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I N D U S T R Y P R O F I L E

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Regional Industrial
Expansion

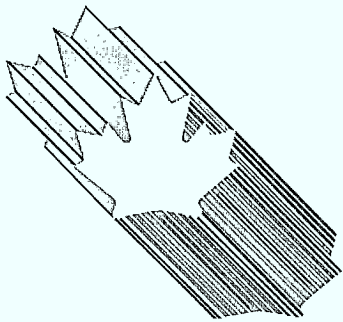
Ministry of State
Science and Technology
Canada

Expansion industrielle
régionale

Ministère d'État
Sciences et Technologie
Canada

Primary Iron and Steel

Canada



I N D U S T R Y

P R O F I L E

PRIMARY IRON AND STEEL

SEP 7 1988

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FOREWORD

In a rapidly changing global trade environment, the international competitiveness of Canadian industry is the key to survival and growth. This Industry Profile is one of a series of papers which assess, in a summary form, the current competitiveness of Canada's industrial sectors, taking into account technological and other key factors, and changes anticipated under the Canada-U.S. Free Trade Agreement. Industry participants were consulted in the preparation of the papers.

The series is being published as steps are being taken to create the new Department of Industry, Science and Technology from the consolidation of the Department of Regional Industrial Expansion and the Ministry of State for Science and Technology. It is my intention that the series will be updated on a regular basis and continue to be a product of the new department. I sincerely hope that these profiles will be informative to those interested in Canadian industrial development and serve as a basis for discussion of industrial trends, prospects and strategic directions.

Minister

Canada

1. Structure and Performance

Structure

The primary iron and steel sector consists of 14 companies operating 24 facilities across Canada. These companies produce primary rolling-mill products: semi-finished ingots, blooms, billets and slabs, sheets, strip, plate, bars, rods, structural sections and rails. The industry had shipments valued at \$7.88 billion and employment of 40 800 in 1986. Exports were \$1.68 billion, 21.3 percent of shipments, and imports of \$1.16 billion accounted for 15.8 percent of domestic consumption. Canada accounted for two percent of world crude-steel production in 1986.

There are two classes of producers: large, integrated mills which consume iron ore and produce a wide range of products, and electric furnace or mini-mills which consume ferrous scrap and produce a limited range of products. Integrated mills are integrated backwards into raw materials (iron ore, coal, limestone) and forward into finished products (pipe, wire products). Mini-mills may be backward integrated (scrap yards) and forward integrated (pipe, wire products).

More than 90 percent of the industry is in the private sector and is Canadian-controlled. Two mills which are wholly provincially owned are Sydney Steel Corporation (Sysco) in Nova Scotia and Sidbec Dosco in Quebec.

Proximity to market, which is the prime determinant of mill location, and technology (very large production scale requirements) strongly influence concentration in central Canada. Three Ontario-based companies, Stelco Inc., Dofasco Inc., and the Algoma Steel Corporation Ltd., constitute 75 percent of the domestic capacity, while smaller mills play important regional roles.

By viewing the Canadian steel industry as three major, individual, integrated producers, concentrated in Ontario and serving national markets, and several mini-mills supplying regional markets across the country, a better appreciation of the Canadian competitive position can be gained.

While the three Canadian firms operating integrated mills produce similar product lines, they all have areas of specialization.

Algoma's product lines are heavily oriented to capital goods and energy markets. These markets are highly volatile, traditionally returning above-average financial yields during strong markets, but they are subject to swift declines. Algoma is the only Canadian producer of seamless tube and wide-flanged beams.

Dofasco produces only flat-rolled products (sheet, strip and plate), primarily for consumer durables markets, such as the automotive and large home appliances sectors. Historically, these markets have been relatively stable. These products enjoy the largest customer base for steel and account for over 60 percent of total Canadian steel demand.

Stelco produces the widest range of steel products, serving both consumer and capital goods markets. It is the only integrated mill that produces large-diameter line pipe, and a large array of wire and wire products.



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**Imports, Exports and Domestic Shipments
1986**

As a group, the electric furnace or mini-mill companies dominate the production of steel bar, light structurals and, to some extent, rod products. Having successfully captured markets from the integrated mills over the past twenty-five years, they now compete primarily amongst themselves. Major exceptions within this classification include Ipsco Inc. in Saskatchewan and Sidbec Dosco in Quebec, which produce flat-rolled steel and pipe. Q.I.T.-Fer et Titane Inc., Tracy, Quebec, began operation in the first quarter of 1987 of a 400 000 tonne per year semi-finished billet operation. Sysco is currently being modernized by the installation of an electric furnace, a continuous caster and a new rail mill.

