

The Gains and Limitations of Indigenization Policy: Grupo México in the Nonferrous Metal Mining Industry

Grupo México and the Indigenization of the Mining Industry

Grupo México Today

Grupo México is an indigenous enterprise group made up of a holding company of the same name that controls numerous subsidiaries operating in the nonferrous metal mining sector. Like the other industries examined in this book, the mining industry has become oligopolized. In the 1996 *Expansión* listing of the 500 largest enterprises, 11 companies in the mining sector (which in this chapter excludes petroleum) are listed. But the top two companies employ 74 per cent of the sector's workforce and account for 81 per cent of its total sales (*Expansión*, August 14, 1996). At the top of the list is Grupo México; second is Industrias Peñoles which like Grupo México is a creation of the government's indigenization program.

The holding company Grupo México was set up in 1994. Before that the group was under the control of the holding company Grupo Industrial Minera México (Grupo IMMSA). When the new Grupo México holding company was established, a multifaceted reorganization of this mining group took place. One facet was that two large-scale copper mining companies, Mexicana de Cobre and Cía. Minera de Cananea, which had been acquired by the group

through the privatization of public enterprises and had been placed outside the group organization, were integrated under an intermediate holding company which held business subsidiaries under its control. Another facet was that foreign capital participation in the new organization was reduced to 26 per cent. Previously the holding company Grupo IMMSA had 100 per cent indigenous capitalization, but a foreign-owned enterprise, Asarco (discussed below), had continued to hold 34 per cent capital participation in the group's intermediate holding company even after indigenization. A third facet of reorganization was that foreign participation in the new organization was changed from the unlisted intermediate holding company to the listed holding company Grupo México. This move made it easier for Asarco to sell its stockholdings on the stock exchange and withdraw from Mexico. This organizational restructuring brought about a radical change in the mining industry's relationship with foreign capital investment that continued after indigenization.

Until World War II the mining industry was Mexico's main export industry, but today it no longer holds such importance. In 1993 the industry made up 1.0 per cent of the country's GDP and accounted for only 2.2 per cent of exports (INEGI 1995, pp. 7, 89). But while the figures for the mining industry are small as a portion of the country's GDP and exports, it has grown more important as a supplier of raw materials to domestic industries as the industrialization of Mexico's economy has progressed. The main consumption of nonferrous metals has been in industries like construction, machinery, automobiles, and electric machines which have been at the center of Mexico's industrialization (INEGI 1986, pp. 16, 21, 23, 25, 27). Because its role as a supplier of raw materials became so important for underpinning the country's industrialization, revitalizing the mining industry became a matter of government policy, and in the early 1960s the government adopted indigenization as the method for achieving this goal.

Decline of Mexico's Mining Industry and Indigenization

The history of mining in Mexico goes back to the Spanish colonial period. By 1600 Mexico had become one of the world's major silver producers (Bernstein 1964, p. 9), and it still is one today. But the important area of the mining industry today is not silver but nonferrous metals, especially copper, lead, and zinc which are mined primarily for industrial use. The formation of the nonferrous mining industry goes back to the start of the twentieth century when major U.S. mining enterprises undertook large-scale capital investments and a flourishing nonferrous metal mining and smelting industry arose.

Within a short time the mining industry grew to become Mexico's major export industry. Most of the large-scale mining enterprises were foreign-owned. In 1928, for example, 75 per cent of mine production was carried on by American affiliates and another 20 per cent by British-owned enterprises, and 85 per cent of the mines were owned by foreign companies. Most of the ores and minerals extracted were exported with 60 per cent of the lead, 70 per cent of the silver, and 90 per cent of the copper going to the U.S. market (Sariego and others 1988, p. 148).

After the Great Depression, Mexico's mining industry began to stagnate, and a downtrend set in after World War II. The causes were the imposition of high taxes on foreign-owned companies and government policies to protect workers which were manifestations of a rising Mexican nationalism. These curbed foreign efforts to invest in mining, and over time existing mines became exhausted as investment waned (Bernstein 1964, pp. 282–84). Meanwhile the country's economy had started to industrialize, and the manufacturing sector rather than mining attracted foreign investment (Sariego and others 1988, p. 160). Other than iron ore, coal, and sulfur mining which were fostered through direct government support, the rest of the mining industry remained stagnant, and its importance in the national economy continued to decline. As a proportion of GDP, mining in 1930 accounted for 10 per cent; this slid to 6 per cent in 1940, 3 per cent in 1950, and 2 per cent in 1960 (Sariego and others 1988, p. 165). As a proportion of total exports, in 1938 it accounted for 36 per cent, in 1948 it was 28 per cent, and in 1953 23 per cent (Bernstein 1964, p. 238). The proportion of government revenue it accounted for was 28 per cent in 1939, 17 per cent in 1948, 8 per cent in 1955, and 4 per cent in 1960 (Sariego and others 1988, p. 166).

