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The Mixed Economy and Private Enterprises: Hylsa and Fundidora in the Steel Industry

The Present-day Steel Industry in Mexico and Its Development

Reorganization in the 1980s

The government's neo-liberal economic reforms in the 1980s brought about drastic structural changes in Mexico's steel industry. One very important change was the disappearance of public enterprises. In 1986 five integrated steel companies existed in the country; two—Hylsa (Hojalata y Lámina, S.A.) and TAMSА (Tubos de Acero de México, S.A.)—were indigenous private enterprises, while the remaining three—AHMSА (Altos Hornos de México, S.A.), SICARTSA (Siderúrgica Lázaro Cárdenas Las Truchas, S.A.), and Fundidora—were public enterprises. Fundidora, which became a public enterprise in 1977 with an increase in capital participation by the government, was liquidated in 1986 under the policy of integrating, liquidating, and privatizing public enterprises. In 1991, AHMSА and SICARTSA went under private management. TAMSА suffered vast deficits due to a sharp decline in orders from its main client PEMEX, the state-run oil company, and to its foreign debt problem. In the process of its reconstruction, Siderca of Argentina, TAMSА's minor shareholder, raised its participation significantly (*El Norte*, June 22, 1994). Hylsa, along with its parent company Alfa, was also

deeply in debt in the early 1980s because of its deteriorating foreign debts. By the end of the 1980s, however, Hylsa was back on the track of growth after solving its debt problem and carrying out a series of streamlining measures (Hoshino 1993b). Under the government's privatization program, Alfa made a successful bid for three of AHMSA's subsidiaries (Rogozinski 1993, p. 196). Of the five steelmakers, Hylsa carried out its restructuring the most smoothly.

To understand how the coexistence of public and private enterprises came about in the steel industry, we have to look at how the industry developed up to the early 1980s, which I would like to summarize briefly below.

Establishment and Development of Fundidora: 1900–1940

The modern history of Mexico's steel industry began with the establishment of Fundidora in Monterrey in 1900. Leading entrepreneurs of the time took part in its establishment. Isaac Garza and Francisco G. Sada, founders of Cuauhtémoc, were on the list of first directors (Vizcaya Canales 1971, p. 78). The incorporation was registered in Monterrey and the factory was also located there. However, in 1907 the company's head office was transferred to Mexico City where it was more convenient to raise funds and negotiate with the government. Another reason was that Adolfo Prieto, who was the managing director in 1907, lived in the capital. At that time Fundidora mainly manufactured non-flat steel products, such as rails for railroads and steel structures for oil field development. A major government policy in the period was protective duties, and high duties were imposed on imported rails. This policy is said to have been the result of lobbying by Prieto. Fundidora's production plunged following the outbreak of the Mexican Revolution in 1910. Operation of the blast furnace was suspended between 1914 and 1916 because of the revolution, preventing Fundidora from benefiting from the demand created by World War I and dealing the steelmaker a heavy blow (Gómez 1995, pp. 12, 15, 35). After the war steel production gradually recovered and returned to the pre-revolution level in the late 1920s.

Five Steelmakers and Import Substitution Industrialization: 1941–82

Starting in the 1940s, four new producers, AHMSA, Hylsa, TAMSAs, and SICARTSA, entered the steel industry as integrated steel companies. AHMSA was set up in 1941 in Coahuila and began production in 1944. Originally the company was to be set up by entrepreneurs to meet the growing demand of World War II and deal with the suspension of steel imports during the war.

The government took part in the fund-raising and procurement of materials for the company's establishment. The governmental development bank, NAFIN (Nacional Financiera), owned all of the preferred stocks, equivalent to one-fourth of the capital, while 90 per cent of the common stocks were acquired by private entrepreneurs and the remaining 10 per cent by an American firm in exchange for construction of a rolling mill and technical assistance. NAFIN then raised its equity share to 50 per cent and assisted AHMSA through intermediation with the Export-Import Bank of the United States for loans, the underwriting of corporate bonds, and financing. With the start of AHMSA's operation, production of flat products, such as steel plates, sheets, and tin plates, was launched for the first time in Mexico (Cole 1967, pp. 11–12, 15, 25).

Hylsa was set up in 1942 as a subsidiary of Cuauhtémoc. At that time imports of steel sheets for bottle caps were suspended due to World War II. The establishment of Hylsa was intended to make up for the suspension (Cervecería Cuauhtémoc 1990, pp. 49, 60). As a semi-integrated steel producer, Hylsa imported scrap steel as raw material, but was troubled by the fluctuation in scrap steel prices. To cope with this, Hylsa worked on the direct reduction method which at the time only existed as a theory. In 1955 it succeeded in putting the method into operation. In 1957 it set up a subsidiary, Fierros Esponja, to undertake sponge iron production and became an integrated steel producer (Peart Pérez and others 1983, pp. 69, 73).

