint venture agreement was signed on 23 May, the day after the cabinet resolution for the 5-percent OECF cut was made. This fit the Saudis' schedule of "signing in May and establishing the joint venture in June."

If the signing of the contract and the establishment of the joint venture had not taken place in June, the negotiations would have dragged on into August, because Ramadan began in July. Therefore it was feared that "if the signing of the agreement and the establishment of the joint venture do not take place by the end of June, we may not obtain the bonus oil which will begin to be supplied in January 1982."

Of course, right now there is a surplus of crude oil but, depending on the production policy of Saudi Arabia, "There is no telling what will happen by this December." (Mr Yano) It is no wonder that MITI rushed to get the joint venture agreement signed.

In addition, the Saudis intend to terminate the provision of bonus oil based on the second five-year plan in connection with this project. Even if the petroleum spot market price goes down, Saudi oil will still be cheaper than that of other oil-producing nations and will be much more advantageous.

The system of supply will probably be similar to that connected with the Methanol Group Project under the leadership of Mitsubishi Gas Chemical (19,000 barrels per day of bonus oil)--20 percent of the bonus oil to be provided the first year, and another 20 percent each year thereafter until the full amount is reached. At

any rate, there would be a great advantage in securing a long-term stable supply of inexpensive oil for 15 years after the start of operations.

The volume for the previous project was 500 barrels a day for each $1 million of investment. If the same system is used, with the Japanese investment in Saudi petrochemical project being a little over $200 million, the volume will be about 100,000 barrels per day.

What position should be given to the bonus oil in the Saudi petrochemical project? This is a difficult problem. The original purpose of the project was to provide benefits for domestic petrochemical manufacturers and to promote economic cooperation with Saudi Arabia, the world's largest oil-producing nation, by having an overseas production base using the gas which accompanies inexpensive oil. In other words, it was a standard economic cooperation proposal, and the bonus oil was simply an accessory.

However, because of the sudden change in the crude oil situation, the existence of the bonus oil has become central to the project. Of course, some of the 59 companies who hold shares in SPDC have their eyes on this oil. So the bonus oil not only coincided with the national interest, but it also stimulated the business interest of the investing companies.

Problems With Petroleum Allocation

If the bonus oil were only a "catalyst," there would be no problem. A fierce argument over domestic allocation has already begun, however, well before the conclusion of the oil agreement expected at the end of the year.

The provision of oil to SPDC has been affirmed, but SPDC does not have import rights. The Mitsubishi Corporation or the other sales companies that are stockholders could act as agents. The problem is the specific allocation system to be used.

Actually, before the interim agreement was made last April, there was a serious argument between SPDC, MITI, and the Agency of Natural Resources and Energy. According to an informed source, the Energy Agency indirectly demanded the right to dispose of the crude oil, making the accusation: "Since you will profit in the future from petrochemical products made with inexpensive oil, it is wrong to take the oil, too." SPDC rejected this as an "irrelevant argument." On one occasion, it took a hard line: "If the right to dispose of the oil is not granted to SPDC, we will not go to Saudi Arabia."

Ultimately, no clear agreement was ever made regarding oil allocation. This year, according to a middle manager of a petrochemical manufacturer, there has been no progress on the problem "other than exchanging rainbow-colored statements with the related ministries and agencies to the effect that everyone will honor the substance and purpose of the agreement with the Arabs and will conduct further discussions on measures to satisfy the doubts of the people."

The SPDC stockholders are not all alike. They represent many different fields, including oil refining, petrochemicals, plant construction, marine transport, and

banking. They run the gamut from those who have no interest in oil whatsoever to those who want every drop they can get. In the methanol project headed by Mitsubishi Gas Chemical, the supply of bonus oil to the joint venture company has already begun. However, the allocation system has not yet been determined.

The Saudis feel that the bonus oil should be granted on the basis of "degree of contribution" to the project. This "degree of contribution" is divided into: (1) direction of plant operations; (2) education and training of Saudi workers; (3) product sales and service; and (4) other services, including investment.

Since this is a petrochemical project, the administration and training necessarily devolve to a great degree on the petrochemical manufacturers. So it seems reasonable that the petrochemical manufacturers would receive a preferential allocation of oil.

According to an informed source, SPDC has a tenative plan in mind. This is to allocate oil to the related parties in portions of 40 percent for those parties providing technological direction and training, 40 percent for those involved in sales and service, and 20 percent for those performing other services, such as investment.

Of course, this plan has not been authorized. OECF is taking the position that "since government money is being used, the distribution should take a form which can be accepted by the people." And even the SPDC position is not fully solidified.

However, many people in the Mitsubishi Group say: "What sort of system will be accepted by the people? We do not understand how the government can cut its investment without justification and then interfere in the allocation of the bonus oil. This should be left up to SPDC, because it knows the circumstances of the stockholders best."

Of course, the government did not decide on the OECF investment with the purpose of obtaining oil. If it is interfering in the distribution of the oil, it is clearly going too far. From the point of view of the stockholders, it is more reasonable to follow the SPDC negotiation process.

International Evaluation a Key Factor

As explained here, the Saudi petrochemical project was shaken by such problems as the OECF investment cut and the allocation of bonus oil before it even got off the ground. The joint venture agreement itself "does not seem at all to have been pushed on us by the Saudis," according to Mitsubishi Corporation Vice Chairman Keizaburo Yamada.

Importantly, there is very little investment risk for the Japanese side in comparison with other projects of the same nature. Of the total funding of 330 billion yen, 198 billion yen (60 percent of the total) will be obtained at low interest (3 to 6 percent) from the Saudi Public Investment Fund (PIF).

With respect to the PIF loan, the World Bank is checking the feasibility report prepared during a 1-year period beginning last April. People have been sent to

Mitsubishi from the World Bank. The company was strictly checked out, and it has been proven capable of withstanding the evaluation of a third party.

Also, a number of preferential measures will be carried out in connection with the joint venture company, Eastern Chemical. For 10 years after its establishment, the company will not be subject to taxation, the income of its foreign employees will not be taxed, and a preferential price will be assigned to the gas used as raw material.

The overall framework of the joint venture agreement has been determined. According to SPDC, the details "will be worked out, including an agreement on bonus oil." However, the petrochemical manufacturers are somewhat concerned about the decision that 75 percent of the workers will be Saudis when the plant is in full operation.

This will be done in line with the "Saudization" policy of the Saudi side; in order to achieve this goal, approximately 200 Saudis must be educated and trained in the next 4 years. This alone is a big job.

Just the same, SPDC is basically satisfied with the content of the joint venture agreement.

According to Mitsubishi Vice Chairman Yamada: "During the negotiation process, we considered whether or not our reasons could be accepted internationally when we disagreed with the Saudis over certain conditions. That was our standard for the final decisions."

There is no way to tell whether the Saudi petrochemical project will go into operation untroubled. Given the precedent of the Mitsui Iran petrochemical project, it is impossible to predict what might happen.

The SPDC is like a mixed group of travelers, and it cannot avoid operational difficulties. When there are opposing interests among the stockholders, however, communication may become difficult. The problem of allocating the bonus oil is representative of this situation. This may be the unavoidable fate of a "national project."

If we consider the nature of "national projects" separately, the Saudi petrochemical project is a representative "national project" in its makeup. Therefore, we must not forget that acceptance or rejection should be connected with international evaluation. If domestic political conditions were to take precedence over an international evaluation, it would be a reversal of the proper priorities.

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