The reorientation of the mining industry from primarily exporting minerals to supplying raw materials to the domestic market began during the 1950s. During the 1940s and 1950s the production of copper, lead, and silver remained at the same level or declined and exports continued to fall. However, domestic consumption increased, especially for copper and lead, and there was not enough production capacity to fully supply the needs of exports, so these declined (Hoshino 1998, pp. 147–48). The increase in domestic consumption was due to the growth of industries such as electric power generation, construction, machinery, automobiles, and electric machines which used copper and lead. But even with the expansion of domestic demand, nonferrous raw materials that had been exported could not suddenly be redirected for use in domestic production because of the lack of domestic capacity for smelting and refining these raw materials. Mexico began to set up these facilities in the 1950s.

With the 1950s, the orientation of the mining industry began to shift more toward supplying domestic consumption, but the industry had problems responding to the expanding demand. One reason was its stagnant level of production. The main factor for this was that although existing mines were becoming depleted and exhausted, no new exploring was taking place (Sariego and others 1988, p. 175). Another problem was the insufficient capacity of domestic smelting facilities. In the 1950s there was no electrolytic zinc production being done in Mexico. Most of the country's zinc was exported for smelting. The reason for the mining industry's overall stagnation was seen as a lack of interest by foreign companies to invest in the industry. Therefore indigenization was expected to be Mexico's policy for extricating itself from the yoke of foreign capital, overcoming the industry's stagnation, and strengthening its ties with domestic industries. Three American companies, Asarco, Anaconda, and Amax, dominated the nonferrous metal industry, and these three companies became the target of indigenization.

Indigenization of the Big Three

Indigenization of the mining industry began following the enactment in 1961 of the "Regulatory Law of Article 27 of the Constitution regarding Exploitation and Utilization of Mineral Resources" and the "Law on Tax and Promotion of Mining." Accompanying these were decrees issued by the Secretary of Finance concerning production taxes and export duties. The essential points of the new mining law were: (1) mining concessions hereafter were to be given only to Mexican nationals or to enterprises that had 66 per cent or higher Mexican capitalization, and (2) existing concessions were to expire in twenty-five years, and within that time period foreign-owned enterprises would have to sell 51 per cent or more of their shares to Mexican nationals or Mexican-owned enterprises. Regarding the statutes on taxation, the mining promotion law lowered income taxes on new investment by enterprises that successfully undertook indigenization (Behrman 1971, p. 62), and the Secretary of Finance decrees reduced the industry's production taxes and export duties by 50 per cent (Wionczek 1967, p. 246).

The indigenization of Asarco will be discussed in the next section. The remainder of this section will look at that for Amax and Anaconda. Amax carried out its indigenization in 1961. Its two subsidiaries were merged to form Metalúrgica Mexicana de Peñoles and 51 per cent of the shares were sold off. In 1965 Amax sold the remainder of its shares and withdrew from Mexico. The buyer was the enterprise group Grupo Cremi led by Raúl Bailleres (Sariego and others 1988, pp. 253–54). One of the subsidiaries of

this group is the beer producer Moctezuma, which appeared in Chapter 2 of this book. In 1969 the company's name was changed to Industrias Peñoles by which it is still known today (RPPCDF, C-3-739-39-37).

Anaconda's subsidiary Cananea was indigenized in 1971. Of the 51 per cent of the shares sold, 13 per cent each were purchased by the government's mining industry promotion committee (CFM) and by the government development bank, NAFIN; 5 per cent each were purchased by Cobre de México, a smelting company set up jointly by NAFIN and Anaconda, and by Banamex, a private Mexican-owned bank; and 3 per cent were bought up by Cananea employees. The remainder of the shares were offered to the public. The reason Anaconda was slow to become indigenized is because it was difficult to find buyers who could procure the huge sums of capital needed to make the purchases. Because private entrepreneurs were finding it financially difficult to make the purchases, the government stepped in, and thereafter government stock purchases swelled. In 1985 the CFM owned 7.7 per cent and NAFIN 50.7 per cent, a total of 58.4 per cent;¹ in 1988 it reached 97 per cent (*El Financiero*, March 14, 1988).