TAMSA was founded as a nonintegrated steel producer of seamless pipes in Veracruz in 1952 and began operation in 1954. Its main customer was PEMEX, which depended on imports for seamless pipes. The company's establishment was promoted by a group of entrepreneurs headed by Bruno Pagliai, an Italian immigrant, and former president Miguel Alemán (in office between 1946 and 1952), who hailed from Veracruz. They contributed a majority of the capital while Italian companies in charge of designing and construction became minority shareholders. NAFIN also paid in 20 per cent of the capital (Cole 1967, pp. 19–20; Fragoso and others 1979, p. 182). In 1959 TAMSA became a semi-integrated steel producer with an electric furnace. Because of the difficulty of importing scrap steel in the 1960s, it introduced Hylsa's direct reduction method and began the production of sponge iron. TAMSA then joined the ranks of the integrated steel producers (Peart Pérez and others 1983, pp. 69, 75, 81).

SICARTSA was set up in Michoacán in the 1970s as an integrated steel producer. Michoacán is the native state of former President Lázaro Cárdenas (in office between 1934 and 1940) who was famous for his nationalistic policies, including the nationalization of oil production. A plan had long been in

the making to build a coastal ironworks to promote regional development. The plan was carried out by the nationalistic Luis Echeverría administration (1970–76) and the following José López Portillo administration (1976–82). Initially production capacity was to be expanded in four phases by 1994. The expansion stopped during the second phase when Mexico was hit by a serious economic crisis triggered by its foreign debt problem in 1982 (Nakaoka 1991, p. 73). The first phase called for the construction of a blast furnace, an LD converter, a continuous casting unit, and a rolling mill, and the manufacturing of non-flat products was started in 1976. The second phase consisted of a direct reduction plant for production of sponge iron, an electric furnace, and a continuous casting unit. Semi-finished products for the production of steel plates began to be manufactured in 1988 (JETRO, Machinery and Technology Department 1993, pp. 74–76).

The Steel Industry Promotion Policy during Import Substitution Industrialization

Starting from the 1940s as part of import substitution industrialization policies, the government promoted the steel industry by establishing public enterprises, controlling imports, and providing financial assistance. As mentioned earlier, AHMSA and SICARTSA were set up as public enterprises. Also, Fundidora became a public enterprise in 1977, when NAFIN acquired a majority of its stocks (a development that will be explained later).

Under Mexico's policy of import substitution industrialization, imports were controlled through the regulation of prices and volume. Duties were imposed on imports to control prices, and tariffs differed according to goods. In principle it was low for intermediate and capital goods, middle for consumer goods, and high for luxury goods (Izquierdo 1964, p. 254). The tariff on steel products, regarded as intermediate goods, though lower than those on consumer and luxury goods, was high enough to give Mexican-produced steel products a competitive edge in the domestic market (Cole 1967, pp. 30–35). An import licensing system worked to control the volume of imports. Prior to the introduction of the system in 1944 (Izquierdo 1964, p. 263), rails, steel sheets, and wire rods were already subject to import licensing since 1942. Other steel products covered by import licensing were tin plates and steel rods (from 1945), steel plates (from 1948), and pipes (from 1951) (Cole 1967, pp. 28–29). By the end of the 1960s, almost all steel products were subject to import licensing (ILAFA 1971, p. 223).

An important role in financial assistance was played by NAFIN. From the start of the 1940s, NAFIN provided funds to the steel industry in various

forms—loans, underwriting stocks and corporate bonds, and guaranteeing and endorsing obligation. The amount of funds increased sharply in the 1970s. NAFIN also served as an intermediary for loans from overseas public financial institutions, including the Export-Import Bank of the United States. The amount of funds channeled through NAFIN rose substantially in the 1960s (Hoshino 1998, pp. 77–78). Funds went mainly to AHMSA in which NAFIN had invested. Also working as financial assistance to companies was the maximum price system under the “Law Stipulating the Authority of the Government concerning Economic Problems” enacted in 1950 (Cole 1967, pp. 36–37). The maximum price was set at a level to ensure the profitability of public enterprises with high manufacturing costs, specifically AHMSA, serving to produce high revenues for companies with low manufacturing costs (Wallace 1980, p. 80).