The post-World War II era saw huge demands for steel in the United States and Europe. Growth in steel demand continued until the late 1960s. There were a large number of companies involved in steel production and each one viewed this market growth as an opportunity to expand production. As a result, several companies expanded to supply the same market and this, coupled with the required economies of scale (i.e., four-million tonne per year blast furnaces) resulted in capacity installation outpacing demand. The problem was compounded by the rapid growth of the Japanese steel industry which was committed to exporting about 35 percent of its production to pay for imported raw materials.

The rapid decline in steel demand which began in the early 1970s in the developed countries, resulted in major plant closures. However a large overcapacity remains.

In developing countries, such as Brazil and Mexico, major steelmaking facilities were installed to meet the perceived needs of their growing economies. Massive international debt loads have thwarted these growth plans, and these countries now export steel at depressed prices in order to generate hard currency.

Performance

The Canadian steel industry has judiciously added capacity to meet average, not peak, domestic demand. This has ensured high-capacity utilization and assisted profitability during periods of reduced steel demand.

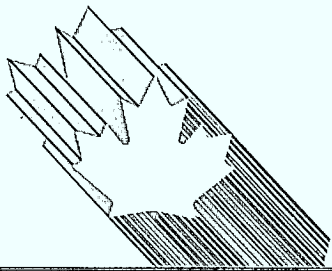
Subsequent to the first oil shock, the industry plunged into recession in 1975. An aggressive export drive in 1976 marked the start of Canada becoming an ongoing net exporter of steel and assisted in maintaining high-capacity utilization and profitability. Domestic and export markets improved gradually, and over the period 1979-1981 steel markets were strong. All major, and most smaller, producers maintained annual profitability during the period 1975-1980. The industry invested over \$2.5 billion to install modern equipment during that period.

In 1982, the industry endured a severe recession. Dofasco was the only major producer to earn a profit that year, and every succeeding year. Stelco incurred the first annual loss in its history in 1982, returning to profitability in 1985. Algoma was severely impacted, losing \$357 million between 1982 and 1986, before finally returning to profitability in 1987. Slater Industries maintained profitability throughout, as did Ipsco which, however, incurred a small loss in 1986, due to the depressed energy sector. During the period 1980-1986, the industry invested \$7.7 billion.

Major factors of a Canadian steel producer's success are sales in its domestic market at profitable prices, coupled with high utilization rates of modern, capital-intensive equipment. For more than a decade, however, dumped steel imports have temporarily disrupted Canadian domestic prices. Canadian steel producers have initiated 88 dumping cases since 1977 involving 27 products from 21 countries. In most instances, these cases resulted in anti-dumping duties which assisted the industry to maintain profitable prices.

The performance of the Canadian industry has been superior to most of its international competitors since 1973.

Since 1975, when the European Community (E.C.) declared "manifest crisis" in its steel industries, the various companies have suffered massive financial losses and have eliminated more than 32 million tonnes of capacity (16 percent), with 400 000 job losses. Most of the steel companies are government-owned. Their debts were absorbed and state aid was provided for modernization.



Between 1980 and 1986, the U.S. steel industry incurred about US\$12 billion in losses, eliminated 36 million tonnes of capacity (26 percent), and reduced the work force from 400 000 to 175 000.

The Japanese steel industry has been relatively immune from imports and has remained profitable over many years. During the past three years, increasing imports from South Korea and other developing countries have captured five percent of the Japanese domestic market. The current high value of the yen has eradicated Japanese competitiveness. Japanese producers suffered major financial losses in 1986, returning to profitability in 1987, due to high home market sales. They are currently closing facilities and reducing employment.

A 1987 study by the Organization for Economic Cooperation and Development (OECD) Steel Committee shows that at least 70 million tonnes of capacity will have to be eliminated in the United States, the E.C. and Japan to bring supply into balance with their domestic demand by 1990.

The Canadian industry's cautious approach to capacity installation has necessitated only minor restructuring. Investments made over the past decade, coupled with gradual closures of older, less-productive facilities, have resulted in an industry with state-of-the-art equipment and much lower production costs.