Indigenization of Minera Asarco and Its Business Development Thereafter

Minera Asarco's Indigenization

Asarco's subsidiary Cía. Minera Asarco became indigenized in 1965. That same year the company name was changed to Asarco Mexicana. It then began an increase in its capitalization, and the structure of its stock issue was divided into 51 per cent A shares which only Mexican nationals could own, and 49 per cent B shares which had no limitations on ownership. With this the A shares were offered for sale. In 1974 the company was renamed Industrial Minera México (IMMSA), and the ratio for A shares was raised to 66 per cent which brought it in line with the law regulating the extraction and usage of mineral resources.

The 51 per cent of IMMSA's A shares was acquired by Bruno Pagliai, an Italian immigrant who served as chairman of the new company's board of directors until 1967 (RPPCDF, C-3-604-451-482). Pagliai was a close friend of the former president of Mexico, Miguel Alemán (Brandenburg 1964, pp. 102, 220, 344), and he also played a role in promoting the establishment of TAMSA which appeared in Chapter 3. Pagliai was succeeded as board chairman by Jorge Larrea, whose work had been in the construction industry and who, like Alemán, was from the state of Veracruz. In coming over to the

mining industry, Larrea is said to have thought he could make good use of his business experience in mining which would help diversify his business.² After 1967 Larrea held the majority of shares in Asarco Mexicana (RPPCDF, Folio Mercantil, no. 13540; C-3-666-256-221), but there were many other entrepreneurs who purchased shares in the new company. An examination of the name list of the board of directors points out two features about the investors. One is that they can be divided between those who were investors from the start of indigenization and those who became investors after it took place. The increase in the number of directors in the years the company raised the level of its capitalization indicates that the group was bringing in new investors as it expanded the scale of its business. The second feature is that all of the investors were influential businessmen. This becomes evident when noting what members of the company's board of directors were also members of the Mexican Council of Businessmen, which had been set up in 1962 and was composed of thirty prominent businessmen chosen from Mexico's business world. Of the nineteen people who had been on the board of directors of Asarco Mexicana (IMMSA after 1974) between 1965 and 1982 and who represented A shares, ten had also been members of the Mexican Council of Businessmen from its start in 1962. One member of the board of directors who went back to the start of indigenization was Juan Sánchez Navarro, president of the beer producer Modelo that appeared in Chapter 2. Another such member was Antonio Ruiz Galindo Jr. who headed the board of directors of the Desc group which will be analyzed in the next chapter. The above facts suggest that only an extremely limited number of people had the requisite qualifications for participating in Asarco's indigenization. The first qualification was strong financial background. Only an extremely small number of influential entrepreneurs at the top of Mexico's business world were able to procure the huge amount of funds for purchasing stock. The second qualification was close government connections. A study that examined Mexico's major capitalists pointed to the existence of a Pagliai group which Alemán and Larrea belonged to, and this group used its close connections with government to expand its members' businesses (Fragoso and others 1979, pp. 140, 200).

Business Developments after Indigenization

1. Expansion of production facilities and growth of output

In 1965 at the time it was indigenized, Asarco Mexicana's major facilities consisted of eight nonferrous metal mines, a copper smelter, lead smelter, lead refinery, zinc refinery (distillation retort plant), a coal mine, a coke oven,

and two sulfuric acid plants. By 1983 the number of nonferrous metal mines had grown to ten, including mines under development, and the group had added a fluorite mine. An electrolytic zinc refining plant had been set up which made possible the integrated processing of zinc from the ore extraction to the refining stage. The number of coal mines had increased to five, including those under development. The group was able to refine by-products such as fluoric acid and cadmium, and the capacity of its original mines, beneficiation plants, and copper smelter had been expanded. In addition it had invested in undertakings outside of the group. The most important was Mexicana de Cobre, a joint venture with the government to develop the La Caridad copper mine. As of 1971 the group had put up 49 per cent of the capital invested in this venture. This was reduced to 15 per cent in 1983, but after that under the government's privatization program, the group acquired the government's shares, and Mexicana de Cobre became an affiliate of the group. Another outside undertaking was the acquisition of 51 per cent of the shares in Minera La Loteria in 1965 and the redevelopment of the mines owned by that company (Hoshino 1998, pp. 156–57). In parallel with the expansion of its facilities, Asarco Mexicana also increased its exploration work, and estimates of the mineral deposits of its affiliated mines, which stood at 11 million tons in 1965, rose to 27 million tons in 1971, then 58 million tons in 1978, and reached 82 million tons in 1983 (Asarco Mexicana c1966, p. 12; c1972, p. 15; IMMSA 1984, p. 8).