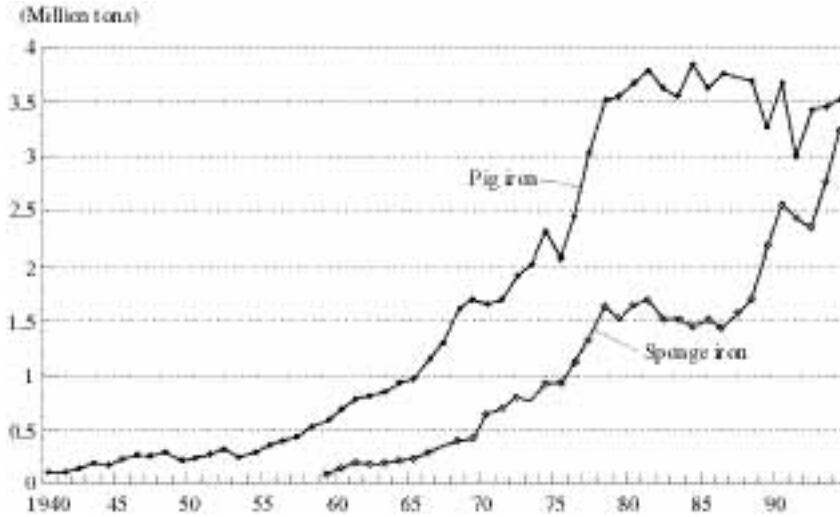
Sharp Rise in Iron and Steel Production and Market Expansion

Steel production grew smoothly during the import substitution industrialization period. In 1954 Fundidora, the oldest iron and steel producer in Mexico, was outstripped by a newcomer, AHMSA, in the output of pig iron (Hoshino 1998, p. 80). From the 1960s steel production leaped as did the production of pig and sponge iron (Figure 3-1).

Changes in the volume of steel production by company, shown in Figure 3-2, indicate that (1) from 1955 AHMSA ranked first, (2) Hylsa overtook Fundidora in the 1960s and retained the No. 2 position, while TAMSA, a latecoming maker of sponge iron, lagged far behind Hylsa, (3) every steelmaker boosted production sizably between 1962 and 1970 which was a period of rapid growth for the steel industry, and (4) the situation differed from company to company between 1974 and 1983: SICARTSA and Hylsa increased their production while Fundidora suffered a setback. A huge rise in steel production and in pig and sponge iron in the latter half of the 1970s was attributed to the first two steel producers. The production of finished non-flat products and flat products displayed outstanding growth from the 1960s on. This was due to the diversification of products. Fundidora, which initially produced non-flat products, began to manufacture flat products, while AHMSA and Hylsa, which produced flat products, started to make non-flat products.

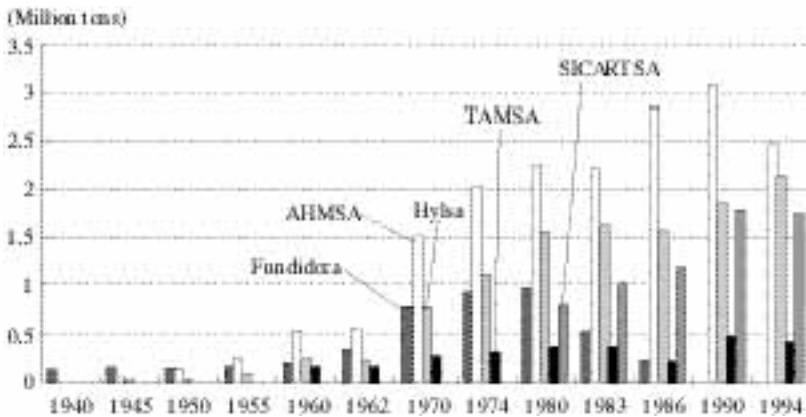
The increasing production raised the ratio of output to nominal consumption for non-flat products from 60 per cent in 1953 to 68 per cent in 1955, 78 per cent in 1960, 83 per cent in 1964, and 92 per cent in 1968. The ratio for flat products also rose for the same years from 73 per cent to 84 per cent, 94

Fig. 3-1. Trend of Pig Iron and Sponge Iron Production, 1940–94



Sources: Peart Pérez and others (1983, pp. 71, 114); Cole (1967, pp. 6, 16, 18); Toda (1970, p. 62); ILAFA (1971, p. 7); CANACERO (1993, p. 6; 1995, p. 8); INEGI (1987, p. 43).

Fig. 3-2. Trend of Crude Steel Production by Enterprise, 1940–94



Sources: Ávila Juárez (1994, p. 218); NAFIN (1986, p. 176); CANACERO (1993, p. 9; 1995, p.11); Cole (1967, pp. 16, 18–19); Toda (1970, p. 70).

per cent, 106 per cent, and 106 per cent respectively (ILAFA 1971, pp. 142, 147). This showed that import substitution industrialization developed smoothly during the 1950s and 1960s. In the 1970s, however, imports rose again due to a sharp growth in demand, in spite of an increase in domestic production. Particularly notable was a rise in imports of flat products (Hoshino 1998, p. 82).