Domestic steel demand has been declining in Canada since the early 1970s. Between 1973 and 1986, Canadian domestic steel shipments decreased an average of 45 000 tonnes per year, while total shipments increased annually by an average of 116 000 tonnes. During the same period, exports increased an average of 161 000 tonnes annually, illustrating the growing importance of exports to the health of the industry.

2. Strengths and Weaknesses

Structural Factors

Key factors influencing the competitiveness of the Canadian steel industry include access to raw materials, economies of scale, state-of-the-art technology, energy costs, productivity, quality, service and transportation costs.

Canadian producers enjoy access to raw materials (iron ore, coking coal, limestone, scrap) comparable to their U.S. counterparts and, in many cases, more favourable than for offshore producers. Ample supplies are available at reasonable costs and within relatively short shipping distances.

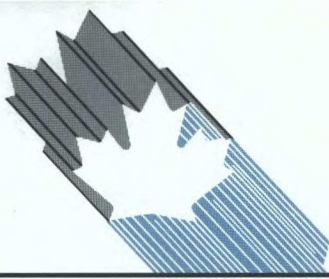
The three major integrated producers currently have international-scale, modern capacity, while most mini-mills have state-of-the-art facilities. They benefit from profitable domestic sales and from proximity to major U.S. steel markets in which they are able to sell profitably. The price of Canadian electricity is low, relative to most other countries. This provides a marked advantage to all mills.

In the past few years, industry investment has been mainly directed to installation of continuous-casting equipment which can reduce the cost of steel production by up to 20 percent, and to facilities to produce higher quality steel. At the end of 1987, the industry had the capability to continuously-cast over 80 percent of steel production. There has been a marked improvement in productivity over the past few years. Tonnes shipped per employee have risen 28 percent, from 224 tonnes per year in 1981 to 286 tonnes per year in 1986. This performance is amongst the highest in the world.

Canadian steel producers can compete in the Canadian and U.S. markets for reasons other than price, particularly against offshore producers. They are well-positioned to supply major Canadian and U.S. manufacturing industries, such as the automotive and white goods sectors, which have demanding quality needs for products, and specific services, such as "just-in-time" delivery.

Transportation costs affect the Canadian industry in two ways. On the one hand, high transport costs constrain and make less profitable exports from the major steel producers in central Canada to offshore destinations. However, these costs also tend to shield major Canadian markets from offshore producers, particularly those in Asia. On balance, the impact is beneficial, in that it provides some natural protection to Canadian producers in central Canada. Since transport costs associated with exports to major U.S. steel markets are similar to those for domestic shipments, they do not constitute a disadvantage in that regard.

A late 1985 study prepared by World Steel Dynamics (Paine Webber, New York, an authority on the world steel industry), compared the cost of production of hot-rolled steel coils in the United States and several other countries, as shown in the following table summarizing part of the report. (These calculations do not include the critical elements of interest and depreciation. These vary greatly between countries and, while they have an important impact on privately owned steel plants, they often have little or no relevance to state-owned organizations.) The cost figures show that Canadian hot-rolled coils could, in 1985, be delivered to adjacent U.S. markets at lower costs than American, Japanese and European steel coils and at only slightly higher costs than Brazilian and South Korean steel coils. Since in 1985, steel from Japan and the European Community was being sold at competitive prices in Canada and the United States, it seems likely that, at those prices, the production and transportation costs were not totally covered.



Costs of Production (Hot-rolled Steel Coils)
(as % of U.S. costs)

	U.S.A	Japan	E.C.	Canada	Brazil	S. Korea
FOB Steel Mill	100	87	87	86	59	56
Delivered to .						
U.S.A or Canada	100	110	110	86	83	80

Source: World Steel Dynamics (Paine Webber, N.Y.)

While U.S. and Canadian currencies have declined significantly relative to all major developed countries since the study, the relative loss of competitiveness of Japan and the E.C. is not directly proportional to change in currency alignments. Raw materials, such as iron ore, coal and ferroalloys are traded internationally in U.S. dollars. As a result, raw material costs have been lowered in Japan and the E.C., while the costs of major domestically priced inputs have been increased in a relative sense. It is estimated that Japan and the E.C. have, as a result, experienced a further major loss of competitiveness in Canada and the United States. The impact on Brazil and South Korea has been less severe. With the existing international currency alignments, Canada enjoys some of the world's lowest domestic steel prices, and the industry remains profitable.