Table 5-1 shows the volume of ore extracted from Asarco Mexicana's (renamed IMMSA in 1974) mines and the volume of minerals converted from the ore by the group's beneficiation plants. From the table it can be seen that the volume of ore mined grew nearly three times between 1965 and 1984 which could be attributed to the increase in exploration, the development of new mines, and the expansion of existing mines and beneficiation plants. The increase in silver, zinc, and copper was particularly great. However, when comparing the volume of ore mined and the volume of metals converted, the former increased nearly threefold while the latter only about doubled. Also at the same time that the group was developing new mines, it closed a number of existing mines (IMMSA 1984, p. 10; 1985, p. 11). This suggests some downgrading and downscaling of ore deposits.

The output of the group's smelters and refineries is shown in Table 5-2. The biggest change can be seen in the production of refined zinc which in 1983 was nearly double that of the several preceding years. But the increase in 1984 was not particularly significant indicating that production had not yet reached full scale (IMMSA 1985, p. 12). There was also an increase in the output of silver and blister copper, the latter attributable to the installa-

TABLE 5-1
VOLUME OF OUTPUT FROM MINES AND BENEFICIATION PLANTS OWNED BY
ASARCO MEXICANA (AFTER 1974 IMMSA), 1961–84

Year	Volume Mined (1,000 Tons)	Volume of Metals Converted					
		Gold (Kg)	Silver (Kg)	Lead (1,000 Tons)	Copper (1,000 Tons)	Zinc (1,000 Tons)	Fluorite (1,000 Tons)
1961	1,804	513	223	52	8	114	
1962	1,831	527	214	47	8	101	
1963	1,894	707	227	49	8	107	
1964	1,863	665	232	46	9	98	
1965	1,773	700	225	45	9	97	
1967	1,729	506	222	46	8	95	
1968	1,809	812	220	43	8	92	6
1969	1,943	560	219	51	8	108	37
1970	2,051	594	222	50	9	114	43
1971	2,610	319	217	49	15	116	55
1979	4,034	483	329	47	17	135	67
1980	4,199	395	339	52	16	139	65
1981	4,081	374	330	50	14	123	60
1982	4,426	403	387	56	16	150	37
1983	4,422	333	408	54	14	149	48
1984	4,935	351	440	67	17	157	52

Sources: Asarco Mexicana (c1966, c1972); IMMSA (1984, 1985).

tion of a new converter. When comparing the output of gold, silver, copper, and lead coming from the mines and beneficiation plants to that from the smelters and refineries, the output of the latter greatly exceeded that of the former, meaning the latter had excess capacity. To make use of this excess capacity, IMMSA undertook custom smelting and refining. The situation for zinc was the opposite. The output of the mines and beneficiation plants greatly exceeded that of the refineries, meaning that refining capacity was insufficient and there was an urgent need to build zinc refineries and put them quickly into operation. The output of coal remained largely at the same level while that for coke and other by-products declined. From 1971 development was started on four coal mines, but in 1984 one of these was closed down (IMMSA 1985, p. 12). Thus IMMSA's investment in the coal and coke sector did not produce much result.

TABLE 5-2
VOLUME OF OUTPUT FROM SMELTERS AND REFINERIES OWNED BY
ASARCO MEXICANA (AFTER 1974 IMMSA), 1961-84

Year	Volume of Metals Converted					
	Gold (Kg)	Silver (Kg)	Lead (1,000 Tons)	Blister Copper (1,000 Tons)	Refined Zinc (1,000 Tons)	Zinc Dust (1,000 Tons)
1961	1,538	393	93	23	52	
1962	1,627	363	72	23	56	
1963	1,564	382	75	21	57	
1964	1,788	416	72	21	59	
1965	2,068	474	74	20	59	
1967	1,733	514	71	18	57	20
1968	2,264	593	69	22	59	17
1969	2,207	520	75	23	59	18
1970	2,683	542	76	25	60	19
1971	1,799	467	67	23	59	15
1979	1,782	617	80	36	48	7
1980	1,740	599	78	35	40	8
1981	1,645	577	70	31	41	9
1982	1,684	565	59	30	37	10
1983	2,015	670	64	33	77	7
1984	1,423	631	62	35	82	9

Source: Same as for Table 5-1.