In the 1960s the largest market for non-flat products was the construction industry (especially for reinforcing bars, heavy gauge steel, and light gauge steel), and the second largest was the manufacturing industry (particularly for wire rods). The chief market for flat products was the manufacturing industry—sheets for household electric appliances, steel furniture, containers, and automobiles, and tin plates for food, pharmaceuticals, chemicals, and beverages. A major customer for seamless pipes was PEMEX, and welded pipes were purchased by PEMEX and the construction industry, particularly companies engaged in public works projects (ILAFA 1971, pp. 117–20, 137, 139). By the 1960s markets for steel products had extended to a variety of sectors reflecting Mexico's progress in industrialization and urbanization. In the next section we will look at the development of Mexico's steel industry through an examination of two steelmakers.

The Development of Hylsa and Fundidora

Expansion and Modernization of Production Facilities

World War II led to the establishment of Hylsa. During the war the United States designated steel sheets, which Cuauhtémoc imported for making bottle caps, as a commodity under wartime controls, and exports were banned. For Cuauhtémoc maintaining bottle cap production was vitally important because a suspension would affect its raw material sections as well as the beer department. Cuauhtémoc sounded out U.S. steelmakers about undertaking local production, but this was rejected, so the company decided to manufacture steel sheets on its own. It purchased partially scrapped hot and cold strip mills and plating carriers in the United States, and had its own mechanics assemble them. An electric furnace was soon introduced, rolling was started in 1943, and steel production in 1944. But the quality of production was extremely poor because of the old facilities and Cuauhtémoc's limited experience (Mendirichaga 1978, pp. 34–72).

In 1953 a Steckel mill was introduced for semi-automatic process of heating and rolling which improved production capacity and quality. An entry into the upstream sector was studied to overcome difficulties purchasing im-

ported scrap iron and customer demand for higher quality. The development of the direct reduction method was chosen in place of a blast furnace because the latter was too large for the steel production capacity that Hylsa possessed. In 1951 experimental production got under way, and a sponge iron manufacturing method (HYL method) using natural gas as fuel was developed. In 1957 Hylsa was awarded a patent, and a subsidiary, *Fierros Esponja*, was set up the same year to start operation of its first sponge iron production plant (Mendirichaga 1978, pp. 62–63, 92–120). In 1960 a second plant was built (Cole 1967, p. 19).

During the 1960s Hylsa diversified its lineup of products. In 1963 it acquired *Aceros de México*, a nonintegrated steel producer of non-flat products in Monterrey. Then it set up a subsidiary, *Hylsa de México*, to produce non-flat products in Puebla which is close to Mexico City, the nation's largest market for steel products. More production facilities were built in 1969 including a sponge iron production plant, two continuous casting units, and a high-speed wire rod rolling mill. At the same time, modernization of flat product manufacturing facilities was carried out in Monterrey. A continuous hot strip mill, partially computer-controlled, was installed and put into operation by the end of the 1960s (Mendirichaga 1978, pp. 130–56). A sponge iron production plant was constructed in Monterrey in 1974 and another in Puebla in 1977 (Peart Pérez and others 1983, p. 104).

As of 1940 *Fundidora* was equipped with a blast furnace, four open-hearth furnaces, a converter, an ingot casting unit, and three non-flat product rolling mills (for rails and structural shapes) (Ávila Juárez 1994, pp. 74, 79–80). Starting in the 1940s, the steelmaker actively promoted expansion and modernization of production equipment. During the first half of the 1940s, iron production capacity was boosted. A second blast furnace was constructed in 1942 and put into operation the following year (Cole 1967, p. 8). With growing iron production capacity, the steel production section was also expanded. In 1942 a fifth open-hearth furnace was built, while a second converter was constructed around the same time. Production capacity of the second and third open-hearth furnaces was boosted. Although production capacity was raised, output leveled off due to labor disputes. As part of small-scale improvement efforts, one of the non-flat product rolling mills was replaced to produce skelp (semi-finished products for welded pipes) and wire rods (Ávila Juárez 1994, pp. 75–76, 84, 90).

The latter half of the 1950s saw an increase in steel production capacity and rolling capacity. From 1956 to 1959 the second steel production section was set up, and two new open-hearth furnaces were built to double steel production capacity. In the rolling section, production of flat products and

pipes got under way. The diversification of steel products was in response to a surplus of steel resulting from expanding steel production capacity, suspension of rail production because of a steep rise in rail imports coming into Mexico as part of official economic aid from developed countries, and an expected growth of demand for flat products.