A U.S. International Trade Commission study of international competitiveness in the production of hot-rolled steel coils was published in February 1988. The findings were similar to those of the 1985 Paine Webber study.

Costs of Production (Hot-rolled steel coils)

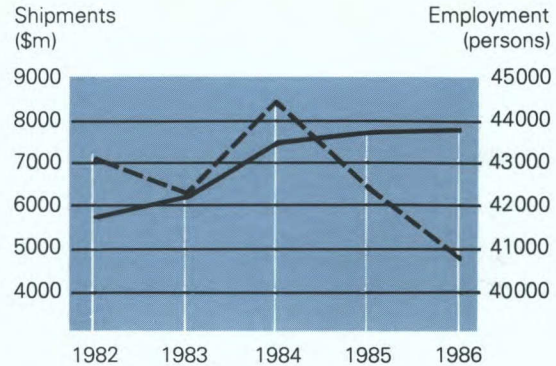
	U.S.A.	Japan	France	F.R.G.	Canada	Brazil	S. Korea
\$U.S./ton	301	359	338	312	275	228	227

Source: U.S. International Trade Commission

Trade-related Factors

Tariffs in most developed countries are in the three percent to 12 percent range. Current tariffs in the United States are four to five percent, compared to Canadian tariffs of eight to ten percent. In general, tariffs are less relevant than the numerous border measures which many countries employ, such as basic or trigger prices (i.e., reference price levels for imports), burdensome customs practices and somewhat arbitrary application of anti-dumping measures. Many offshore steel export markets, particularly those in developing countries, restrict imports of those steel products which are manufactured locally.

Canadian steel producers view non-North American markets as secondary, primarily due to high transportation costs.



Shipments —————

Employment - - - - -

Total Shipments and Employment*

* Steel companies producing rolled products (not including ferroalloys and steel castings).

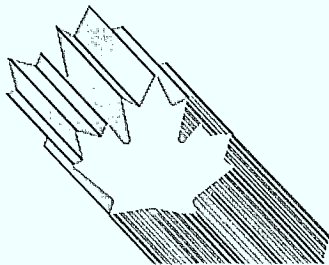
A number of elements of the Canada-U.S. Free Trade Agreement (FTA) will have an impact on the Canadian steel industry. These include elimination of U.S. and Canadian duties over a ten-year period, elimination of drawback of duties on imported off-shore steel, explicit rules of origin, safeguard-action provisions, the trade-dispute settlement mechanism and development of new rules on dumping. The expected effect of these measures is discussed in the section on the Evolving Environment.

Technological Factors

Steelmaking technology is readily available internationally, and Canadian steel producers have a history of identifying advanced technology at an early date. In the early 1950s, two Canadian steel companies commissioned the first installations of a basic oxygen furnace and a continuous-casting machine in North America. These revolutionary technologies, first developed in Europe, have experienced major improvements and are currently considered as state-of-the-art internationally. The high cost of major steel production facilities makes it difficult, if not impossible, to move quickly to new technology.

The major Canadian steel producers have research and development (R&D) departments working on process and product development, while only a few of the mini-mills have dedicated R&D groups. Process and product development normally have greater net financial returns than research into new production machinery and equipment.

In a recent study by Statistics Canada, the steel industry was identified as one of the major Canadian users of computer control in production facilities. The steel industry also is recognized as a major user of advanced technology relative to its international competition.



Other Factors

With respect to tax reform, a September 1987 study by the Conference Board of Canada, commissioned by the steel industry, indicated that the proposed Canadian tax reform laws would leave Canadian producers on a competitive footing with their U.S. counterparts.

In the view of the industry, the tax reform measure to change capital cost allowance (CCA) on machinery to a 25-percent, declining-balance system is inferior to the current three-year fast write-off. However, some companies feel that coupled with a lower corporate tax rate, their financial performance should not be significantly altered.

The "available for use" rule would delay utilization of CCA to a maximum of two years. In such circumstances, after a two-year delay, the half-year rule would not apply. Recent major steel industry investments will, however, continue to benefit from the current CCA. In contrast, U.S. tax laws allow write-off over seven years, although there is a "put in use" rule which does not allow depreciation to commence until the machinery is commissioned.