2. *Financing*

This section will look at the ways that financing was procured for the expansion and construction of production facilities. Looking first at capital increases, Asarco Mexicana (IMMSA after 1974) increased its capital from 300 million pesos at the time the company was indigenized in 1965 to 400 million pesos in 1967, then 600 million pesos in 1973, 800 million pesos in 1975, 840 million pesos in 1976, 1 billion pesos in 1977, and 1.2 billion pesos in 1978 (RPPCDF, C-3-604-451-482, C-3-667-412-357, C-3-879-413-444, C-3-1023-94-110, C-3-1036-439-444, C-3-1072-195-262). In 1978 the stocks of IMMSA were transferred to the holding company Grupo IMMSA. Grupo IMMSA's capital then increased rapidly from 620 million pesos in 1978, to 900 million pesos in 1979, then 2.3 billion pesos in 1981 (RPPCDF, Folio Mercantil, no. 13540). Part of the increase in capital (such as in 1978) included capital from retained earnings, but the increase in the number of new directors in the years of capital increase indicates that funding was com-

ing in from new stockholders. However, this funding was totally inadequate to meet the huge demand for funds, and this can be seen from the continual downtrend in Asarco Mexicana's capital-to-assets ratio (Asarco Mexicana c1966, p. 17; c1972, p. 29).

Because of the enormous need for investment funds, loans from overseas financial organizations became the major source for funds. Asarco Mexicana's ratio of total liabilities to net worth rose from 31.8 per cent in 1964, to 53.6 per cent in 1965, then to 58.2 per cent in 1970, and 90.0 per cent in 1971. The sudden increase from 1964 to 1965 was due to the dollar-denominated loans that were borrowed to purchase 51 per cent of the shares in Minera La Loteria; the sudden increase between 1970 and 1971 came from the large loans borrowed from four big private U.S. banks (Asarco Mexicana c1972, p. 33). The details about borrowing in 1972 and after are unavailable, but in 1983 the ratio of total liabilities to net worth for the holding company Grupo IMMSA stood at 106.4 per cent. After an assets reassessment in 1984, this dropped to 77.7 per cent, but the group's foreign debt still stood at 191.6 million dollars (IMMSA 1985, p. 21).

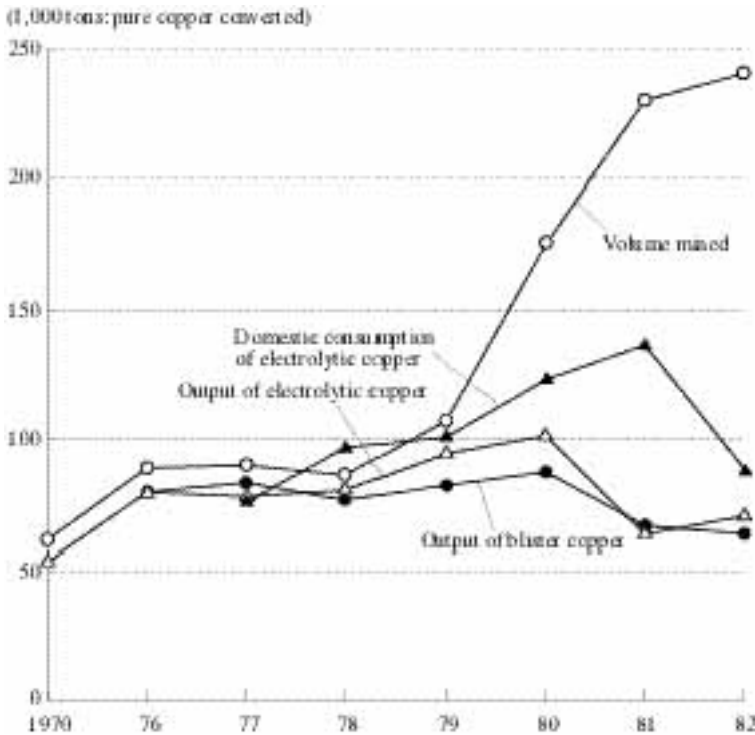
To summarize the points of this section—it was the introduction of the government's indigenization policy that allowed Asarco Mexicana (later renamed IMMSA, then transferred to the holding company Grupo IMMSA which was renamed Grupo México in 1994) to successfully break out of the long decline that had gripped the mining industry. Following indigenization new management came in which revived aggressive investment, and this led to the expansion of production which put the group onto the path of growth. However, to finance the enormous cost of this investment, the group built up a huge foreign debt. But considering the limits on the financial resources of Mexico's entrepreneurs and the enormous amounts of money needed to develop the mining industry, the huge growth of foreign borrowing was to some extent inevitable. Grupo México was not alone. The rapid increase of foreign borrowing became a phenomenon common to many large-scale Mexican enterprises during the latter half of the 1970s. But unlike many of these enterprises that got caught up in the debt crisis in the 1980s when the peso was devalued, Grupo México was only slightly affected because a large part of its sales came from exports. The next section will examine how the above developments for the largest mining group in the country affected the course of the mining industry as a whole.