In 1956 the ingot casting unit was replaced to produce such semi-finished products as slabs and billets in addition to conventional blooms. Established in the same year was a subsidiary, Aceros Planos, equipped with a steel plate rolling mill, a continuous hot strip mill, and a cold strip mill. It used slabs produced by the new ingot casting unit to manufacture steel plates and sheets. Fundidora also acquired a 50 per cent stake in a steel pipe maker, Tuberia Nacional, which used skelp manufactured by the rolling section to produce welded pipes 0.5–3 inches in diameter. In 1960 it obtained a 70 per cent stake in Tubos de Acero, which produced welded pipes 4–24 inches in diameter for PEMEX (Ávila Juárez 1994, pp. 97, 104–5, 110, 114, 119, 122).

During the latter half of the 1960s Fundidora further increased its iron and steel production capacity. In 1965 it began construction work on a third blast furnace, and inaugural kindling was conducted in 1968. The company then closed down its first blast furnace. In the steel production section, construction of two open-hearth furnaces was begun in 1964, and both were put into operation in 1967 (Ávila Juárez 1994, pp. 122, 135–36). In the 1970s a basic oxygen furnace was installed in the steel production section, and a pellet plant was constructed (Zapata 1989, pp. 84–85, 120).

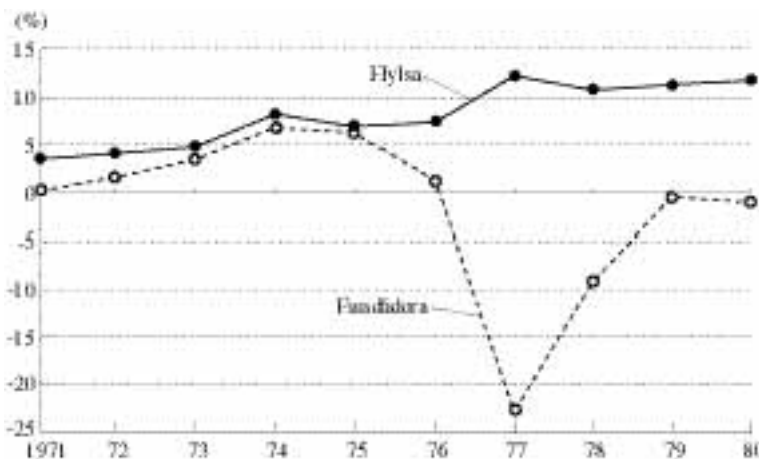
Thus, both Hylsa and Fundidora pushed ahead with the expansion and modernization of production equipment. In the next section the facilities of three steelmakers will be compared.

AHMSA, Hylsa, and Fundidora: A Comparison of Production Equipment and Profitability

First a comparison will be made of the production equipment operated by AHMSA and Fundidora, both which are steelmakers equipped with blast furnaces. We will compare the size of blast furnaces, the changeover from open-hearth furnaces to basic oxygen furnaces, and the size of basic oxygen furnaces.

As of 1979, AHMSA was operating two mills, one in operation since its founding and a second one put into operation in 1976. The first mill consisted of four blast furnaces with an annual production capacity of 1.8 million tons, while the second had one blast furnace with a capacity of 1.5 million tons. As of the same year, Fundidora was operating two blast furnaces

Fig. 3-3. Trend of Profit-to-Sales Ratio for Fundidora and Hylsa, 1971–80



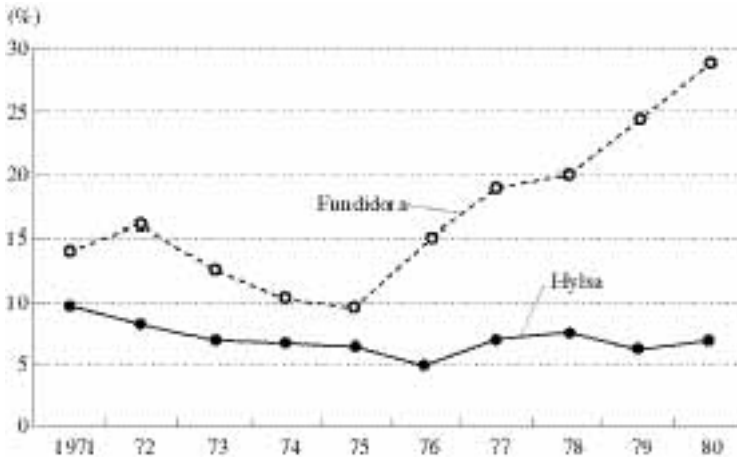
Sources: BMV (1977, pp. 114, 386; 1981, pp. 189, 531).

with an annual production capacity of 1.4 million tons. In iron production capacity, AHMSA far exceeded Fundidora, and AHMSA's second mill was equipped with a large-scale furnace.