3. Evolving Environment

Future developments in the international steel industry are unclear. By 1990, an international overcapacity of at least 150 million tonnes will remain, in spite of massive capacity cuts in the major developed countries.

Developing countries will continue to install new facilities, and will become an increasing force on world markets. Streamlined U.S., Japanese and E.C. industries will provide stiff competition for Canada which, like most developed countries, is facing a declining domestic demand for steel.

A major factor contributing to declining steel demand in Canada is the increasing imports of steel-intensive items such as automobiles, industrial lift-trucks, etc. The establishment of automotive production in the United States and Canada by offshore producers should help to redress this problem.

Development of new technologies could emerge in the next decade. Production of molten iron using coal instead of coke would reduce the cost of making steel, and eliminate the need to install costly new coke ovens. This could present an opportunity for an integrated producer, such as Stelco, faced with replacing an aged coke battery.

While steel demand dropped over 500 pounds per unit when the North American automobile manufacturers down-sized their cars, there are no indications that other materials will replace steel as the major raw material in automobile and truck production in the near future. To the extent that offshore automobile producers increase production and sourcing in North America, demand for steel would be stimulated.

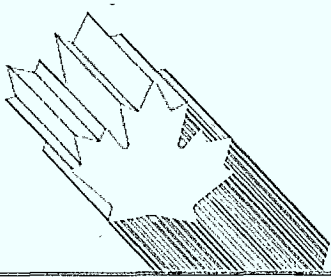
The Canadian steel industry will benefit from the Canada-U.S. Free Trade Agreement (FTA) in a number of ways. Increased economic activity resulting from the agreement will stimulate steel demand. Elimination of tariffs over a ten-year period will benefit both countries by increasing the profitability of bilateral trade and by providing preferential access to one another with respect to offshore producers. The elimination of duty drawback with respect to offshore steel for export to the United States after further processing in Canada, will enhance demand for domestic steel. Another major benefit which the agreement will provide is related to machinery and equipment inputs. The accelerated reduction of tariffs on a number of major inputs such as mill machinery and computer equipment will reduce input costs and enhance the Canadian steel industry's international competitiveness.

Of particular importance for steel-mill products are rules of origin, which will provide a solid basis for ensuring that benefits of the agreement apply only to products which validly originate in Canada or the United States. The system is simple, it does not require elaborate value-added calculation, and it will ensure that offshore steel products which undergo minimal Canadian or U.S. processing do not enjoy preferred access to either market. The system will reduce the potential for either country becoming a back door for low-priced and possibly dumped steel.

In the future, when safeguard actions are taken by either country, the other party to the agreement will be excluded from the action unless its imports are substantial and are contributing significantly to the serious injury, or threat of serious injury, caused by the imports. Canadian producers will no longer be sideswiped by actions primarily directed at other exporters, and this may benefit Canadian steel producers in future U.S. safeguard actions. Had these proposed safeguard measures been in effect in 1976, the Canadian specialty steel industry would not have been subject to major constraints and penalties on its U.S. exports, from June 1976 to February 1980, and from July 1983 to date.

In addition, under the FTA, when Canada accounts for a major portion of steel imports in a U.S. safeguard action, Canadian steel exports cannot be reduced below the then-current volumes, and would enjoy annual growth based on the growth rate of most recent years.

The new trade-dispute settlement mechanism in the agreement is expected to be valuable in reducing the potential for harassment, and will provide a final appeal through a bi-national panel. This, combined with the new safeguard elements, will provide the primary iron and steel industry with considerably enhanced and more secure access to the U.S. market. Development of new rules on dumping will clarify procedures and provide a greater degree of comfort to the Canadian steel sector.



4. Competitiveness Assessment

The Canadian steel industry is currently internationally competitive, having invested heavily in state-of-the-art facilities over the past 15 years. This performance was achieved without government financial support and during two severe cyclical downturns in steel demand. In spite of the major disruption in international steel markets during this period, most Canadian steel companies have emerged as profitable organizations. They have weathered successive oil shocks and the resulting downsizing of the North American automobile.