Grupo México and the Gains of Indigenization in the Mining Industry

To understand the gains of indigenization, we will first look at Mexico's production and export of silver, copper, lead, and zinc at the start of indigenization. Until the mid-1960s the output of all these minerals remained flat or was falling, and exports of all were steadily declining, meaning that the trends before indigenization continued to prevail. Some changes began to appear during the latter half of the 1960s. One was the upward shift in the output and export of zinc and in the output of copper. Another one was the nearly complete loss of the industry's capacity to export copper. As of 1970 the situation for the output and export of the above four minerals by processing level of final products can be summed up as follows. There was no more capacity to export copper, and most of the copper ore mined was refined and consumed domestically. About 30 per cent of the zinc ore mined could be refined domestically, and most of the ore was exported at the concentrate stage. Nearly half of the silver and lead produced was exported, and most of the ore for these two minerals was refined domestically. Thus the issues the mining industry needed to deal with were firstly the need to increase the production of copper by expanding mine output as well as smelting and refining capacity to handle greater mine output; it was urgent for the industry to satisfy the growing domestic demand for copper before dealing with export capacity. Next was the need to expand zinc refining capacity which would make it possible to raise the value added on exports. For silver and lead the need was to reverse the long-term downtrend of these minerals by expanding mine output and the capacity of smelters and refineries to handle the greater mine output. The remainder of this section will look at the extent that the industry dealt with these issues during the 1970s.

The biggest increase in output took place in copper. Figure 5-1 shows that mine output doubled from 1970 to 1979, and it continued to expand strongly thereafter. This rapid expansion of output was primarily the work of Cananea and Mexicana de Cobre. The output of blister and electrolytic copper was slow to start, but by 1979 both were expanding in parallel with mine output. But output could not keep up with domestic consumption, and from 1978 on domestic consumption was greater than electrolytic copper output, meaning that the difference had to be met by imports. Meanwhile in 1978 the output of blister copper fell below that of electrolytic copper, meaning that an insufficiency of smelting capacity had arisen and blister copper had to be imported. With the start of the 1980s, mine output leaped, and smelting and

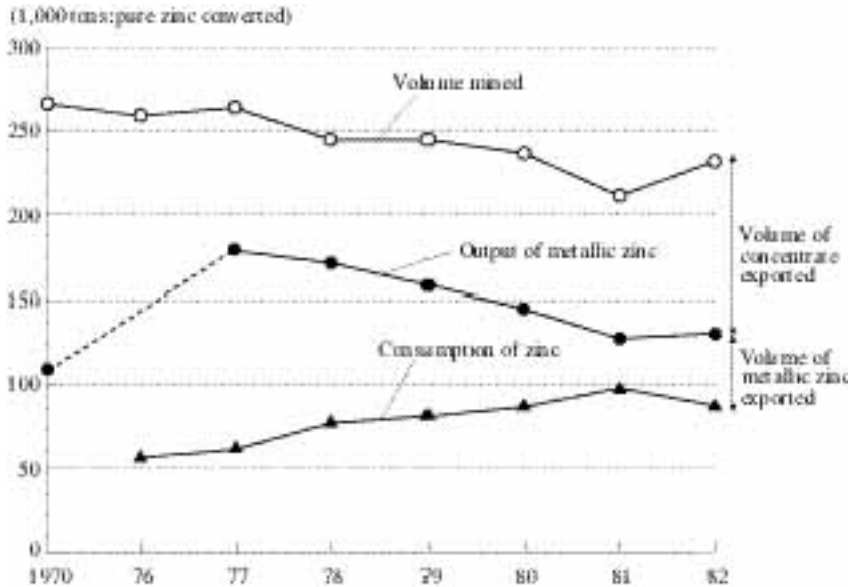
Fig. 5-1. Output of Copper by Type and Domestic Consumption, 1970–82



Sources: SIC (1971, pp. 7, 23); *Minera Camimex* (July–August 1978, p. 11; May–June 1980, p. 7; May–July 1981, no. 3, p. 7; May–June 1982, p. 7; July–August 1983, p. 7); INEGI (1985, vol. 1, p. 441).