In steel production, AHMSA installed a basic oxygen furnace in 1971 and Fundidora in 1977. In 1979 AHMSA had eight open-hearth furnaces and two basic oxygen furnaces in its first mill, and one basic oxygen furnace in its second. In the same year, Fundidora had eight open-hearth furnaces and two basic oxygen furnaces. The combined annual production capacity of the two basic oxygen furnaces at AHMSA's first mill was 1.25 million tons, and the basic oxygen furnace at the second mill was capable of producing 820,000 tons. At the same time, the combined capacity of Fundidora's two furnaces was 1.5 million tons. Thus, AHMSA was ahead of Fundidora in the changeover to basic oxygen furnaces, and the scale of the furnace at its second mill surpassed Fundidora's (Kendrick and others 1984, pp. 44–46; Peart Pérez and others 1983, p. 86; Zapata 1989, p. 85).

The next comparison is the installation of continuous casting units, an index of ironworks modernization. Hylsa was the first of the steelmakers to install a continuous casting unit which it did in 1969. AHMSA introduced one in 1976 (Peart Pérez and others 1983, p. 94), but Fundidora never did. In sum, Fundidora lagged far behind AHMSA in iron and steel production equipment, while Hylsa was ahead of AHMSA in the installation of a continuous casting unit.

Fig. 3-4. Trend of Financing Cost-to-Sales Ratio for Fundidora and Hylsa, 1971-80



Source: Same as for Figure 3-3.

Now a comparison of profitability between Hylsa and Fundidora in the 1970s for which data are available. Figures 3-3 and 3-4 show some indexes from the financial statements of Hylsa and Fundidora. As the figure indicates, Fundidora's ratio of profits to sales was always below that of Hylsa. Losses worsened especially in 1977. Low profits or losses stemmed from a sharp increase in financial costs, including interest payments. Fundidora's ratio of financial costs to sales was always above that of Hylsa, showing a rapid rise from 1975 on. Large financial costs mean large debts which translates into small stockholders' equity. The ratio of stockholders' equity to total assets was constantly more than 50 per cent for Hylsa, whereas the ratio for Fundidora fluctuated greatly, plunging to nearly 30 per cent at one point. A temporary rise in Fundidora's ratio in 1976 resulted from a capital increase. Stocks for the capital increase were underwritten by NAFIN.

Factors for the Differing Performance between Hylsa and Fundidora

Financing for Equipment Investment

One factor causing differences between Hylsa and Fundidora is fund-raising. Publicly financed loans from NAFIN and from the Export-Import Bank of the United States through NAFIN were mainly given to AHMSA until the

end of the 1960s. In the latter half of the 1960s, NAFIN gradually increased funding to Fundidora. Funding to Hylsa was marginal (Hoshino 1998, p. 93).

In 1942 Fundidora built a blast furnace. This was financed through a bond flotation guaranteed by NAFIN and private financial institutions in Mexico. The replacement of a non-flat product rolling mill in 1951 was funded by a 4.5-million dollar loan from the Export-Import Bank of the United States. When Aceros Planos, a subsidiary for flat product rolling, was set up in 1956, Fundidora received a 26-million dollar loan from the Export-Import Bank. The construction of the third blast furnace in 1965 was also covered by a 28-million dollar loan from the bank. The total amount of loans from the Export-Import Bank came to 76.3 million dollars between 1948 and 1964 (Ávila Juárez 1994, pp. 153, 162–63, 165, 182).

Investment in the establishment of Hylsa was made by major shareholders in Cuauhtémoc (Rojas Sandoval 1995, p. 135). Until the early 1950s when production began, Hylsa made huge investments which were financed by Cuauhtémoc. The purchase of a Steckel mill in 1953 was funded by a capital increase and a loan from the Export-Import Bank of the United States with the guarantee of NAFIN (Rojas Sandoval and Rodríguez 1988, p. 62). A German firm won the order for the construction of the Puebla plant in 1969 on condition that one-third of construction funds would come from overseas private banks. The rest was covered by funds on hand (NAFIN 1970, p. 115). In sum, the main financial resources for large-scale equipment investment were the Export-Import Bank of the United States and NAFIN for Fundidora, and funds on hand (including funds from Cuauhtémoc) and overseas financial institutions for Hylsa.

Foreign debts opened the way to state ownership of Fundidora. In the early 1970s, Fundidora carried out a capital increase and refinanced its debts through loans from U.S. private banks as measures against its liabilities. However, debt repayment jumped sharply because of the devaluation of the peso in 1976. NAFIN, which had underwritten 26 per cent of the stocks in the preceding capital increase, acquired a majority of shares in Fundidora in exchange for the taking-over of its debts (Zapata 1989, pp. 43–44).