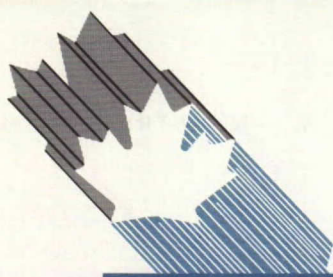
The Canadian steel industry's performance has been superior to its international competitors in the United States, Europe and, more recently, Japan. While the steel companies in these areas have experienced massive financial losses and reduction in capacity with concomitant major job losses, the adjustment process in Canada has been relatively less severe. Canadian investments in steelmaking capacity over the past decade, coupled with gradual closure of obsolete facilities has resulted in a competitive industry with modern equipment and lower costs. The industry has improved labour productivity over the past few years, and is recognized as a major user of computer-controlled production.

The Canada-U.S. Free Trade Agreement will provide enhanced and more secure access to the U.S. market for the Canadian steel industry. Increased economic activity resulting from the agreement will stimulate steel demand.

For further information concerning the subject matter contained in this profile, contact:

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PRINCIPAL STATISTICS

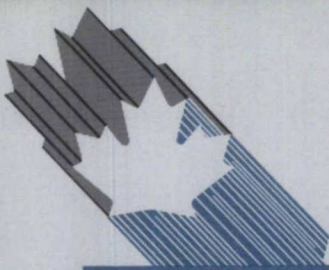
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	1973	1982	1983	1984	1985	1986
* Establishments	21	22	22	23	23	24
* Employment	49 000	43 051	42 280	44 450	42 475	40 803
Shipments (\$ millions) (million tonnes)	2 345 9.9	5 715 9.3	6 196 10.0	7 505 11.6	7 827 11.9	7 879 11.7
Gross domestic product (constant 1981 \$ millions)	2 658.2	1 518.8	1 863.7	2 238.4	2 208.5	2 183.6
Investment (\$ millions)	261.0	1 102.1	820.4	991.8	1 185.3	1 573.0
**Profits after tax (\$ millions) (% of Sales)	148.2 5.70	5.6 0.16	(9.3) (0.12)	237.6 3.33	349.6 3.96	144.4 1.55

TRADE STATISTICS

	1973	1982	1983	1984	1985	1986
Exports (\$ millions)	292	1 389	1 132	1 447	1 592	1 681
Domestic shipments (\$ millions)	2 053	4 326	5 064	6 058	6 235	6 198
Imports (\$ millions)	410	620	656	948	1 196	1 159
Canadian market (\$ millions)	2 463	4 946	5 720	7 006	7 431	7 357
Exports as % of shipments	12.1	24.3	18.3	19.3	20.3	21.3
Imports as % of domestic market	15.3	12.5	11.5	13.5	16.1	15.8
Canadian share of international market	1.9	2.3	1.6	1.8	1.9	2.0
Source of imports			U.S.	E.C.	Japan	Others
(% of total value)		1982	46	28	12	14
		1983	54	25	10	11
		1984	39	37	9	15
		1985	45	34	8	13
		1986	34	38	10	18
Destination of exports			U.S.	E.C.	Japan	Others
(% of total value)		1982	56	14	1	29
		1983	84	5	1	10
		1984	87	4	1	8
		1985	87	5	1	7
		1986	85	6	0	9

(continued)



REGIONAL DISTRIBUTION — Average over the last 3 years

	Atlantic	Quebec	Ontario	Prairies	B.C.
Establishments – % of total	3.7	29.6	51.9	11.1	3.7
Employment – % of total	2.7	5.5	83.8	7.1	0.7
Shipments – % of total	1.2	13.5	69.9	12.1	3.3

MAJOR FIRMS

Name	Ownership	Location of Major Plants
1. Stelco Inc.	Canadian	Hamilton, Ontario Nanticoke, Ontario Contrecœur, Quebec Edmonton, Alberta
2. Dofasco Inc.	Canadian	Hamilton, Ontario
3. Algoma Steel Corp.	Canadian	Sault Ste. Marie, Ontario
4. Sidbec Dosco Ltée	Province of Quebec	Contrecœur, Quebec Montréal, Quebec Longueuil, Quebec
5. Lake Ontario Steel Co.	Canadian	Whitby, Ontario
6. Ipsco Inc.	Canadian	Regina, Saskatchewan

*Steel companies producing rolled products (not including ferroalloys and steel castings).
**From corporate financial statements of six firms representing approximately 90 percent of industry.

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