refining capacity was left far behind, which meant that the export of concentrate increased. The above facts indicate that copper output was enough to satisfy domestic demand and to allow for exports to earn foreign exchange, but there was an urgent need to expand smelting and refining capacity. This expansion began to take place around 1980 with Cananea, Mexicana de Cobre, and Cobre de México, a copper refining company, expanding their smelters and refineries and building new capacity. Grupo México participated in the expansion as well by installing a new converter. But output from all this new investment did not begin to take effect until 1983. Cananea and Mexicana de Cobre had to rely on foreign borrowing for the large amount of capital needed to expand their facilities and build new capacity, and both were caught up in the foreign debt crisis of the 1980s. NAFIN provided debt relief for both companies by increasing its shareholdings in both. Later under the

Fig. 5-2. Output of Zinc by Type and Domestic Consumption, 1970–82



Sources: SIC (1971, pp. 9, 25); *Minera Camimex* (May–June 1982, p. 18; May–June 1983, pp. 18, 20; July–August 1983, p. 18); INEGI (1985, vol. 1, p. 443).

government's privatization policy these two companies were passed over to Grupo México.

The expansion of zinc refining capacity was also carried out. Figure 5-2 indicates that the output of metallic zinc increased from 1970 to 1977. This was due to the start of zinc refining by Peñoles. In 1982 Grupo México began operation of an electrolytic refinery, but the impact of this investment lies outside the time frame of Figure 5-2.

In silver production the long period of declining output finally came to an end during the second half of the 1970s. Most of the production of silver was as a by-product of the smelting and refining processes for producing copper, lead, and zinc, and the increase in the processing of these metals naturally led to an increase in the production of silver. The mining of lead continued to lag, but smelting and refining capacity expanded. The result was an insufficient supply of concentrate, and from 1977 imports made up for the shortage. The issue of expanding the output of lead mines remained to be dealt with (Hoshino 1998, pp. 147, 169).

From the above analysis it is evident that the mining industry after

indigenization succeeded in raising production capacity even though it was troubled by a large accumulation of foreign debts and by capacity imbalances among mining and metallurgic sectors. These imbalances derived from the high uncertainty that is inherent in the mining industry because investing in mines compared with investing in smelting and refining depends more on the prevailing conditions of natural resources. Moreover, the uncertainty is heightened by the worsening of the conditions where natural resources are located. But even while burdened by such problems, the expansion of investment by the mining industry following indigenization brought about a rapid expansion in copper mining, an expansion in copper and lead smelting and refining capacity, an expansion in zinc refining capacity, and an increase in the production of silver which was the result of the expanded capacity to process the other metals. And Grupo México performed an important part in the revitalization of the mining industry through its energetic exploration for minerals and development of new mines, its expansion of smelting facilities and construction of new refineries, and its capital investment in Mexicana de Cobre.

Concluding Remarks: Conditions for the Success of the Indigenization Policy

Following implementation of indigenization, the development of the nonferrous mining industry benefited the national economy in three ways: it strengthened the system for supplying raw materials that supported industrialization; it expanded export capacity which enhanced the acquisition of foreign exchange; and it improved the domestic processing of nonferrous metals that were exported. In this sense Mexico's indigenization policy was successful. I would now like to point out conditions which made its success possible.

To begin with, the conditions in the mining industry were conducive for the success of indigenization. Generally in the early stages of mining development, the balance of negotiating power between foreign investors and the government of the host country is tipped in favor of the former. But after investment in development has been completed, the balance quickly shifts toward the latter (Shafer 1983, pp. 97–98) because after the development stage, it is no longer possible for assets to flee overseas which is the strong bargaining chip that foreign investors can use in negotiations. However, even if indigenization is carried out and ownership and management rights are transferred, that does not mean that business operations will automatically achieve self-reliance. For newly indigenized enterprises to survive and develop, they have to secure markets, technology, and investment funds; and

being able to inherit the business network that existed before indigenization or having to build up a new network becomes an important issue for these enterprises. Mexico was able to indigenize its mining industry without running into any major difficulties, and this can be attributed to the following three factors: (1) industrialization of the economy had been steadily progressing, and when indigenization took place, almost a half of nonferrous metal output was being absorbed by the domestic market; (2) starting in the 1960s developing countries began indigenizing their nonferrous mines, and the major foreign mining companies which until then had held overwhelming control over the industry saw their power in the world market substantially reduced; and (3) Mexico's indigenization program did not require the 100 per cent transfer of ownership rights, only 51 per cent transfer which allowed indigenized enterprises to gradually build up their self-reliance.

Factor no. 1 meant that Mexico's mining industry had a secure domestic market which lessened concern about the issue of market problems after indigenization. Also ironically Mexico was fortunate in that its deposits of natural resources were only of moderate size as this reduced the formidable burden of establishing a marketing network in the world market.