Technological Capability

One reason why Hylsa's revenues were so much more substantial than Fundidora's was the export of technology. Hylsa developed the HYL method which it licensed to TAMSA and SICARTSA. It also obtained patents for the HYL method in about forty countries (Mendirichaga 1978, p. 171). In the early 1980s, the HYL method was being used at numerous steel mills over-

seas (Peart Pérez and others 1983, p. 104). Technology exports yielded revenues in foreign currencies and provided excellent opportunities for access to information on the steel industry in foreign countries (Mendirichaga 1978, p. 172).

Hylsa was able to develop its own technologies for several reasons. First, it had nurtured its technological capabilities since its foundation. In its early days, the company reassembled partially scrapped facilities, and in ensuing years, often through failure, it accumulated experience in the development and use of operational technologies, a process which has led to the company's advanced technological capabilities. Second, Hylsa has harmonious labor-management relations. This is considered to have made it easy to transfer technologies among employees and improve overall capability in technology. Third, the management shows understanding about the difficulties of technology development. It took six years to launch experimental operations using the HYL method and apply for its patents. In a pilot plant experiment, the steelmaker failed to put the method into operation (Mendirichaga 1978, pp. 113–14). Experimenting was costly and it was uncertain whether it would succeed. But it was management's thorough understanding of the difficulties entailed in technology development that allowed the experiments to continue. In addition, funds from Cuauhtémoc and the need to overcome the unavailability of raw materials also kept the experimental process going until the ultimate success of the HYL method.

Labor-Management Relations

Labor-management relations at Hylsa formed a striking contrast to those at Fundidora—cooperative at Hylsa and confrontational at Fundidora.

Fundidora's confrontational industrial relations were attributed to a powerful labor union. This had an adverse effect on profitability. First, the union frequently staged strikes except in the 1960s when the labor-management relations were harmonious. Strikes sometimes led to the loss of business opportunities (Zapata 1989, pp. 37–38). Second, work functions were divided into various categories and fixed at the request of the labor union. When expansion and modernization of production equipment gave rise to new functions, the management, which was barred from redefining functions, had no choice but to recruit new employees or to pay extra allowances. This led to a surplus workforce and a rise in production costs (Zapata 1989, pp. 137–39; Ávila Juárez 1994, p. 77). Third, the labor union had a say in recruiting new workers who were often employed through influential contacts, and this led to a lower quality labor force (Zapata 1989, p. 125).

By contrast, Hylsa's management recognized the importance of cooperative industrial relations. First, when the management recruited new workers, it was careful not to hire would-be extremists (e.g., Mendirichaga 1978, pp. 66, 153). Second, Hylsa created its own welfare system for employees. Sociedad Cuauhtémoc y Famosa was established as an exclusive organization to provide a school, hospital, and sports, recreational, and other welfare facilities for employees of Cuauhtémoc and its subsidiaries as well as their families (Cervecería Cuauhtémoc 1990, pp. 44–47). Third, a sense of companionship and a family atmosphere were promoted at work places (e.g., Mendirichaga 1978, p. 68). Cooperative labor-management relations created in this way served to encourage loyalty to the company and willingness to work among employees.

The cause of the contrastive industrial relations between Hylsa and Fundidora dates back to the Cárdenas administration (in office between 1934 and 1940). The administration is noted for laying the foundation for one-party rule by the PRI (Partido Revolucionario Institucional). At that time, the party was a group of political hopefuls who gained power in the Mexican Revolution. Fierce power struggles were going on within the party. Lázaro Cárdenas, who took office during these struggles, organized workers and farmers as part of the PRI to strengthen his power base and stabilize his administration. He promoted the establishment of a nationwide organization of government-influenced labor unions. It was only in Monterrey that this effort failed. In 1936 Cárdenas sent union activists to Vidriera Monterrey, an affiliate of Cuauhtémoc, to organize a government-influenced labor union (Barragán and Cerutti 1993, p. 192). To resist this, the management of Vidriera Monterrey staged a strike by capitalists to protest and display their power. At the same time, the management made all-out efforts to crush any government-influenced labor union (Saragoza 1988).

In a bid to put the steel industry under government control, Cárdenas also tried to organize a government-influenced labor union in Fundidora. He sought to control Fundidora through a labor union because a legitimate cause for nationalization could not be applied to Fundidora unlike foreign-owned oil companies troubled by labor disputes. As government-influenced labor unions extended their power, cooperative industrial relations were destroyed (Zapata 1989, p. 32). It was this bitter experience in the 1930s that led Hylsa to promote harmonious labor-management relations.

A possible reason why the management of Fundidora could not prevent a government-influenced labor union from gaining power was its reliance on the government, which will be explained in the following section.

Differing Degrees of Reliance on Government

The steel producers differed in their degree of reliance on the government for markets, financing, and labor-management relations.

The main products produced by Fundidora, particularly before diversification of products in the 1950s, were rails and structural shapes used for railways, the oil industry, and public works projects. This meant that the government was one of Fundidora's main customers. Meanwhile the largest market for flat products manufactured by Hylsa was the manufacturing industry. Principal customers were private companies, Cuauhtémoc being the largest in the early days. Fundidora's dependence on the government was larger than was Hylsa's.

Financially Fundidora relied more on NAFIN for loans than did Hylsa. In labor-management relations, Fundidora, which had a government-influenced labor union, looked more to the government for intermediation. Hylsa could carry on negotiations with its labor union without any intervention from the government. In every aspect, the degree of reliance on the government was higher for Fundidora.

As mentioned earlier, the managing director of Fundidora lived in Mexico City and moved the company's head office to the capital at an early stage. For the smooth operation of business, it was essential to maintain good relations with the government through regular contact with government officials. As long as the government favored Fundidora, smooth operation was ensured. If not, Fundidora faced great difficulties.

As evidenced by the Cárdenas administration, the more nationalistic regimes tried hard to gain control over the key industries including steel. It was during the Echeverría administration (1970–76) that the steel industry was exposed to the threat of government control. As mentioned earlier, the direct causes for the nationalization of Fundidora were its accumulated foreign debts and the devaluation of the peso. An increase in external debts resulted from huge losses due to labor disputes. In 1970 a road leading to an iron mine owned by Fundidora was closed by students, suspending the supply of iron ore for a long time. Responding sympathetically to the students, Fundidora's labor union carried out acts of sabotage, forcing the suspension of production at the third blast furnace. The background to the disputes was the government's attempt to control Fundidora. The government apparently felt it had to own an iron mine prior to the launch of the government-operated SICARTSA steelworks (Zapata 1989, pp. 39–40, 52). President Echeverría also tried to find a chance to intervene in the management of Hylsa,¹ but the

government could find no excuse for such intervention because Hylsa had sufficient financial resources and boasted of cooperative labor-management relations. Hylsa was more autonomous from the government, and therefore could avoid intervention from the government.

Concluding Remarks: The Mixed Economy and Autonomy of Enterprises

It requires huge amounts of funds to found and develop a steel industry, which is a key sector to provide materials for expanding and diversifying industries. One of the reasons why the Mexican government intervened in steel production through public enterprises was that such funds could not be supplied by the private sector alone.

Hylsa and Fundidora dealt with financial problems in different ways. In the initial period, Hylsa depended mainly on Cuauhtémoc for funds. As demand for funds grew, its dependence on loans increased. Still, funds on hand, including those from Cuauhtémoc, played an important role. In addition, Hylsa had a revenue source of its own—the sale of technology.

Fundidora, which had no backer similar to Cuauhtémoc, chiefly depended on loans from the Export-Import Bank of the United States and NAFIN for funds. The problem was repayment, which was adversely affected by the devaluation of the peso. Fundidora tried to expand and modernize production equipment to the maximum degree of available funds, but the pace lagged behind other steelmakers, which confirmed its declining status in the steel industry.

Besides its vulnerable financial situation, Fundidora had another weakness—its higher degree of reliance on the government for markets and labor-management negotiations. The dependence on the government was a double-edged sword. On one hand, it was a reasonable corporate strategy in the context of government procurements, access to public funds, and government influence on labor unions. On the other hand, such a strategy was premised on favorable relations with the government, and if the government changed its policy and took a hostile stance, the existence of the company would be in danger.

In contrast to Fundidora, Hylsa was more autonomous from the government for markets, funds for investment, and labor-management negotiations. Moreover, Hylsa had a cooperative labor union, and Cuauhtémoc was its main supporter.

In conclusion, three tasks were essential to the growth of private steel producers in Mexico: (1) to expand production capacity in order to keep up

with the rapidly growing steel market; (2) to ensure investment funds toward that end; and (3) to maintain good relations with the government or to create a corporate structure requiring less dependence on the government. A reduction in production costs and improvement in quality were not necessarily requisites for the growth of steelmakers. Government policies only encouraged companies to expand their production capacity and lacked a mechanism to reduce costs and upgrade quality. In this situation, private steel producers made little effort to reduce costs and improve quality. High costs and poor quality in the material sector determined costs and quality in the overall process of industrialization, resulting in a lower competitive edge for industry as a whole. The harmful effects were left unattended and became all the more serious, and triggered a drastic change in industrial structure in the 1980s.

Note

- 1 From an interview at Hylsa in September 1995.