Factor no. 2 was the upsurge of nationalism over natural resources which gave impetus to movements throughout the world for indigenization. Along with indigenizing their natural resource industries (and in many cases nationalizing them), developing countries with oil and nonferrous metal resources also gathered together to form organization of producer countries for the purpose of reconciliating production, exports, and taxes among them (Kuroko 1989, pp. 82–86). These movements to take control of their own natural resources dealt a serious blow to the major foreign oil companies and nonferrous enterprises that had long reigned over the world's natural resource industries. Most of the major enterprises in the nonferrous metal sector had integrated production systems that ran from the ore extraction stage up to the metal processing stage. The mining and beneficiation stages were carried out in the developing countries outputting the raw materials while the latter-stage smelting and refining processes were done in the developed home country (although in some cases this latter processing stage was done in the developing country). Indigenization cut this integrated production system in two, and with the development of smelting and refining capacity in the resource-owning countries, the latter-stage processing facilities in the home country were cut off from their long-standing sources that had supplied raw materials. The integrated production systems of the major enterprises broke down which quickly brought an end to their long domination of the market. Thereafter these enterprises suffered takeovers by major oil companies, rational-

ization, and severe anti-pollution controls on smelting and refining plants because of rising concern about environmental problems. These aggressive changes ultimately led to the breakup and/or restructuring of the major enterprises in the nonferrous metal mining sector.

Looking specifically at the outcome of the three big nonferrous metal producers that were indigenized in Mexico, Anaconda was bought up by a major oil company and then liquidated. Amax, which originally was a producer of copper and molybdenum, diversified during the 1960s and 1970s, then went through a process of rationalization in the 1980s, and was reorganized into a producer of aluminum, coal, and gold. Asarco, which successfully developed into a custom smelting and refining company, originally did not have much investment overseas, and it was not greatly affected by indigenization. But then smelting and refining began to take place in the resource-owning countries, so the company bought up mines in the United States, and today it is developing an integrated production system in that country (Metal Mining Agency of Japan 1989). Such liquidations and restructuring of major nonferrous enterprises substantially diminished the portion of the world nonferrous market where these enterprises had controlled prices and distribution, and this led to an expansion of the competitive market. This opened the market wider for resource-owning developing countries, but it also increased the number of participants in the market which made competition more severe and price fluctuations more extreme. And the risks of this newly widened competitive market had to be borne by the resource-owning countries themselves. The global restructuring of the nonferrous market was also reflected in the changes that took place in the distribution of Mexico's exports. Up until indigenization the country's exports of nonferrous metals had gone entirely to the United States (Bernstein 1964, p. 240), but after indigenization its export market greatly diversified (Hoshino 1998, p. 174).

Turning to factor no. 3, the requirement for 51 per cent Mexican ownership—by setting this criterion, Mexico was able to avoid the friction with parent companies of Mexican subsidiaries that would have arisen had 100 per cent transfer been required. Keeping parent companies as stockholders made it easier to gain their cooperation in securing markets and technology even after indigenization. In the case of Grupo México, initially after indigenization it carried on exporting through Asarco (Asarco Mexicana c1966, p. 9), but by 1983 at the latest it had set up a sales subsidiary in the United States and established its own marketing network. At the same time the group reduced the ratio of its exports going to the U.S. market to 38 per cent (IMMSA 1984, p. 14). In the area of technology as well, the group initially depended on Asarco for technological assistance, but in 1985 this de-

pendence came to an end.³ In this way Grupo México made use of its relationship with Asarco in the areas of marketing and technology to gradually build up its own capabilities in these areas, and this enabled the group to evolve smoothly into a self-reliant business concern. Regarding financing (which could not be expected from Asarco even before indigenization), this was sought from foreign private banks, and the smooth implementation of indigenization, the existence of Asarco as a stockholder in Grupo México, and the steady progress of Mexico's industrialization all worked advantageously for acquiring financing from overseas. Also the rise of oil money in the international financial market in the 1970s and the need to recycle this money made it easy for Mexican enterprises to secure financing. The rise of oil money itself had its origins in the upsurge of nationalism in the developing countries which had taken control of natural resources out of foreign hands. Thus the current of the times provided an underlying impetus for indigenization of Mexico's mining industry.

Notes

- 1 Calculated from the name list of attendees at the regular meeting for Cananea stockholders held on April 30, 1985.
- 2 According to an interview this author had at Grupo IMMSA on September 12, 1985.
- 3 Author's interview at Grupo IMMSA on September 12, 1985.